CHAPTER VI

INDIA’S ENERGY SECURITY AND
COOPERATION WITH CENTRAL ASIA

India’s rise as a global power is contingent upon its steady economic growth for which adequate availability of energy is called for. Rahul Roy Chaudhury of the international Institute of Strategic Studies in London says, “Energy resources fuel India’s economic growth and its consequent rise as a global power. In the absence of energy security, India will be hard-pressed to surmount the key challenge of high economic growth rates.”

Uninterrupted, sufficient, reliable and secure supply of energy at affordable price is a global necessity, and India is no exception to it. Indian demand of energy has grown and will continue to do so to sustain the envisaged GDP growth targets. At the G-8 summit in St. Petersburg, it was stated that “to deliver a sustained growth of 8 per cent through 2031, India would – in the very least – need to increase its primary energy supply by 3 to 4 times and electricity supply by 5 to 7 times of today’s consumption.” The indigenous production of energy is unable to meet the growing demand. Various measures have been taken to fatten the energy basket by the addition of renewable sources of energy such as wind power, bio-diesel, ethanol, photovoltaic and solar thermal power. Even if measures are undertaken to bring down the consumption levels by developing energy efficient, vehicles, buildings and durables, dependence upon oil imports is likely to continue, presently the bulk of which comes from the Middle East, a volatile region thought to be so after 9/11 event. India needs diversification of supply from countries of various regions. In this chapter India’s energy scenario along with that of the Central Asian Republics – Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan and Tajikistan – is discussed, and various options of securing energy assets and supply – through routes presently available in running order, proposed or conceived – have been analyzed. India’s present energy cooperation and future prospects with the Central Asian countries are also examined.


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INDIA'S ENERGY SCENARIO

Energy is the prime mover of economy. To maintain and accelerate the pace of economic growth, availability of adequate, sustainable and affordable energy supply is imperative. There is an utmost need to achieve the goal of energy security. The steady pace of economic growth along with phenomenal growth of the transport sector, population explosion and urbanization, rise in income levels and subsequent proliferation of private vehicles are all resulting in burgeoning energy demand.

It is the economic growth that stimulates energy demand. India adopted the economic policy of liberalization, privatization and globalisation in the early 90s with emphasis on attaining high economic growth rate targets. It was in the last decade that the country witnessed an unprecedented economic growth. India’s global economic profile is rising fast. World Bank has predicted India along with China, Indonesia, Brazil and Russia to be a big player in shaping the global economy over the next two decades. External Affairs Minister Natwar Singh in his keynote address “India: The Next

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3. A significant part of the oil – nearly 112 million tonnes (2004) is consumed by the transport sector annually. “President’s Address to the Nation on the Eve of 59th Independence Day August 14, 2005” Strategic Digest Volume 35 Number 9 September 2005 p. 1142.

4. The share of urban population which stands at 27.8 per cent (census of India-2001) is projected to increase up to 43 per cent in 2020. About 80 per cent of commercial energy is consumed by urban and semi-urban India while the rest of 70 per cent of rural population fulfills its requirements from non-commercial sources.

5. “Third BRIC (Brazil, Russia, India, China) report from Goldman Sachs has predicted that India will add a million cars a year from next year and sales volumes will overtake Germany by 2010 and Japan by 2012 to become the world’s fourth largest market by 2020. And by 2050, Indians will buy every sixth car produced in the world”. Indrajit Basu 2005 “India Zips Ahead”. February 24, http://www.atimes.com/atimes/south_Asia.html.

Decade” at Chatham House, London on 27 June, 2005 said:6

Mckinsey had forecast a steeply rising graph of India’s economic rise sometime ago. More recently we have the report of Goldman Sachs, which predicts that India will be the third largest economy in dollar terms within 40 years. (It already is the fourth largest economy in terms of Purchasing Parity) 6

Asian Development Bank’s (ADB) Asian Development Outlook 2005 update (September 2005) has also painted a bright future of Indian economy, which is expected to surge ahead, underpinned primarily by growing investment and strong consumption. Thus this growth in economy indicates incremental energy demand and consumption in the years to come. International Energy Outlook 2005 of the Energy Information Administration (EIA) also projects strong growth in energy demand in the emerging Asian economies of China and India. The GDP in India is expected to register an average annual growth rate of 5.5 per cent over the forecast period of 2002-2025, compared with 3.9 per cent globally. With such growth in GDP, demand for energy is expected to double by the year 2025, accounting for nearly 40 per cent of total projected increase in world energy consumption.7 India is thus expected to be at fulcrum of this growth plank.

To support the government targets of 8 per cent annual GDP growth at the end of the tenth plan, with the expected energy growth targets of 5.2 per cent, India needs to secure adequate energy supplies both in the long and short term. As Prime Minister Manmohan Singh stated while addressing the first meeting of the Inter-Ministerial Energy Coordination Committee in New Delhi on 6 August 2005: “We have to ensure that we are building up adequate energy security to insulate the economy from any

future shock."

Energy security is a catch-all phrase that encompasses entire energy spectrum whether natural gas, oil, coal, hydro power, nuclear power or other renewable sources of energy. The attainment of energy security necessitates:

- To ensure sustainable and reliable supply of energy.
- Diversify energy supply sources and energy mix.
- Manage energy resources more economically.
- Production and use of energy—with minimum damage to the environment—to promote sustainable development.

India ranks sixth as energy consumer in the world. During 2002-03, of the total primary energy consumed, 71 per cent came from commercial sources, namely coal, lignite, oil, gas, hydel, nuclear, wind and solar photo-voltaic. The remaining 29 percent came from non-commercial sources, namely firewood, agricultural wastes and animals dung. The biggest chunk of India’s primary commercial energy consumption matrix is dominated by the fossil fuels: with coal accounting for nearly 50 per cent, oil 36 per cent and gas 8.9 per cent while nuclear and hydel comprise the rest.

**Oil and Gas Overview**

The world is becoming overwhelmingly dependent on hydrocarbons. The share of oil may remain almost the same, but that of the natural gas is expected to increase in lieu of its being preferred as a clean and environment friendly fuel. International Energy Outlook 2005 projects oil to remain the dominant energy source worldwide with its share of total energy consumption declining only slightly from 39 per cent in 2002 to 38 per cent in 2025, whereas average annual growth rate in the natural gas segment is expected

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to be 2.3 per cent over the period 2002-2025. In the world energy consumption matrix, it is the oil and natural gas that dominates (63 per cent). In India, the energy consumption matrix is also favourably inclined towards oil and gas, but there is constraint of availability due to lack of indigenous production and imports. India is home to 17 per cent of the world’s population but with only 0.8 per cent of the world’s known oil and natural gas resources. The gap between demand and resources makes import dependence ineluctable. The indigenous production of crude oil does not match the enhanced level of consumption in India. The production of crude oil in India has stagnated around 33 million tonnes (mt) 2001-2002, and is likely to increase marginally up to 33.97mt. by 2006-2007.13

The Tenth Five Year Plan estimates the demand of oil in India to increase at an annual average rate of 3.6 per cent, higher than the projected average annual growth rate of around 2 per cent in the world energy demand. With only a marginal increase in indigenous production and ever growing demand, India is emerging as a large importer of crude oil, either through trade or investments in countries with rich fossil fuel sources around the world. If the present trend continues, its dependency on oil import is likely to go even beyond the current level of over 70 per cent. The consumption of oil is expected to increase from 114 mt. (2003-04) to 190 mt. by 2011-12, which will result in around 81 percent import dependence, and is likely to increase further by the year 2025 when the demand of oil is projected to be 364mt.14

Natural gas is fuel of the future because of its being eco-friendly. The importance of gas as the preferred fuel is increasing in the post-Kyoto world. It is recognized, by far, the cleanest and the most efficient of the fossil fuels: “low carbon contents relative to other fossil fuels – gas emits 60 percent lower carbon dioxide than electricity produced from coal and 42 per cent lower when fuel used is oil.”15 A consideration of global concern on the linkages between energy and its effect on the environment, or in

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ossip_hindu March 30: Delhi p.10

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other words, between the burning of fossil fuels and carbon emissions, weighs heavily on countries to switch over to safer and alternative fuel substitutes for reducing greenhouse gas emissions.

In the “Little Green Data Book 2006” released on 9 May 2006, the World Bank has said:

The rapidly expanding economies of China and India are showing a swift increase in carbon dioxide emissions. China which is already the second largest polluter has increased its emissions by 33 per cent between 1992 and 2002 while India’s emissions have grown 57 per cent in the same period.16

This trend is likely to continue in future in the wake of growing economic activity. Besides, gas being eco-friendly, there are other reasons which help forming consensus that natural gas is the fuel of the 21st century: global gas reserves have doubled in the last 20 years in contrast to meagre addition to oil reserves, and gas prices have been relatively much less volatile and more cost effective. This makes compulsive for India to enhance the share of natural gas in energy mix. India Hydrocarbon Vision 2025 projects that among coal, oil, gas, hydel and nuclear options, the share of gas is expected to grow faster, being environment friendly and advantageous to multidimensional sectoral use, particularly in transportation, power generation and as a boiler fuel for industry. The share of natural gas in India’s energy mix is ascending: from 2.5 per cent in early 80s to around 8 per cent in 2003, and is projected by India Hydrocarbon Vision 2025 to grow substantially to about 15 per cent by the year 2011-12 and further up to 20 per cent by 2025. The gap between demand and supply will go on widening with the passage of time. So the shortage of natural gas is to be met from imports and increasing domestic production.

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Table 6.1
Estimates of India’s Oil and Natural Gas Demand

<table>
<thead>
<tr>
<th>Year</th>
<th>Gas (In mmscmd)</th>
<th>Oil (In mmt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-2007</td>
<td>231</td>
<td>173</td>
</tr>
<tr>
<td>2011-2012</td>
<td>313</td>
<td>190</td>
</tr>
<tr>
<td>2024-2025</td>
<td>391</td>
<td>364</td>
</tr>
</tbody>
</table>

Source: India Hydrocarbon Vision 2025

mmscmd: million metric standard cubic metres per day, mmt: million metric tonnes

Table 6.2
Estimates of Natural Gas Shortage (Demand- Supply) from 2008-2012
(In mmscmd)

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand</th>
<th>Domestic Supply</th>
<th>Import LNG</th>
<th>Total Supply</th>
<th>Demand-Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>179</td>
<td>75</td>
<td>21</td>
<td>96</td>
<td>-83</td>
</tr>
<tr>
<td>2009</td>
<td>197</td>
<td>101</td>
<td>25</td>
<td>126</td>
<td>-71</td>
</tr>
<tr>
<td>2010</td>
<td>226</td>
<td>169</td>
<td>30</td>
<td>199</td>
<td>-27</td>
</tr>
<tr>
<td>2011</td>
<td>262</td>
<td>177</td>
<td>35</td>
<td>212</td>
<td>-50</td>
</tr>
<tr>
<td>2012</td>
<td>279</td>
<td>198</td>
<td>40</td>
<td>238</td>
<td>-41</td>
</tr>
</tbody>
</table>


Table 6.3
Domestic Gas Supply Projections
(In mmscmd)

<table>
<thead>
<tr>
<th>Year</th>
<th>ONGC</th>
<th>RIL</th>
<th>Other Private Joint Ventures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>54</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>2009</td>
<td>60</td>
<td>84</td>
<td>25</td>
</tr>
<tr>
<td>2010</td>
<td>60</td>
<td>84</td>
<td>25</td>
</tr>
<tr>
<td>2011</td>
<td>63</td>
<td>89</td>
<td>25</td>
</tr>
<tr>
<td>2012</td>
<td>64</td>
<td>109</td>
<td>25</td>
</tr>
</tbody>
</table>

India’s East Coast Recognized as World Scale Gas Province

It was thought that India did not contain significant hydrocarbon (oil and gas) resources. Not many large finds were discovered till 1999, except ‘Mumbai High’. The failure may be attributed to the reason that incumbent players did not pay much attention to exploring deep-water resources because of lack of economic viability – controlled returns and pricing. The scenario has radically changed after New Exploration Licensing Policy (NELP) undertaken by the government. The Directorate General of Hydrocarbons estimates gas potential reserves of about 400 tcf in the east coast of which gas reserves of 104 tcf have been established.

Table 6.4
Untapped Gas Reserves in India
(In Trillion Cubic Feet)

<table>
<thead>
<tr>
<th></th>
<th>Gas Resources (Approx.)</th>
<th>Reserves Established</th>
<th>Yet to be found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas (15 basins)</td>
<td>400</td>
<td>104</td>
<td>296</td>
</tr>
<tr>
<td>CBM (26 blocks)</td>
<td>50</td>
<td>6</td>
<td>44</td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
<td>110</td>
<td>340</td>
</tr>
</tbody>
</table>

Sources: Directorate General of Hydrocarbons/ Data as of April 2007

Indian basins still remain poorly explored. Only 20 per cent of total 3.1 million square kilometres basin area is moderate-to-well explored. The under given table explains the extent of exploration in Indian basins.

Table 6.5
Poorly Explored Indian Basins
(In per cent)

<table>
<thead>
<tr>
<th></th>
<th>1996</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration initiated</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>Unexplored</td>
<td>49</td>
<td>15</td>
</tr>
<tr>
<td>Poorly explored</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>Moderate to well explored</td>
<td>16</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: Directorate General of Hydrocarbons
It is easy to hold, if the basin area is well explored, there are enough chances for new hydrocarbon finds. To augment production of gas through new finds, under NELP bidding, blocks are awarded to foreign and domestic companies, both private and public sector. Exploration and production is a continuous process. Some of the new finds are: a large discovery of natural gas reserve in 2005, estimated to be of 20 trillion cubic feet (tcf), in the Krishna-Godavari (KG) basin by a consortium led by Gujarat State Petroleum Corporation Ltd (GSPC)\(^\text{17}\); another finds by GSPC in 2006 in the KG basin, off shore Kakinada district in Andhra Pradesh that produces the gas flow of 4.8 million cubic feet per day and oil flow of 862 barrels per day\(^\text{18}\); gas discovery by Oil and Natural Gas Commission (ONGC) in KG basin block KG-DWN-98/2 which lies adjacent to Reliance Industries D6 block where 11.9 tcf of certified in place gas reserves have been struck till date.\(^\text{19}\) Reliance Industries partner, Canadian Niko Resources, has stated that “an independent engineering report prepared by Gaffrey Cline and Associates (GCA) at fiscal year end 2006 has increased the high estimate of gross original natural gas in place for the D6 block to 35.4 tcf from 11.9 tcf\(^\text{20}\); gas reserves have also been struck by the ONGC in Geleki in Assam.\(^\text{21}\) No doubt, the new discoveries will cut the demand-supply gap, but even then the projected demand is unlikely to be met by indigenous gas production alone. That makes essential for India to import liquefied natural gas (LNG) by sea, and if possible, gas through pipelines from countries of the region which can be economically more viable. Even in the draft paper on Approach to the 11th Five year Plan, the Planning Commission has said that “the scope for transnational gas pipelines needs to be explored from a long term perspective.”\(^\text{22}\) Major cross-border gas import pipeline proposals under consideration are: Iran-Pakistan-India pipeline, Turkmenistan-Afghanistan-Pakistan-India pipeline and Myanmar-Mizoram (India) pipeline.

For LNG, India has entered into two long term contracts with Qatar and Iran for

\(^{17}\) “World’s Biggest Gas Reserves” 2005 Hindustan Times: June 27:Chandigarh p.13

\(^{18}\) “Major Gas Reserves Found in Gujarat” 2006 The Tribune June 8: Chandigarh p. 22

\(^{19}\) “ONGC Strikes Gas in Bay of Bengal” 2005 The Tribune September 3:Chandigarh p.21

\(^{20}\) “Reliance Gas Reserves Double” 2006 Hindustan Times June 29: Chandigarh p. 14

\(^{21}\) “ONGC Finds Gas in Assam, KG Basin” 2006 The Tribune May 12:Chandigarh p.19

supply of five million tonnes annually for a period of 25 years. LNG from Qatar has been coming in from 2004, while supplies from Iran will commence from 2009. The regasification of LNG takes place at LNG gas terminals at Dahej and Hazira. Petronet LNG terminal at Dahej in Gujarat with a capacity of 5 million metric tonnes per annum (mmpta) was commissioned in February 2004. It is being planned to expand the capacity of this terminal to 10 mmpta by 2008-09 to meet the growing demand of LNG. Hazira terminal has also been commissioned. Dabhol LNG terminal may also become operational, subject to the availability of LNG. The setting up of LNG terminals at Kochi (Kerala), Mangalore (Karnataka) and Krishnapatanam (Tamil Nadu) are also under active consideration.

Renewable Energy

The quest for energy security is an essential component of India’s vision for development for which India needs unhindered access to all sources of energy. Given the challenges of the eventual depletion of fossil fuels, heavy import dependence for procuring them, ever-increasing global oil prices and environmental hazards call for promoting, exploiting and developing the renewable sources of energy such as biodiesel, ethanol, wind, solar and biomass energy. With the spiraling world crude oil prices, renewable energy sources are becoming economically more viable, competitive and mass-market oriented. Efforts are being made to progress in this direction.

In India, “several wind, solar, biomass and small hydropower stations (under 25 MW capacity) have been set up. The scale of operational grid power capacity creation has also expanded. India has an installed capacity of grid-connected renewable energy-based electricity of 6, 100 MW (by end 2004-05). In the area of wind power alone, there was by March 31, 2005 an installed and fully operational grid-connected capacity of 3,650 MW in eight states.” The ONGC is also setting up two wind power plants of 120

23 “Availability & Utilization of Natural Gas” Director General-Hydrocarbons, Government of India, New Delhi, http://petroleum.nic.in/ng.htm
24 Ashok Parthasarth 2005 “Renewable Energy Sources Coming of Age” The Hindu August 17:Delhi p.10

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mega-watt (MW) each in Tamil Nadu and Gujarat. Oil importing countries are looking for renewable alternative fuels: ethanol and bio-diesel. Brazil has set up example in clean, renewable alternative energy sources to an ever greater extent. “More than 40 per cent of Brazil’s energy comes from “green” sources, in comparison with around 7 percent in rich countries. The ethanol, Brazil produces from sugarcane is attracting worldwide interest, for it is one of the cheapest and most dependable types of fuel derived from renewable sources. Three-quarters of the cars now being produced in Brazil have ‘flex-fuel’ engines, capable on running on either ethanol or petrol or any mixture of the two.” In the face of rising oil prices, India like Brazil seeks to enhance the use of ethanol as an alternative to petrol. On 13 September 2006 India inked an agreement with Brazil on “energy research development and diversification with the aim of providing more efficient, affordable and cost effective energy technologies” – it will facilitate greater use of ethanol.

According to the Planning Commission, “the use of ethanol as an admixture in gasoline should help displace at least 2 million tons of crude.” India has begun the ethanol blended petrol programme with 5 per cent ethanol doping in petrol. In the first phase, this programme is being implemented in ten states, namely, U.P., Andhra Pradesh, Haryana, Karnataka, Punjab, Gujarat, Goa, Maharashtra, Tamil Nadu and Uttaranchal, and the three union territories namely Chandigarh, Daman and Diu and Pondicherry.

India is also scouting for other alternative renewable fuels. Bio-diesel from Jatropha plant and Pongamia is significantly less polluting than conventional petroleum based diesel. “The Indian Railways have already taken the significant step of running passenger locomotives and trains of diesel multiple units with a 5 per cent blend of bio-

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Reliance Industries Ltd. (RIL) is contemplating to invest $500 million to set up a bio-diesel refining plant, and has earmarked 200 acres of land at Kakinada in Andhra Pradesh to cultivate Jatropha shrubs. Global energy major, British Petroleum (BP) has also announced that it would invest $9.4 million in bio-diesel production in India in a span of 10 years; it has planned to cultivate 8000 hectares of wasteland with Jatropha shrubs to produce 9 million litres of bio-diesel every year. BP Vice President, Phil New, while setting aside the fears that the cultivation could affect farm produce, said: “Because Jatropha is drought resistant and can grow on marginal land, it offers the possibility of an economically, socially and environmentally sustainable contribution to energy security challenges in India.”

The relatively strong participation of the private sector in renewable energy sources is a consequential response to the policy and incentives extended to the participants by the government. No doubt, India has an enormous potential of renewable energy but still, technological development to bring down cost and increase its availability are key imperatives.

**Unconventional Sources of Gas**

India Hydrocarbon Vision 2025 highlights the need to harness the unconventional sources of natural gas like coal-bed methane (CBM), natural gas hydrates, underground coal gasification to augment the supply of gas. CBM is the methane gas present in coal seams and is taken as natural gas. The Government of India announced a programme for exploration and production of CBM in April 2001 under which the allotment of CBM blocks was started. Another source of gas from ‘gas hydrates’ is on the horizon. It is also methane trapped in ice and found in deep ocean areas. Although countries like Japan, Russia, and the US are successfully pursuing technologies to harness this source of energy; India still needs geo-scientific

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32. Ibid.
work and studies in the area, and also viable deep ocean drilling and extraction technology, before gas from gas hydrates could successfully harness and boost India’s energy supplies. Underground coal gasification is also an unconventional energy source that needs to be explored. On 24 November, 2005 ONGC signed a memorandum of understanding with Skochinsky Institute of Mining, Russia, to get underground coal gasification technology. Mani Shankar Aiyar, Union Petroleum and Natural Gas Minister, told the Lok Sabha on 9 December, 2004 that this application of technology would bring down fuel cost for fertilizer and power plants drastically and help the country improve energy security.

However, it remains to be seen, to what extent, these alternative sources of energy will actually contribute to India’s energy security. At present, almost all alternative forms of energy sources suffer from some combination of economic and technical constraints. Research in science and development of technologies is an endless mission and holds the key in removing deficiencies in energy availability to a certain extent. More advanced scientific research and development is required to utilize the non-conventional sources of energy in an efficient and sustainable manner to achieve the tangible results.

**Nuclear Energy**

In the post-Kyoto world, the use of nuclear energy, a clean and non-pollutant source is professed all around; 31 countries use nuclear energy and accounts for 16 percent of world’s electricity. At present, the share of nuclear energy in India’s energy basket is miniscule (1 percent). The Indo-US civilian nuclear cooperation deal has gone through, it will provide India an access to nuclear technology, hitherto denied for over three decades. Anil Kakodar, Chairman of the Atomic Energy Commission, stated at

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34. Ibid

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Tarapur in May, 2006\textsuperscript{36} that “with the possibility of opening up of civilian nuclear cooperation, we are trying to get additional capacity and accelerate our own domestic programme.” He further stated that India has raised its nuclear capacity target of 20,000 MWe by 2020 to 40,000 MWe by 2030 in anticipation of international nuclear cooperation. The present total installed nuclear capacity amounts to 4120 MWe after Tarapur Atomic project-3 of 540 MWe capacity got criticality.\textsuperscript{37}

Kirit Parikh Committee report has noted that to sustain the growth rate target of 8 per cent per annum, electricity supply will have to increase from 120,000 MW to 7,78,000 MW by 2031-32.\textsuperscript{38} This projected demand of electricity shows that the share of targeted nuclear energy is meagre in the whole energy mix.

\textit{Diversification of Oil and Gas Supply}

Taking an overall view of energy scenario, India will have to depend heavily on hydrocarbons, thereby huge imports of oil, natural gas and to some extent of coal become essential to meet its both present and future energy requirements. To obtain high energy security, the need to diversify oil supply sources and acquisition of equity in oil and gas abroad by public sector undertakings or private sector companies, either on their own or through strategic alliances, has been singularly suggested in the Approach Paper to the Tenth Five Year Plan 2002-07.

ONGC Videsh Limited (OVL), India’s overseas arm of the state-run exploration firm ONGC, has been making forays into overseas oil acreages in the form of production sharing contracts and also by acquiring exploration rights. Other public sector oil companies like Indian Oil, Hindustan Petroleum Corporation Ltd. (HPCL) and Gas Authority of India Ltd. (GAIL), the private sector oil major RIL, are also exploring the possibilities of their overseas presence, and it is a continuous drive.

\textsuperscript{36} “Nuclear Power Target Doubled” 2006 \textit{The Hindu} May 22: Delhi p. 13.

\textsuperscript{37} Ibid.

\textsuperscript{38} Talmiz Ahmad 2006 “Advantage of Transnational Gas Pipelines” \textit{The Hindu} April 24: Delhi p. 10.
Diversification of supply source is an acknowledged imperative guiding India’s global oil and gas investments. With the Gulf region remaining the major source of oil supplies to India, efforts are on to look at other regions – Africa, Latin America, Russia and Central Asia. OVL has stakes in 26 projects in various countries. OVL and private sector company, RIL, acquired stakes in oil and gas exploration and production projects in various countries as explained in tables given below.

Table 6.6
Reliance Industries Overseas Energy Blocks

<table>
<thead>
<tr>
<th>Name of the block</th>
<th>Joint venture partner</th>
<th>Stake %</th>
<th>Offshore/Onshore</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yemen</td>
<td>Calvalley/Hoodoil</td>
<td>25</td>
<td>onshore</td>
<td>Sayun-Masila Basin(west)</td>
</tr>
<tr>
<td>Block-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block-34</td>
<td>Hoodoil operator</td>
<td></td>
<td>onshore</td>
<td>Oman border</td>
</tr>
<tr>
<td>Block-37</td>
<td>Hoodoil operator</td>
<td></td>
<td>onshore</td>
<td>Oman border</td>
</tr>
<tr>
<td>Oman</td>
<td>Block 18</td>
<td>100</td>
<td>offshore</td>
<td>Batinah coast (Gulf of Oman)</td>
</tr>
<tr>
<td>Block 41</td>
<td></td>
<td></td>
<td>offshore</td>
<td></td>
</tr>
<tr>
<td>Columbia</td>
<td>EcoPetrol</td>
<td></td>
<td>offshore</td>
<td>Tumaco Basin (Pacific coast)</td>
</tr>
<tr>
<td>Timor</td>
<td>Block K operator</td>
<td></td>
<td>offshore</td>
<td>East Timor’s Southern coast</td>
</tr>
<tr>
<td>Australia</td>
<td></td>
<td></td>
<td></td>
<td>North-West shelf</td>
</tr>
</tbody>
</table>

Table 6.7
OVL’S Current Participation in Overseas Exploration and Production Projects

<table>
<thead>
<tr>
<th>No. of projects</th>
<th>Name of the block</th>
<th>Other partners</th>
<th>Stake %</th>
<th>Offshore/Onshore</th>
<th>Project status</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Vietnam Block 06.1</td>
<td>BP Exploration operating co.ltd.-35% Petrovietnam-20%</td>
<td>45</td>
<td>Offshore</td>
<td>Under production</td>
</tr>
<tr>
<td></td>
<td>Block 127&amp;128</td>
<td></td>
<td></td>
<td>Deep water</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Myanmar Block A-1</td>
<td>Daewoo International corp-60% Kogas-10% Gail(India) ltd-10%</td>
<td>20</td>
<td>offshore</td>
<td>Gas discoveries made</td>
</tr>
<tr>
<td></td>
<td>Block A-3</td>
<td></td>
<td></td>
<td>Deep water</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Libya NC-188&amp;189</td>
<td>Tpoc-51%</td>
<td>49</td>
<td>Onshore</td>
<td>Under exploration</td>
</tr>
<tr>
<td>Area 43</td>
<td></td>
<td></td>
<td></td>
<td>Deep water</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Iraq Block 8</td>
<td></td>
<td>100</td>
<td>offshore</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Qatar NajjwtNajim</td>
<td></td>
<td>100</td>
<td>offshore</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Russia Sakhalin-1</td>
<td>Exxon Neftgas -30% Sodeco-30% SMNG-11.5% R N Astra-8.55%</td>
<td>20</td>
<td>offshore</td>
<td>Under production</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cuba Northwest coast</td>
<td>Production sharing agreement with National oil company Cuba Petroleum</td>
<td>Sole operator</td>
<td>offshore</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Egypt North Ramadan block</td>
<td>IPR Energy Red sea-30%</td>
<td>70</td>
<td>offshore</td>
<td>oil discoveries made</td>
</tr>
<tr>
<td>1</td>
<td>Columbia Mansarover Energy project</td>
<td>Sinopec China-50%</td>
<td>50</td>
<td>Under production</td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>Country</td>
<td>Block/Project</td>
<td>Company/Partners</td>
<td>Status</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>--------------</td>
<td>----------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Brazil</td>
<td>Block BC-10</td>
<td>China National Petroleum Corporation (CNPC)</td>
<td>Under development</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Syria</td>
<td>Al-Furat</td>
<td>CNPC-40% Petronas Cargali Overseas Sdn Bhd, Sudan-5% Petronas-68.875% Sudapet-7%</td>
<td>20 Under production</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Sudan</td>
<td>Greater Nile oil project Block 5A</td>
<td>CNPC-40% Petronas Cargali Overseas Sdn Bhd, Sudan-5% Petronas-68.875% Sudapet-7%</td>
<td>24.125 onshore Under production</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Nigeria</td>
<td>OPL 279 &amp; OPL 285</td>
<td>Through ONGC Mittal Energy Ltd (OMEL)</td>
<td>40 offshore Under exploration</td>
<td></td>
</tr>
</tbody>
</table>


The Indian oil and gas industry has gone global. It has acquired acreages for exploration and production even in far off lands, but bringing hydrocarbons back home is a problem. The supplies may be disrupted by manmade (war, terrorist strikes etc) or natural calamities. So the oil and gas supplies and acquisitions in neighbourhood, near or distant, are comparatively preferred with the additional advantage of less transportation cost. So the regional energy alliances and cooperation are taking precedence all over the world. Such an advance is the result of diverse factors – geological, geo-political, geo-strategic and economic.

The United States is the largest energy consumer in the world, consumes about 25 per cent of world oil production. But it produces around 40 per cent of its consumption of energy, the rest is imported. Previously, the imports were mainly from the Middle East, notably from Saudi Arabia. George W. Bush’s new energy policy started in May, 2001.
changed the course of supply of hydrocarbons. It now imports most of its oil and gas from its own continent – Canada, Mexico, Venezuela and Columbia – rather than the Middle East.\textsuperscript{39} Canada and Mexico are connected with the United States with inter-boundary pipelines through which most of the supplies of hydrocarbons takes place. Canada supplies gas to several US markets in the mid-west and north east, the pacific north west and California through pipelines. Such like arrangements cements political and commercial ties.

Russia is shipping oil and gas to European Union. It has terminated the pre-eminence of Middle East from the European Market. China and Japan, which have been dependent for virtually all of its energy supplies from the Middle East, are exploring the possibilities of supplies from neighbours – Russia and Central Asia. China has built Atashu-Alashnkou pipeline from Kazakhstan to China. It is also aggressively pursuing access to Turkmenistan’s abundant gas reserves through pipeline. Russia plans to build 4000 Kilometre pipeline from Angarsk to Nakhodka which will greatly enhance Russo-Japanese energy cooperation. It would encourage the development of Eastern Siberia and far East, and would carry round about 50 million tonnes of Siberian oil to Japan.\textsuperscript{40} As a matter of fact, both China and Japan want to make use of large amounts of gas reserves available in Russia’s East Siberia and the Sakhalin Peninsula. As of now, Japan is heavily dependent on the supply of LNG from the Gulf countries which have to pass through the Strait of Hormuz and the Malacca Strait.

Today, when the nations are heavily loaded in favour of regional alignments and cooperation for their energy interests, India also can not lag behind and has been following the same pattern to meet its energy interests. India’s ONGC Videsh Ltd. and GAIL together hold a 30 per cent stake in the Block A-I in Myanmar. Myanmar has agreed to sell India gas from A-I block in the shwe field off the coast of Arakan state. A-I block is estimated to contain 2.88 to 3.56 trillion cubic feet (tcf) of gas.\textsuperscript{41}

\begin{footnotesize}


\end{footnotesize}
Indian Minister of State for Petroleum and National Gas, Dinesh Patel said in the Rajya Sabha on 16 May 2006: “India is pursuing the option of a gas pipeline from Myanmar through the north-eastern states of India bypassing Bangladesh.” The route being pursued is by linking the Kaladan river in Myanmar to Mizoram. Though, Unocal has found a huge gas deposit in Bibiyana, Bangladesh but due to political reasons, its import to India appears unlikely. The negotiations for Iran-Pakistan-India gas pipeline are in an advanced stage, despite the US pressure to abandon this project, and are continuing to iron out the differences. The dialogue for Turkmenistan-Pakistan-Afghanistan-India gas pipeline is in a conceivable stage and yet to take a concrete shape.

The Central Asian Republics are said to possess a sizeable quantity of energy deposits, their importance increases, especially, when oil reserves are believed to be depleting worldwide. India needs to focus its energy for the possible diversification of oil and gas supply sources from Central Asia.

OIL AND GAS IN KAZAKHSTAN, TURKMENISTAN AND UZBEKISTAN

As the global demand for oil continues to grow along with its production nearing the peak, the new supply regions elicit the world attention, and central Asia is one of them. The implosion of the Soviet Union has thrown open a rich treasure trove of oil and gas and other valuable minerals in Central Asia, thus making it economically and strategically significant for major players of the world. The region, though possesses substantial gas and oil reserves, is faced with physiographic constraints. All the Central Asian states are geographically isolated, situated in the centre of the continent, highly landlocked and with no direct access to the sea, and therefore to the main trade routes, and all this makes the transportation of its hydrocarbon resources a formidable task to accomplish.

At the time of Soviet disintegration, the main function before the Central Asian Republics was to put the economies of their states on to the rails, which had gone downhill, and to preserve their independence. To boost their sagging economies, the Central Asian states of Kazakhstan, Turkmenistan and Uzbekistan, endowed with oil

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42. “Gas Pipeline from Myanmar to Bypass Bangladesh” 2006 The Tribune May 17: Chandigarh

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and gas reserves, made efforts to get benefits from the proper use of their energy resources. The Central Asian states were in a dire need of injecting modern technology and capital to tap into up untapped oil and gas potential. Hence, the upstream sector was opened up to facilitate the flow of foreign investment. Nevertheless, it differed from country to country depending upon the extent of privatization and the government policies.

Of the Central Asian Republics, Kazakhstan, Uzbekistan and Turkmenistan are rich in hydrocarbon reserves whereas Tajikistan and Kyrgyzstan are deficient in it, but the nature has been graceful enough to endow them with bountiful of water resources, quite helpful in the generation of electricity. While Kazakhstan is home to both oil and gas deposits, Uzbekistan and Turkmenistan have lesser quantities of oil but abundant natural gas reserves. The details of the oil and gas reserves, production, and transportation routes of Kazakhstan, Uzbekistan and Turkmenistan are being discussed as under.

**Kazakhstan**

In the hydrocarbon sector, Kazakhstan sounds important among the Central Asian Republics. Kazakhstan, situated to the north east of the Caspian sea, has the largest discovered oil and gas fields. Energy Information Administration (EIA), US, estimates the combined onshore and offshore proven oil reserves of Kazakhstan between 9 and 29 bbls.\(^{43}\) In 1990, when the country’s reserves were estimated, approximately, at 16 bbls, Kazakhstan was a minor world oil exporter. But, gradually, after getting the required foreign investment, accompanied by modern technology, the oil production picked up and it began to play a significant role as a world energy producer and exporter. Now Kazakhstan has enough surplus of oil to export as it consumes less than what it produces. In 2004, it produced approximately 1.22 million barrels per day (bpd) of oil and consumed just 2,24,000 bpd which resulted in net exports of almost 1 million bpd.\(^{44}\) Larger scale of the production and exports of oil were reported in 2007.


\(^{44}\) Ibid
Table 6.8
Kazakhstan’s Oil Production and Exports

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (million bpd)</td>
<td>1.22</td>
<td>1.44</td>
</tr>
<tr>
<td>Consumption (bpd)</td>
<td>2,24000</td>
<td>2,50000</td>
</tr>
<tr>
<td>Net Exports (million bpd)</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Estimated Production (million bpd)</td>
<td>1.54(2008)</td>
<td>1.71(2009)</td>
</tr>
</tbody>
</table>


Four major fields – Tengiz, Karachaganak, Kurmangazy and Kashagan – all of which are situated in the north and west of the country, would be the main vehicles of growth in the production of oil and gas.

Tengiz

Tengiz, an oil field is one of the world’s most important energy resources, located on the swamplands on the edge of the Caspian Sea, in the north west of Kazakhstan. It contains some 6-9 billion barrels (bbls) of recoverable oil. In 1993 to develop the field, Tengizchevroil (TCO) partnership was formed comprising of two American companies – Chevron and Exxon Mobil, Kazmunaigaz – Kazakhstan’s national oil company, and Lucarko. Since the operation of the field, production has increased with each passing year. In 1993, production began with barely 60,000 bpd but in 2005, total oil production from Tengiz averaged 2,96000 bpd which is expected to touch the level of producing 700,000 barrels of oil per day by 2010. The production performance suffered during 2006 due to the restrictions imposed by the government against the flaring of associated natural gas. Again during the first half of 2006, repeated mechanical problems also hurt the production at the Tengiz field. Full scale implementation of sour gas injection plan along with newly drilled wells is likely to show

45. Ibid.

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increase in oil production to more than 4,60000 bpd during 2008.47

Karachaganak
Karachaganak field, discovered in 1979, is one of the world’s largest gas and oil condensate fields. It is being operated by Karachaganak Petroleum Consortium led by the Britain’s British Gas and Agip/Eni of Italy. The field holds reserves of around 47 tcf of natural gas and 8-9 bbls of oil condensate. In 2007, it produced over 2,50000 bpd of oil condensate and 503 bcf natural gas.48 In 2003, a new 635 Kilometre pipeline to connect field to the Caspian Pipeline Consortium (CPC) at Atyrau was completed, with this dependency on Russian buyers has been reduced. Historically, almost all the production was exported to Russia but now exports via the CPC would enable up to 70 percent of liquids from this field to be exported to international market, and also help achieve realizations closer to Mediterranean prices which are substantially higher than those achieved by selling to Russia.

Kashagan
The biggest find in Kazakhstan has been the offshore Kashagan field, to the north of the Caspian Sea, near the city of Atyrau. The field is believed to hold between 13 bbls of oil reserves, with the potential of going up to 38 bbls.49 The consortium ‘the Agip Kazakhstan, North Caspian Operating Company – Agip KCO’, formerly known as OKIOC, has been developing the field. British Gas (BG) pulled out of the consortium, and after prolonged negotiations, its 16.7 per cent share was equally divided between the members of the consortium and Kazmunaigaz. This change-over may delay the execution of the project. Initially, the production is expected to be 3,00000 bpd in 2011, and by 2013, Kashagan could produce up to 1.2 mbls of oil per day.50 The field is full of challenges for its developers because of the extreme weather fluctuations in the northern Caspian Sea area, and also due to the presence of large quantities of sulphur in

48. Ibid
49. Ibid
50. Ibid
the oil and high proportion of associated natural gas under very high pressure.

**Kurmangazy**

Kurmangazy is situated on the maritime border between Russia and Kazakhstan. In May 2002, Kazakhstan and Russia entered into a bilateral agreement by which the boundary of Kurmangazy and two other disputed offshore fields, lying on the Caspian Sea bed, were fixed. Kurmangazy field is still in the initial stage of development, although with the estimated potential of 7.33 bbls of oil reserves. Exploratory drilling at Kurmangazy started during 2006 but came up dry. In July 2005, a new $23 billion Production Sharing Agreement (PSA) between Rosneft (Russian firm) and Kazmunaigaz (Kazakh firm) was signed for the development of the field. It is expected that this field will produce 600,000 bpd in 2010.51

Table 6.9

<table>
<thead>
<tr>
<th>Fields</th>
<th>Proven Reserves</th>
<th>2007 Production</th>
<th>Projection</th>
<th>% Share of major Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tengiz</td>
<td>6-9 billion barrels-oil</td>
<td>2,80000 bpd</td>
<td>2008: 4,60000 bpd</td>
<td>Chevron-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2010: 7,00000 bpd</td>
<td>Lucariko-5</td>
</tr>
<tr>
<td>Karachaganak</td>
<td>8-9bbls oil and gas condensate, 47 tcf natural gas</td>
<td>2,50000 bpd</td>
<td>2010: 500,000 bpd</td>
<td>British Gas-32.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>503 bcf</td>
<td>2012: 900 BCF gas</td>
<td>ENI-32.5</td>
</tr>
<tr>
<td>Kashagan</td>
<td>13 bbls oil equivalent</td>
<td>Not producing</td>
<td>2011: 300,000 bpd</td>
<td>ENI-16.66</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Kazmunaigaz16.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inpex-8.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total, SA-16.66</td>
</tr>
</tbody>
</table>

Source: Energy Information Administration (EIA) Kazakhstan 2008

bpd: barrels per day, tcf: trillion cubic feet, bcf: billion cubic feet

Kazakhstan’s proven natural gas reserves were estimated about 65-70 trillion cubic feet in 2005. It remained a net natural gas importer for a couple of years after independence. The production of natural gas has started increasing after 1999. This was the sequel of Kazakh government’s enforcement of a law in August 1999, requiring subsoil users to include natural gas utilization projects in their development plan. Kazakhstan production and consumption reached on even level by 2004 – production approximately 555 bcf and consumption 540 bcf. The production of gas has increased from Tengiz and Karachaganak fields. According to the Kazakhstan Energy Ministry estimates the production of gas during 2007 would total 1037 bcf. Thus the country is poised to become a net exporter of gas in 2008. In 2007, the Oil and Gas Journal, has also revised the natural gas proven reserves in Kazakhstan to 100 tcf, thus placing it at par with Turkmenistan.

Most of Kazakhstan’s natural gas reserves are situated in the north and west of the country. Karachaganak field is a major gas field that contains roughly 25 per cent of proven gas reserves of Kazakhstan. The peak production from this field is expected by 2012 at around 900 bcf. Several of the country’s other oil fields such as Tengiz and Kashagan also contain associated natural gas which is the by product of oil extraction. The whole of gas production can not be consumed locally from these fields; so most of it is being exported to Russia, the gas pipeline network which exists since pre-independence era. Now efforts are underway to export Karachaganak gas condensate and other liquids through the CPC pipeline system.

Amangeldy field is situated in the south of the country and it contains many gas wells; those which have been developed, are producing approximately 880 million cubic feet per year. Another very important gas field in this area is located near Zhambul. Exploratory drilling in 2001 estimated reserves up to 1.8 tcf. The field is being developed primarily by Kazmunaigaz. The commissioning of new wells at the

52. Ibid
54. Ibid
55. Energy Information Administration: Central Asia: Kazakhstan Energy Sector, op.cit.

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Amangeldy field will increase gas production tremendously. This source of gas, being close to natural gas distribution structure, will help lessen the southern region’s import dependency from Turkmenistan and Uzbekistan.

Table 6.10
Kazakhstan’s Gas Production and Exports

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (bcf)</td>
<td>555</td>
<td>1,037</td>
</tr>
<tr>
<td>Consumption (bcf)</td>
<td>540</td>
<td>–</td>
</tr>
<tr>
<td>Net Exports</td>
<td>No exports</td>
<td>No exports</td>
</tr>
<tr>
<td>Estimated Production (tcf)</td>
<td>1.66 (2010)</td>
<td>1.84 (2015)</td>
</tr>
</tbody>
</table>


Table 6.11
Revised Proven Oil and Natural Gas Reserves

<table>
<thead>
<tr>
<th></th>
<th>Oil Reserves</th>
<th>Gas Reserves (tcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>9-29 bbls</td>
<td>9-40 bbls</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>546 mb</td>
<td>600 mb</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>594 mb</td>
<td>549 mb</td>
</tr>
</tbody>
</table>


Oil Exports

Kazakhstan exports its oil in all the four directions ranging from Russia in the north, Iran in the south (through swap), Russia (CPC) and Azerbaijan in the west to China in the east.
M6.1

Source: Energy Information Administration Caspian Sea September 2005
http://www.eia.doe.gov
Table 6.12
Oil Export Pipelines from the Central Asia

<table>
<thead>
<tr>
<th>Name/Location</th>
<th>Route</th>
<th>Crude Capacity</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atyrau-Samara</td>
<td>Atyrau(Kazakhstan) to Samara(Russia) linking to Russian pipeline system</td>
<td>340,000 bpd</td>
<td>432 miles</td>
</tr>
<tr>
<td>Caspian Pipeline</td>
<td>Tengiz oilfield to Russia’s Black Sea Port of Novorossiysk</td>
<td>6,90000 bpd (2007) Planned: 1.35 million bpd (by 2011)</td>
<td>980 miles</td>
</tr>
<tr>
<td>Consortium (CPC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baku-Tbilisi-Ceyhan(BTC)</td>
<td>Baku (Azerbaijan) via Tbilisi (Georgia) to Ceyhan (Turkey) terminating at the Ceyhan Mediterranean Sea port</td>
<td>1 million bpd</td>
<td>1040 miles</td>
</tr>
<tr>
<td>Kazakhstan-China</td>
<td>1 stage: Aktobe to Atyrau 1st stage: Atasu(Kazakhstan) to Alashankou (Xinjiang, China) III Stage: Kenkiyak to Kumkol (yet to be completed)</td>
<td>140 million bpd (after completion)</td>
<td>1860 miles (after completion of all three stages)</td>
</tr>
</tbody>
</table>


_Atyrau – Samara Pipeline_

Atyrau-Samara pipeline is a north bound pipeline linking Kazakhstan to the Russian distribution system. This is the predominating Russian pipeline structure in the north. It is the part of the old Soviet Union pipeline network which covered over 65,000 kilometres of primary lines, 400 pump stations and a design capacity of 600
million tonnes per year, 80 per cent of this pipeline network is now in Russia. Primarily, the system was meant to feed the local demand as well as the needs of the communist states in the Eastern Europe. Now, after the break up of the former Soviet Union, focus has radically changed—a switch over from internal to international markets. This north bound Atyrau-Samara pipeline extends from Samara to Latvia and Lithuania (Baltic Sea), Ukraine and Poland, Bulgaria, Slovenia, Greece and Novorossiysk (Black Sea).

Before the completion of Caspian Pipeline Consortium (CPC) at the end of 2001, almost all oil of Kazakhstan was exported through this route. In June 2002, Kazakhstan and Russia signed a 15 year oil transit agreement under which Kazakhstan will export 340,000 bpd of oil annually via this Atyrau-Samara pipeline. Russia also pledged to increase the capacity of this pipeline to around 500,000 barrels per day.

Caspian Pipeline Consortium (CPC)

CPC is 980 miles long. It connects Kazakhstan Caspian Sea oil deposits with Russia’s Black Sea port of Novorossiysk. The CPC Project was developed by the governments of Russia, Kazakhstan and Oman in collaboration with a consortium of international oil companies. This pipeline surrounding the Caspian Sea was structured in Soviet era which has been refurbished, repaired and configured to serve the present needs. The pipeline was officially inaugurated on November 27, 2001. The CPC started with the initial capacity of 5,60000 bpd which was planned to increase up to 1.35

57. Energy Information Administration: Central Asia: Kazakhstan Energy Sector, op.cit.
million bpd by 2011.59

Most of the oil, exported through this pipeline, is produced in Tengiz field but some oil is also exported from the production of Kenkiyak and Karachaganak fields which has been possible with the completion of two pipeline spurs from these fields. The transportation of oil from the CPC increased from 3,10000 bpd in 2003 to 4,50000 bpd in 2004, 6,55000 bpd in 2005 and 690,000 bpd in 2007.60

Concern has been expressed by Turkey on the increased exports through the CPC pipeline as it would increase congestion in Turkey’s Bosporus Strait which connects Black Sea to Mediterranean. Roughly, 2.5 to 3 million bpd oil flow through the Bosporus Strait. With the expansion of CPC capacity, there will be an addition of 7,50000 bpd through this route. Bosporus Strait is a major choke point to handle expanded tanker traffic. The possibility of tanker collision, as a result of increased tanker traffic, resulting in oil spill is a grave environmental concern to Turkey.

_Baku – Tbilisi – Ceyhan (BTC)_

The construction of BTC pipeline began in September 2002. The project was led by the British Petroleum (BP)61 having 30 per cent stake in the consortium. The Baku-Tbilisi-Ceyhan, 1040 miles long pipeline with 1 million barrels per day capacity,62 was officially opened on May 25, 2005 in the presence of the Presidents of Kazakhstan, Azerbaijan, Georgia, Turkey as well as United States Secretary of Energy, Samuel Bodman. In May 2006, the pipeline came on stream. Its cost came out to be $ 4 billion, 70 per cent of which was funded by the World Bank, the European Bank for Reconstruction and Development, and export credit agencies. 63


60. “Kazakhstan” Country Analysis Briefs, EIA, op.cit.


This pipeline which has been built entirely anew passes through seismically active zone which suffers from frequent earthquakes. So the pipeline engineers had to address in finding out technical solutions to reduce the wide vulnerability of earth movements. The pipeline had to face the wrath of environmental activists as it crosses the watershed of Borjomi national park in Georgia, a tourist spot, with mineral water springs, abundant wildlife and an outstanding natural beauty. The mineral water is a major export commodity, and any oil spills would have an adverse effect on the local water bottling industry. The BTC pipeline runs over the regions of enormous political instability and social unrest. In Azerbaijan, the BTC passes just north of the breakaway Azeri region of Nagorno-Karabakh, inhabited by ethnic Armenians which seek complete independence from predominantly Muslim Azerbaijan, causing sporadic violence in the region. In Georgia, the pipeline crosses near the violent breakaway regions of Abkhazia and south Ossetia; their relations always remain tense as the latter assert for the independence, and Georgia desires to reintegrate them. Lastly, it passes through the Kurdish region, home to separatist Kurdish Movement in south eastern Turkey. Thus as the BTC crosses the volatile regions, a possible terrorist attack becomes the greatest threat to its security. Therefore, to protect this oil pipeline buried 10 feet below the surface from any sabotage, guards trained by the US army and the British Special Forces, have been deployed in the Caucasus region. Despite environmental and other concerns, the BTC project dawned into reality, because the political necessity of the United States domination of the Caspian oil was the major driving force of commercial decisions.

The BTC pipeline marks a step in the opening up of new export route for Caspian basin oil resources to the United States, Israel and Western European markets. The BTC is backed by the United States, side steps both Russia and Iran, and also aims to reduce dependency on Organisation of Petroleum Exporting Countries (OPEC), oil producers in the turbulent West Asia. It certainly opens new options of energy supply in case of failure in supply elsewhere. Moreover, it opens in the Mediterranean Sea, bypassing the congested Bosporus Strait.

The BTC would make sufficient contribution to the development of world energy supply with its annual 50 million tonnes capacity. The project, which serves an important East-West energy corridor, will give Turkey greater geo-political importance.
Ceyhan will become an important international oil market, and the reduction of oil tanker traffic in the Bosporus will contribute to greater social security to Istanbul.

The BTC pipeline offers bright economic prospects for the Caspian region in general, and Kazakhstan in particular. The pipeline is expected to increase the discovery of new oil finds in Kazakhstan because of the availability of export outlet through this East-West energy corridor. Kazakhstan President Nursultan Nazarbayev signed a declaration committing some of his country’s vast oil reserves to be transported through the BTC on May 25, 2005, on the occasion of the launching ceremony of the pipeline.64 An agreement on June 16, 2006 was signed in Almaty between Kazakh President Nazarbayev and his Azerbaijani counterpart Ilham Aliyev, in which Kazakhstan has finally committed to shipping oil via the US backed BTC pipeline. This move of Kazakhstan will enhance the economic viability of the BTC past 2010, when Azeri oil production is forecasted to decline, if new fields are not developed. The pipeline infrastructure (Trans-Caspian Pipeline) connecting the major oil port of Aktau to Baku is also under active consideration to which Russia is opposed; if and when it is completed, it will facilitate expanded transportation of Kazakh oil through the BTC.

Kazakhstan - China Pipeline

The Kazakhstan-China Pipeline, which is almost 1860 miles long,65 was to be completed in three phases: first section, completed in 2003 from the oil fields of the Aktobe region to the oil hub of Atyrau; the second section, from Atasu in Kazakhstan to Alashankou in China was completed by December 2005; the final stage of the pipeline, from Kenkiyak to Kumkol in central Kazakhstan is yet to be completed. The pipeline was jointly developed by the China National Petroleum Corporation (CNPC) and the Kazakh state energy company (Kazmunaigaz). It has a capacity of some 140 million barrels of crude per year.66 Kazakhstan has no obligation in filling the pipeline but the responsibility solely lies on china to export its own oil produced from Kazakhstan’s oil fields. China has been importing about 30,000 barrels per day from

64. “Key East-West Oil Pipeline Opens” 2005 The Hindu: May 26: Delhi p.14

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Kazakhstan via Alashankou rail crossing. In order to augment oil production in Kazakhstan, China bought PetroKazakhstan, a Canadian firm in August 2005 for $4.18 billion. This was based on China’s strategy to reduce its dependence on foreign-owned firms and boost its energy supplies. The Russian oil firm, Lukoil, tried to block the sale but the Canadian court turned it down. This acquisition of Petrokazakhstan underscores China’s need to find new sources of oil to drive its booming economy as well as to increase its political influence in Central Asia.

Turkmenistan

According to EIA estimates, Turkmenistan possesses proven oil reserves of roughly 600 million barrels. Majority of the country’s oil fields are located in the south Caspian basin and Garashevlyk onshore area to the west of the country. Nevertheless, in the absence of an agreement between Iran, Azerbaijan and Turkmenistan on maritime borders in the Caspian Sea, several prime oil fields still remain untapped. One such example is Turkmenistan’s dispute with Azerbaijan over the sovereignty of Kapaz (Serdar) and Chirag oil fields. Turkmenistan’s oil extraction targets by the year 2030 stands at 2.2 million bpd. But the slow-paced political and economic reforms in Turkmenistan have proved detrimental to attract much foreign investment so as to boost its production appreciably. The selected few international oil companies – Dragon oil(UAE)-Chelken Project, Burren Energy(UK)-Nebit Dag, Petronas (Malaysia)-Makhtumkuli 3A and Mitro International-East Cheleken fields – have been successfully developing the Turkmen portion of the Caspian shoreline. Petronas has also begun extracting crude oil from Turkmenistan’s Diyarbekir offshore field, following President Niyazov’s May 2006 resolution authorizing the extraction, according to the government’s Russian language newspaper, Neitral’niy Turkmenistan’s July 14, issue. The consortium of Maersk Oil(Denmark), Wintershahll(Germany), ONGC(India) and Zarit

68. Ibid
signed production sharing agreement with Turkmenistan to explore and develop Caspian Sea blocks.

The production of oil in Turkmenistan was 1,10000 bpd in 1992 which grew approximately to 2,14000 bpd in 2004 and 1,80000 bpd in 2007. Turkmenistan is a highly oil consuming country in the world; it consumes over nine times as much oil per unit of GDP as an average country does. It is pertinent to note that Turkmen government provides transportation customers with free gasoline up to a specified allocation (120 liters per month for car owners). According to EIA sources, local consumption is estimated as 1,10000 bpd and the rest is exported. Turkmen oil is exported mainly to Russia and Iran. No oil pipeline exists in Turkmenistan. Whatsoever oil exported, is shipped by sea. Turkmenistan exports oil to Iran through swap arrangement in which Caspian oil is shipped from Turkmenistan refineries via the Iranian port of Neka in northern Iran for local consumption. An equal swap volume of Iranian oil is then received through Persian Gulf terminals such as Kharg island. In 2006, swap of Turkmen oil via Iran stands at 40,000 barrels daily.

Turkmenistan with its gigantic gas reserves is ranked among the world’s top 12 gas producers. At the end of 2007, Oil and Gas Journal reported that Turkmenistan has proven gas reserves of approximately 100 tcf (2.83tcm). It is up from the earlier estimates of 71 tcf (2tcm). Turkmen natural gas production for the first half of 2006 amounted to 33.69 billion cubic metres (bcm), up 1 per cent from the same period in 2005, whereas gas exports were 23.6 bcm, according to the released figures by Turkmen National Institute of State Statistics and Information.

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Turkmenistan exports significant portion of its gas production to Russia and Ukraine, and a lesser extent to Iran and the neighbouring countries. Iran, though, has second largest gas reserves in the world after Russia, also imports gas from Turkmenistan for the internal consumption of its northern area, the figure stood at 5.8 bcm in 2005. During Iranian President Mahmud Ahmadinejad’s visit to Ashgabat on July 24, 2006, Tehran expressed its desire to enhance gas imports from Turkmenistan to the tune of 13 billion cubic metres in a year. Turkmenistan gas is transmitted through $ 190 million Korpezhe – Kurt Kui pipeline to Iran, the first natural gas export pipeline in Central Asia to bypass Russia. The pipeline was launched in December 1997 by Turkmenistan as a result of a 25 years of contract between Iran and Turkmenistan. According to the contract, Iran will take between 177 bcf and 212 bcf of natural gas from Turkmenistan annually. The price of 35 per cent of Turkmen gas will be considered repayment for Iran’s contribution to building the pipeline.

Turkmen gas covers about 50 per cent of Ukrainian gas needs. But Turkmen’s gas exports to Ukraine, many a times, suffer from cash-flow and pricing problems. The same happened to their contract in the year 2006 when Turkmenistan demanded $ 100 per 1000 cubic metres of gas against the agreement price of $ 60 per 1000 cubic metres for the second half of 2006. Turkmenistan demanded the same price from Russia also against the contract price of $ 65 per 1000 cubic metres, which demand Gazprom ultimately acceded to.

Such problems arise due to Turkmenistan’s dependence on Russia for the transit of its majority of gas through the Central Asia-Center Pipeline, routed through Russia and owned by Gazprom, the state run Russian company. Russia exploits this dependence for its own benefit and earns good profits by gas exports. Production of gas in Russia

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76. “Iran, Turkmenistan Stress Bilateral Oil and Gas” Iranian News Agency op.cit.
77. Ibid
(Gazprom) has flattened at around 550 billion cubic metres (bcm) a year because of age old gas fields and lack of new investments in untapped Arctic field. Moreover, it has to supply gas to its people at subsidized rates incurring huge losses to ensure social stability. This loss is made up by exporting to the West at a much higher price the Central Asian gas purchased at a lower price. Gazprom plans to upgrade the capacity of Central Asia-Center Pipeline from the present level of 40 bcm / year to 55 bcm / year to augment the gas supply from Central Asian Republics to Russia.

To break the shackles of Russia’s near monopoly on Central Asian gas, various options for export outlets for Turkmen gas were thought of. To get fair price for its natural gas at internationally reasonable levels, Turkmenistan seeks China outlet for its gas exports. During Niyazov’s China visit from April 2-7, 2006, a framework agreement was signed by Niyazov, Turkmenistan’s President, and Chinese leader Hu Jintao, to carry out “separate and joint actions necessary for the rapid implementation of the Turkmenistan-China gas pipeline project.” The pipeline, to be commissioned in 2009, would pass through Kazakhstan and possibly, Uzbekistan. China pledged to buy 30 bcm of natural gas annually from Turkmenistan for 30 years, starting in 2009. Further, the two countries also agreed to carry out joint exploration and development of gas deposits.

An idea of building a Trans-Caspian pipeline from Turkmenistan to Turkey via Azerbaijan and Georgia was also conceived. It had thorough backing of Europe and the United States to counter Russia’s aggressiveness and influence in energy field. The idea could not go beyond the planning stage because of the unresolved differences between Turkmenistan and Azerbaijan over the proportion of gas to be transported through the pipeline by each country. In the present situation, there is little possibility for the project to fructify.

The proposal for Turkmenistan-Afghanistan-Pakistan (TAP) gas pipeline came again on the board with the establishment of fragile peace in Afghanistan, and

81. Ibid.
vanquishing the Taliban from power after the ‘war on terror’; India had officially agreed to take part in this project but there is a little possibility of the project being implemented because of the political considerations and the prevailing instability in Northern Afghanistan and areas bordering Pakistan.

Turkmenistan has entered into export agreements of gas with a number of countries – Russia, Ukraine, Iran and China – spanning over a period of time; the sum total of which is far greater than the present production. It is enigmatic as to whether Turkmenistan’s gas production will move upwards to match the export obligation levels, especially when the estimates of gas reserves projected by various organisations differ widely and investments for exploration of new fields incommensurate.

**Uzbekistan**

The EIA estimates that Uzbekistan possesses 594 million barrels of proven oil reserves. Roughly, 70 per cent of production comes from Bukhara-Khiva region’s oil fields. The country also has oil fields in the Ferghana Valley region, Ustyurt Plateau and the Aral Sea. The Ferghana basin oil fields, numbering around 58, are being explored by Australia’s Santos Ltd. and Caspian Oil and Gas Ltd. The company sources claim that the fields contain reserves of 1.2 bbls of oil and 5.5 tcf of natural gas. In June 2005, the Chinese firm CNPC formed a joint venture with Uzbekneftegaz, the state oil and gas holding company, to develop oil fields in the Bukhara-Khiva region. Also in July 2005, Sinopec signed a $106 million investment deal to rehabilitate existing oil fields with Uzbekneftegaz. Patronas formed a $200 million joint venture with Uzbekneftegaz to develop hydrocarbon resources in the Aral Sea. During 2007, total liquid production in Uzbekistan averaged 1,00000 bpd, and consumption at 1,56000 bpd. The country is a net oil importer. Uzbekistan has three refineries at Ferghana, Alty-Arik and Bukhara with the total refining capacity of 2,22000 bpd. The refineries are working below the rated capacity because of the lack of production. Uzbekistan had to import crude oil from

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84. Ibid.
other countries due to low production to fulfill the requirements of its refineries. The refined products in limited quantity are exported by rail and road to neighbouring countries and to the ports in Black Sea.

Uzbekistan is the third largest natural gas producer in the Commonwealth of Independent States after Russia and Turkmenistan, and one of the top 15 gas producers in the world. But its large population accounts for high domestic consumption of energy, and lower levels of exports.

Natural gas reserves of Uzbekistan are estimated to be 66.2 tcf, according to the Oil and Gas Journal. There are about 52 gas fields in the country, 95 per cent of its production comes from 12 fields which include shurtan, Gazli, Pamuk and Khauzak. The Amu-Darya basin and the Mubarek area are the regions where the deposits are mainly concentrated. The natural gas production increased to 2.03 tcf in 2003 from 1.51 tcf in 1992; in 2004, it stood at 2.07 tcf. In order to offset the falling production yield from the older gas fields, such as Uchkyr and Yangikazgan, Uzbekistan is speeding up development of existing fields as well as developing new fields for exploring new reserves. Gazprom has been actively involved in revamping old fields in Uzbekistan and will invest $1.2 billion in Ustyurt region in Uzbekistan.

Uzbekistan, unlike Kazakhstan and Turkmenistan, does not border the Caspian Sea but is an important energy supplier within Central Asia itself – to Kazakhstan, Kyrgyzstan and Tajikistan. The principal export pipeline within Central Asia runs from Tashkent through Bishkek to Almaty via northern Kyrgyzstan and south Kazakhstan. One more inherited Soviet-built pipeline connects Uzbekistan with Tajikistan, paving the way for Uzbek gas supplies to Tajikistan. Outside Central Asia, Uzbekistan sends most of its gas exports to Russia, and lesser extent to Ukraine through the Central Asia-Center Pipeline.

Russia purchased in 2005 from Uzbekistan 8 billion cubic metres of gas at a price of $45 per 1000 cubic metre. The chairman of Russian Gazprom reached an agreement on 20 January, 2006 with the Uzbek President Islam Karimov to buy 9 billion cubic

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87. Ibid.
metres of Uzbek gas at a price of $60 per 1000 cubic metres. However, later on, Uzbekistan started demanding substantial increase in the export price of its natural gas above $100 per 1000 cubic metres according to RIA Novosti report on July 27, 2006. It was also announced by Gazprom on 20 January, 2006 that it intends to increase the throughput capacity of Central Asia-Center Pipeline that runs through Uzbekistan, and invest up to $1.5 billion in Uzbekistan’s energy sector in future.

INDIA-CENTRAL ASIA ENERGY COOPERATION

India’s energy security is dependent upon global production, sustainable supplies at affordable price and indigenous production. The expected growth in GDP will increase the demand of energy to attain higher levels of industrial activities. Oil and gas are bound to play an important role in the development of Indian economy. At present, the indigenous production is stagnant, and even added production from new finds, sometimes later, will not make any significant impact on supplies as compared to the rising demand.

The world over, geologist and energy technologists are coming to the view that the world oil production is near its peak and thereafter, would start decreasing drastically and is irreversible. King Hubbert, a US geologist’s prediction that oil production in the United States would peak in 1970s, came true. The most optimistic peak oil theorists believe that it would not be later than 2030. Even British Petroleum has said, in its World Energy 2005 report, that the world will face serious oil shortages 40 years later. Therefore, in the changing global energy scenario when oil reserves may shrink, production falls, demand increases and prices rise – India has to gear up its energy security policy. India Hydrocarbon Vision 2025 suggested to go for diversified energy

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supply sources and to acquire oil and gas energy assets abroad. Apart from the countries of Latin America, Africa and South Asia; Central Asian Republics have also emerged as new energy centres that could help in supplementing India’s energy needs. Although late entrant, India is becoming increasingly active to gain a foothold in the Central Asian region but so far it has had only a modicum of success.

In its equity energy drive, India faces fierce competition from China in the Central Asian region not only because of the country’s geographical proximity but also more money power, active and aggressive pursuance of the Chinese oil company, China Petroleum Corporation (CNPC). In order to give strength to its overseas energy acquisitions in 2005, ONGC, an Indian public sector undertaking, tied up with billionaire steel magnet Lakshmi N. Mittal’s Mittal Investment Sarl, and formed two joint ventures ONGC Mittal Energy (OMEL) and ONGC Mittal Energy Services (OMESL). Although, OMEL notched up success in bagging a deal in Nigeria to produce an average 6,50000 barrels a day of oil and oil equivalent gas over 25 years; but in Kazakhstan, it was outbid by the Chinese CNPC in the acquisition of Petrokazakhstan Inc., a Canadian listed oil company operating in Kazakhstan. Petrokazakhstan, with its proven and probable oil equivalent reserves of approximately 550 million barrels, accounted for about 12 per cent of oil production in Kazakhstan and it produced 1,50000 barrels per day of crude output and also owned the best refinery, Shymkent, one of the three oil refineries in Kazakhstan. India’s $ 3.98 billion acquisition bid for Petrokazakhstan, the highest one at the first instance, was defeated by CNPC’s revised bid of $ 4.18 billion. It is alleged that the bid was not fair and the rules were changed mid-way which helped CNPC to win. The deal indicates total failure of Indian oil diplomacy in spite of the fact that India and its partner had a significant presence in Kazakhstan. It is not a sole case, India lost in oil bids to China in Sudan, Angola, Indonesia and Ecuador. However, later on, at the initiative of the then Petroleum Minister of India Mani Shankar Aiyar, India and China through an agreement signed in Beijing on January 12, 2006 created a framework under which their state owned oil and gas companies could evolve strategy for collaborative bidding in acquisition of overseas assets as far as possible.


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Nevertheless, there would still be competition at places where national interests stand supreme.

Beijing is a great power that could be a dangerous neighbour for Kazakhstan. Kazakhstan would like multilateralism to defend itself from potential economic and territorial threats. India’s geo-political and economic presence in Kazakhstan may be of help in counter-foiling many challenges from China. Moreover, Kazakhstan is looking at an investment in exploring and extracting hydrocarbons of around, $ 8.6 billion in 2006-10 and $ 13.5 billion in 2011-15. There is a hope that on this ground there may be enhanced cooperation between India and Kazakhstan in the energy field, if properly advocated and pursued. In support of the concept of multilateralism, during the visit of India’s Petroleum Minister Mani Shankar Aiyar in October, 2005, the Kazakhstan government had offered OVL, 50 per cent stake in the two medium sized oil blocks Satpaev and Mukhanbet in the Caspian Sea, owned by Kazakhstan’s national oil and gas company Kazmunaigaz. OVL on 5 September, 2006 declared that it has decided for the acquisition of stake in Satpaev oil block, the modalities of which are being worked out.

Energy security is high on India’s primary agenda, as Prime Minister Mr. Manmohan Singh has said that “energy security is second only in our scheme of things to food security.” This view has been further corroborated in the opening remarks of the Prime Minister at the joint press conference with Uzbekistan’s President on his visit to Tashkent on 26 April, 2006 when he said, “We see Uzbekistan as an important element in any effort to optimally utilize the energy resources of Central Asia.”

India secured a niche for itself in the Uzbekistan’s hydrocarbons; Uzbekistan agreed to allocate geological territory to Indian companies to explore the resources of gas, oil and other hydrocarbons on equal sharing basis in revenues from any discovery without bidding. The way was facilitated with the signing of memorandum of understanding between Indian Ministry of Petroleum and Natural Gas and the Uzbekistan’s national holding company, Uzbekneftegaz, for cooperation in the field of oil and natural gas. Another memorandum of cooperation agreement was signed between Gas Authority of India Limited (GAIL) and Uzbekneftegaz to jointly pursue gas sector projects covering exploration and production and gas processing. On quid pro quo basis, India signed a memorandum of understanding to establish an Entrepreneurship Development Centre in Tashkent, offered to set up satellite based tele-education and tele-medicine connectivity; a centre for information technology was also inaugurated. A decision to establish partnership between Delhi University and Tashkent Institute of Oriental studies was also taken.

In furtherance of the execution of energy agreement entered into in Tashkent, GAIL announced on May 2006, that it would set up liquefied petroleum gas (LPG) plants in collaboration with Uzbekneftegaz in the western parts of Uzbekistan for the local consumption, each with capacity of one lakh tonnes per annum with a capital investment of $50-60 million. The visit of Prime Minister has opened the door for enhanced bilateral cooperation between India and Uzbekistan. India wants to increase its share of nuclear energy in the energy basket, and Uzbekistan possesses vast reserves of uranium. Later on, India may seek the supply of uranium from Uzbekistan required in its nuclear energy production.

The change in geopolitics after developments in Andijan in May 2005, and the strong historical links and cultural ties provide enough ground for warm relationship between India and Uzbekistan which can be helpful in augmenting energy cooperation.

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97. "GAIL to Set up LPG Plants in Uzbekistan" 2006 *The Tribune*: May 9; Chandigarh, p.15.
Transportation Bottlenecks and Opportunities

The energy imports from Central Asian Republics, India’s extended neighbourhood, offers an attractive opportunity but is restricted due to three factors: geography, economics and politics.

The Central Asian states, being landlocked, are physically isolated from the consumption markets. Russia to the north, Iran to the south, Iraq to the south west and Afghanistan to the south east, all effectively block the way. Due to geographical constraints, pipelines can be the key mode of transportation of oil from Central Asia. Some of the pipelines are the legacy of the Soviet Union. The conventional export outlet of Caspian oil is through the port of Black Sea, mainly through the Russian pipeline system but the Bosporus Strait, a choke point – environmental hazard alleged by Turkey – is a limiting factor. The new BTC pipeline sponsored by the West, bypassing Russia and Bosporus Strait, ends at Ceyhan Port in Turkey in the Mediterranean Sea, would facilitate Caspian oil marketing in the world trade.

India has no direct rail, road and sea link with the Central Asian region. India imported 95.9 million metric tonnes (mmt) crude and a little over 5 mmt per annum LNG during 2004-05 but did not source any crude oil or gas from the Caspian region. However, ultimately India had been successful in bringing Caspian oil to India. Bharat Petroleum Corporation Ltd. (BPCL), an Indian company, signed a deal with the British Petroleum on 9 September, 2005 to obtain 6 lakh barrels of Azerbaijan’s crude in October, when “1764 Km. Baku Tbilisi Ceyhan Pipeline is operational.” Petroleum Minister Mani Shankar Aiyar said, “ the first drop of Caspian Sea oil flowing into the Mediterranean from the BTC pipeline will be brought into the Indian ocean.” The crude was to be shipped from Mediterranean Sea through Suez to Mumbai refinery. Thus an opportunity has been opened to bring the Central Asian oil to the Mediterranean Sea.

100. Ibid.
through the BTC route. Mani Shankar Aiyar, addressing the 12th International Caspian oil and gas conference in Baku on 10 June, 2005 said: “There is immense possibility of our becoming consumers of Caspian oil. We are ready to pick up whatever Caspian oil is available in the Mediterranean Sea at competitive rates.”

India’s visualization to have an access to Israeli pipeline for the transportation of crude oil from Central Asia and Caspian Sea via Red Sea is yet to fructify. In the 12th International Caspian oil and gas conference, Petroleum Minister Mani Shankar Aiyar had put forward the proposal to use the 254 Km long Eilot-Ashquelon pipeline for transporting East Mediterranean crude to the Red Sea from where it could be shipped to India: “Oil can be pumped from the Caspian region into the just commissioned 1764 Kilometres BTC pipeline to reach the Mediterranean Sea from where it can be pumped into the Israeli pipeline from very Large Crude Carrier to pick up at the Red Sea for transporting it to India.” By using the Israeli pipeline the oil tankers can avoid going along the lengthy winding route of Africa and can avoid passing through the Suez canal, so far a pipedream for India.

Central Asian gas can flow to India through Turkmenistan-Afghanistan-Pakistan pipeline; originally conceived in the 1990s but was shelved due to civil war in Afghanistan. It has had to pass through various stages. Again, the project was revived in May 2002 after the fall of Taliban government in Afghanistan. A steering committee comprising of the oil and gas ministers of Afghanistan, Pakistan and Turkmenistan was formed to oversee the project. India attended the ninth meeting of the steering committee of the Trans-Afghan pipeline, held in Ashgabat on 14 February, 2006, as an observer, to weigh the project’s technical, financial and geo-political aspects. India was invited to become an official member of the TAP pipeline project which it agreed to. But there are negligible chances of its fruition and is in a state of limbo primarily because of political and the security considerations.

A short route of transportation by rail and road to Central Asia exists via Afghanistan through Chahbahar, an Iranian port in the Persian Gulf. Iran, India and Afghanistan signed a memorandum of understanding in Tehran in January 2003, to

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102. Ibid pp. 953 – 954.
improve Afghanistan’s access to the Iranian port of Chahbahar. Under this agreement Iran was obliged to build a road connecting Milak, in the south east of Iran to Zaranj in Afghanistan. India was to construct a road connecting Zaranj to Delaram in Afghanistan which is on the main Herat, Kandahar road. During Iranian President Mohammad Khatami’s visit to New Delhi in January 2003, the two sides agreed to forge a ‘Strategic Partnership’ and to work upon secured modes of transport of energy. To encourage bilateral trade and economic cooperation between the two countries, the development of Chahbahar port complex, the Chahbahar-Fahraj-Bam railway link and marine oil terminal at agreed location was specifically discussed. Indian Border Roads Organisation has already constructed the road from Zaranj to Delaram. By following this route the distance between Chahbahar and Central Asian Republics will be shortened by 1000 Km. It bypassed Pakistan which has denied India the transit facilities to Afghanistan and further on to Central Asia. On the fruition of this plan, Chahbahar port could become a primary port for the transport of energy and the commercial goods between India, Afghanistan and Central Asia.

**Tajikistan and Kyrgyzstan’s Hydro-power Potential and India.**

Since independence, for the augmentation of their domestic economy, Tajikistan and Kyrgyzstan depend on hydro-power potential. The hydro-power generating capacity of Kyrgyzstan and Tajikistan is viewed by both the republics as potentially the main revenue generator. These republics want to capitalize this potential by exporting electricity to their neighbouring countries, apart from the Central Asian Republics. But “the cost of developing new hydro-power options are enormous and beyond the budgetary capacity of the Kyrgyz Republic and Tajikistan. They, therefore, need to attract external investment both public and private sources of funding.” They also need funds to rehabilitate and augment the existing hydro-power plant and the transmission system.

103. “Indian Taken Hostage in Afghanistan” 2005 *The Hindu* November 21: Delhi p.1
There is a growing demand of electric energy in India. On 31 March 2006 the generating capacity of electricity in India was 1,24287 MW\(^{106}\) which is expected to grow to 7,78000 MW by 2031-32\(^{107}\) as projected by the planning commission corresponding to GDP growth rate of 8 per cent. India has a vast experience in setting up, reconstructing and rehabilitating hydroelectric dams. Indian company Webcos was engaged in reconstructing the Salma dam whereas Sarobi dam was rehabilitated by Voith Siemens, both in Afghanisan\(^{108}\). The Power Corporation of India has built up transmission lines in Nepal and Bhutan. Its transmission lines in Afghanistan would pass through snow bound tough hilly terrain, deep hills with altitude ranging from 1800 metres to 4000 metres above sea level and temperatures as low as-30 degree centigrade\(^{109}\). If an Indian company were to set up a hydroelectric power plant in Tajikistan and Kyrgyzstan the electricity generated could move to India by the Wakhan corridor in Afghanistan and Pakistan. Though the terrain is mountainous, the technology for erecting high voltage direct current transmission lines in a cost effective manner already exists\(^{110}\). The transmission lines passing through the Wakhan corridor would enter northern areas of Jammu and Kashmir occupied by Pakistan before moving across to the Indian side of the state. This possibility should be explored. However, the opening up of this route appears uncertain because of the troubled relations with Pakistan. India could also seriously discuss with China to bring in electricity from the Central Asian Republics to Himachal Pradesh by laying transmission lines through the Chinese territory of Xinjiang.


\(^{107}\) D.V. Kapur 2006 “Don’t Lump it” August 31 The Hindu: August 31: Delhi p.8

\(^{108}\) “India to Build Power Projects in Afghanistan” 2005 The Tribune: August 18: Chandigarh p.13

\(^{109}\) Ibid.

No doubt, difficult geography and remote location are constraints in the way of accessing energy from Central Asia. However, in the globalised world, the financial muscle, technical know-how, political will and skill take precedence over the closeness of boundaries. Although physical deliveries of oil, gas and electricity from Central Asia are not easily realizable, even then, the acquisition of assets and investments give leverage and manoeuvrability to energy security.