India's Energy Security and India-Turkmenistan Relations

Avishek Naskar

In this paper, an attempt has been made to highlight India's energy position, which is obviously deficient so far as supply of energy is concerned. I have tried to find out India's attempts to produce energy to meet the growing demands of the energy. Failing to cope with the growing energy demands, and inadequate measures to produce oil in the domestic sector, India is compelled to procure energy from other countries. In this part of the study I have tried to focus on these issues and find out the solutions these off.

Turkmenistan, being a latecomer in the field of gas exploration but the world's fourth-largest gas exploration centre becomes very much important to India. Because the TAPI (Turkmenistan-Afghanistan-Pakistan-India gas pipeline) project which has been taken up recently is of great interest to India for procurement of gas from this country which is very much near to India. If it is implemented the cost of energy will be very much low in India. All these points have been taken into account in this study.

Introduction

Energy-related policy challenges have rapidly grown in India in the past two decades. The idea of energy policy, foreign policy and national security are all interconnected to each other. Therefore, 'energy security' is not a new concept in the present era. Over the last ten years, the conceptions of 'energy security' have grown more complicated. After the oil crisis of the 1970s, as prices have grown higher the scarcity of affordable supplies became a vital requirement, it becomes a vital concern for all countries, including India. Energy consumption has risen for factors like growing population, economic growth and lifestyle challenges, among others.

It has been observed that an energy-intensive growth paradigm underwrote India's impressive growth during the past two decades. It seems that energy consumption in India has been rapidly growing. It trails far behind GDP growth. If we go beyond the last five years or so energy consumption has made a compound growth rate at about 6 per cent per annum. [1] It is an alarming rate of growth in comparison to GDP growth.

For that reason, it can be stated that two major factors are influencing India's energy policy decisions. These are **energy and growth concerns** and **energy and poverty concerns**. The first problem includes the need to supply enough commercial energy to drive growth, tackle unsustainable consumption, and improve India's Government's ability to control high energy prices.

The second concern of the problem arises from the pressures generated due to significant energy inequities. However, it is essential to control the transition from traditional fuel sources to refine fuels and the provision of lifeline energy required to banish poverty and provide a basic minimum standard of living to all citizens.

The author is a PhD Scholar at Department of International Relations, Jadavpur University, Kolkata (W.B.).

ju.naskar.avishek@gmail.com

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Domestic Energy Supply and its Failure

Energy is vital for the present transportation system. A huge level of energy is needed. But energy supply agencies have failed to enforce vehicle-free efficiency norms, though railways are considerably It appears from the above that the railway sector and road transport sector have been consuming high volume of energy. India has drastically failed to control ever-increasing transportation system as well as planning for energy efficient transportation system. This has rapidly increased energy consumption. This can be explained by the way of an example like Chennai Metro rail, a four-car rake running nearly 400 km a day can generate about 1,900 km/hour (kWh) of power (the amount of energy converted from work at an average rate of 1000 W/hour). The train consumes 6,300 kWh to run that distance. [2] From this, it can be easily guessed that the how much quantum of energy is required in a day to run the entire railway sector in India. For this, it requires to be keen to stick to its own energy production. Likewise, gas block in the Krishna-Godavari (K-G) basin's six satellite fields include D-2, D-6, D-19, D-22, D-29 and D-30 in the K-G block and also D-34 or R-series and D-55 (M.J.) would be developed separately. Not only K-G basin but in respect of other sectors like Barauni in Bihar to Guwahati in Assam pipelines are connected for present supply of energy. Chandra

more energy-efficient than road or year base transport. The National Highway Programme has been aggressively pursued while railway programme, such as the Dedicated Freight Corridor and high-speed rail corridors continue to languish.

Mahan Patwary, Industry Minister of the state of Assam said that at Barauni, the pipeline would be connected with national grid. Besides, in the previous eight years, India was able to utilize 55 blocks of oil and natural gas. [3]

It will be relevant to point out here that in the sectors of energy exploration and utilization, government has not only taken the responsibility itself alone; it has also engaged non-state actors or private companies in this field. It is a part of government's measures for public-private partnership as a means for development in this sector. As for example, Reliance Industries Ltd (RIL) has engaged itself with the lifting of gas in the eastern off-shore K-G D-6 basin. From this source of natural gas exploration lowest level of 4.9 million metric standard cubic meter/day (mmscmd) is produced.[4] Reliance, in January 2018 produced 3,960 Mega Watt (M.G.) power through its thermal power units located in Madhya Pradesh.[5] Hindustan Petroleum Corporation Ltd (HPCL) output of oil refinery has been to the tune of 51.11 per cent annually.[6]

The following two graphs clearly show the gaps between India's energy demand and supply ratio from the year 2005 to 2010.



Expected growth in consumption (Demand)

Graph-1; Source: WHITEPAPER, "ENERGY: Indian Demand- Supply Gap", Zinnov off-shore research and consulting, 2010

Graph-1 shows that the expected growth in the energy demand, particularly energy requirements of oil, natural gas and petroleum products. While the growth rates rises significantly it's for both India and China, the U.S. exhibits minor growth rates. EIU data estimates that India's growth particularly in coal, natural gas and electricity segments is 7.2 per cent, 6.5 per cent and 6.6 per cent respectively. This figure is much higher than that of the U.S. It seems that the Government of India's has failed to control the energy consumption particularly in the above sector because of government's uncontrolled expansion of energy induced programs both in rural and urban areas. Hence the growing demand of the people is not in conformity with the production of energy. As a result, the government is bound to import a considerable chunk of electricity, natural gas and crude-oil from foreign countries.





Graph-2; Source: WHITEPAPER, "ENERGY: Indian Demand- Supply Gap", Zinnov off-shore research and consulting, 2010

India's unbalanced consumption and demand create a shortage of supply. In this respect, India lags behind China in its overall energy production. It is estimated that China is the top energy producers in the world. Graph-2 shows the growth projection in production capacities of the three countries or primary energy requirements. It can be argued that India will not be able to increase its production capacities of any of the primary sources of energy because the government's policy so far as energy production is concerned is not at par with other countries like China. An increase is expected in the natural gas production rates in the next five years due to the K-G basin (Krishna and Godavari) discoveries of potential reserves of over 360 mmboe (balance oil equivalent). But a huge amount of uncertainty is still there. It is a fact that the petroleum and crude oil sector does not witness any significant change in matters of production. But it is said that the refined product supply is expected to move upwards.

It may be argued that sudden crucial measures are required to be undertaken by the policymakers in order to bridge this demand and supply gap. The steps to be taken are as follows:

- Implementation of exploration measures to convert proven reserves into establishing resource fetching reserves. The government should encourage new players to enter into exploration segments.
- (ii) Technology should be upgraded in matters of existing production and exploration. This will enhance better productivity and extract more resources from the proven reserves. The need for power to create an enabling infrastructure for energy sector growth by investment imports, railways, pipelines and power transformation.
- (iii) Tie-ups and alliances are to be made to

set up international pipelines for crude oil and LNG import. The government should also provide the impetus for private participation.

(iv) The government should frame the policies which will smooth the regulatory framework and increase the industry attractiveness for foreign investors and entrepreneurs.

In the renewable energy sector, India could target 100 GW of solar capacity by 2022, whereas till now, India could produce 20 G.W. cumulative solar capacities. Not only the present situation, but the previous successive UPA Government also concentrated on the energy supply failure matter. The former Prime Minister Dr. Manmohan Singh had set up an energy co-ordination committee to deal with energy security and other energy sector issues as far back as 2005. But this committee failed to produce the desired result.

Another problem in respect to energy sector data is that there are discrepancies in the data used by the different agencies. It hinders a sound policy formulation because of discrepancy between oil usage and transport activity data and about 15 per cent discrepancy in coal usage data. The lack of a responsible agency for basic tasks such as reliable data collection reconciliation is another indicator of weak institutional response.

Yet another problem facing the energy sector, particularly the petroleum and oil sector is India's insufficient attention to ever increasing consumption. An estimate shows that petroleum imports contribute to 80 per cent of the energy import bill and about half the petroleum consumption in the country is for transport. From this it appears that the demand in the transport sector is a significant demand and how the government has taken measure to tackle this problem, is a moot question. A study has shown that the government has taken minimal proactive action to tackle this problem. Automobiles sales in the country have been increasing at a rate of about 12 per cent per annum and the consumption of petrol and diesel has been increasing at a rate of about 8 per cent per annum.[7] From all this, it can safely be said that India needs huge energy to import from energy rich countries.

Since India faces an energy problem, it starts the process of importing energy from energy-rich countries. Therefore it is not only present NDA Government's venture to import energy; the earlier UPA Government also started energy import from other oil-rich countries. The fact is that India is depended on energy import. But it is a matter of regret that the Central Government did not take notable steps to solve this import depended on the energy system. It appears from different studies that the conjunction of energy in India increases and it did not tally with production. As a result, the energy crisis gradually increases. Finding no other alternative and government's failure in controlling energy consumption, the successive government is stressed upon the import of energy vis-à-vis energy production. The below-mentioned data will reveal the consumption and production and net import energy scenario of India during 2000 to 2016.



Graph 3. India Petroleum and other Liquids Production and Consumption 2000-17 Million Barrels per Day

Source: EIA U.S Energy Information Administration Report, 2016

In India, the higher demands of energy are coal, oil, natural gas, electricity and renewable energy which are essential for the survival of human. It is for this reason that the Government of India emphasizes upon the production of these energies. To make my point clear I would like to present below data which will eventually analyze the energy position in India. Coal is the dominant fuel. Because coal is not only essential for human, it is but also used in industry sectors. The volume of coal consumption increases from 353 million tonnes in 2001 to 2,057 million tonnes in 2015. The use of coal in the generation of power also increases which ranges from 14 per cent in 2001 to 24 per cent in 2031.[8]

Oil stands in the second position in terms sphere of use particularly in the transport sector. In 2015 the demand for oil rose to the tune of 75 per cent.

According to the demand for energy is increasing 8 per cent per annum which, it has been estimated, will

remain constant till 2030-31. Energy is not only essential for institution or organization; it is also needed to eradicate poverty, good health, proper education. In order to meet this ever increasing demand of oil, the government has to depend on the production of energy sector and its related physical infrastructure. At present, in India, the nuclear energy demand has increased from 74 per cent to 96 per cent. Day after day the price of gas cylinder is increasing, the government's withdrawal of subsidy, and inability on the part of H.P., LNG, and Indian Oil organizations to supply gas in due time all these amply prove that the government is facing an energy crisis and herein lies the government's failure to provide energy security.[9]

Now India has decided to formulate an energy policy which is substantial, pro-active and multifaceted. This policy will be adopted to promote India's security interest across the world. India's overseas engagements aim at achieving the following purposes:

- Significant enhancement of domestic resources and capabilities by bringing in state-of-the-art foreign technology and expanding the national knowledge base.
- (ii) Involving either equity participation in producing (E & P) contracts in different parts of the world, both onshore and off-shore.
- (iii) Finalization of long term LNG contracts.
- (iv) Setting up of transnational gas pipelines.
- (v) Obtaining technologies to promote sustainable energy use, including increased use of environment-friendly fuels.
- (vi) Since at present entire Asia is the prime oil resource area and Caspian Sea region's oil potential is significantly high, India, should overcome the challenges before her to make 'connect Central Asia' policy[10] a reality.

Central Asia as a 'Heartland' or 'Pivotal Area': India's 'Look North-West' policy

Central Asia is one of the most important places from the geo-strategic and geo-political point of view. Two great powers- Russia and USA- influences on this area remained constant. NATO countries, People's Republic of China, India, Pakistan and Iran also made attempts to influence this area. All these efforts are meant for establishing hegemony on Central Asia. Five countries- Kazakhstan, Azerbaijan, Turkmenistan, Uzbekistan, and Kyrgyzstan comprise Central Asia. Once upon a time, these five countries were in the domain of USSR. After the fall of USSR in 1991, all these countries became independent.

The countries which fall in this region are: Kazakhstan, Azerbaijan, Turkmenistan, Uzbekistan, and Kyrgyzstan. Kazakhstan which possesses 30 billion barrels of reserves stands sixth in the ranking of oil and natural gas reserves in the world.

The reserve of Azerbaijan is 7 billion barrels and 7.5 trillion cubic meters natural gas reserves for Turkmenistan who stands forth and the largest natural gas reserves in the world.

Similarly, the reserves for Kazakhstan and Uzbekistan are 2.41 trillion and 1.84 trillion cubic meters, respectively. Therefore, in the Caspian Sea region, the total reserve is to the tune of 46 per cent of the world's natural gas reserves [11].

According to Mackinder's theory Central Asia is a pivotal area from geo-strategic point of view. He thought that this pivotal area is the 'Heartland' of the world; because oil and natural gas, are two important energies which have brought about geo-strategic and geo-economic significance in this area. Therefore, it is understood that Central Asia has become a certain area for supply of oil and natural gas for all countries of the world. It is for this reason that Mackinder has pointed out that Caspian Region is playing as the heart for oil and natural gas reserves.

Oil energy brings about stable economic growth. Caspian source of energy, particularly petroleum and natural gas, has become a multidimensional security question. First it has a geo-political dimension which has brought about the United States in who control 75 per cent of the oil fields in this area. The U.S. has invested \$30 billion for this purpose. 30-40 per cent investments from foreign companies have come to Tajikistan and Azerbaijan. Similarly, UK, France, Turkey, Iran and Japan's energy companies also made their presence in the Caspian Area of the Central Asia. All these indicate that Caspian Area has become a centre for conflict for oil and natural gas exploration and supply to all these countries. It is pertinent to mention that all these countries are dependent on the pipelines of Russia for supply of oil and natural gas [12].

At present India with its 'Look North-West' policy is pro-actively engaged in this Central Asia. In this way India can be able to connect her as oil and natural gas importer in this area. But there are some non-supportive factors which are involved here; these are as follows:

- (i) China's dominance over this region
- (ii) U.S. investment
- (iii) India-Pakistan relations: China's hegemony
- (iv) Government's policy failure and investments
- (v) Problem of terrorism

The above mentioned factors seem to have given India's 'Look North-West' policy a great challenged.

Caspian Sea region: Turkmenistan a Prime Factor for Energy supply to India

Caspian Sea region belongs to the middle Asia where the large natural gas reserves exists. But the fact is that Russia played a prime role and initiative in matters of Caspian region. For this reason, Caspian is now turned into "Southern Flank". It is one of the greatest land-locked seas in the world. Caspian is also known as "Sea Lake". After all, Caspian Sea region is one of the largest sources of mineral power. And North Caspian may be taken as a zone of this power. In the sphere of power North Caspian is to be taken as "United macraregion". Russia and Kazakhstan dominate the north region, and Turkmenistan and Azerbaijan dominate the South Caspian region.[13]

Caspian Sea region oil reserves are 45 billion barrels and natural gas 7.3 trillion cubic meters, which is 4 per cent of the total reserves of the world. The production is 3.6 million barrels increasing per day. It may be said "energy firms have come to recognize that is a high cost region and a politically difficult highly unstable arena."[14]

Turkmenistan: Turkmenistan is the energy dominant state in Central Asia and stands forth in respect of natural gas reserves which is 7.5 trillion cubic meter.[15]

Year	Oil		Billion barrels
	2007	BP Statistical Review Year- End	0.600
	2009	Oil and Gas Journal January-1	0.600
	Natura	l gas	Trillion cubic feet
	2007	BP Statistical Review Year- End	94216
	2008	Centre International d'Information sur le Gaz Naturel et tous Hydrocarbures Gazeux (CEDIGAZ), January-1	94644
	2009	Oil & Gas Journal, January-1	94000

Table 1. Oil and Gas reserves of Turkmenistan

Source: Devendra, P., Economic Security Dimensions in Central Asia: Role of India, (New Delhi: K.W. Publisher, 2012), p.401

The above data show oil and natural gas reserves from 2007-09. From this it is understood that the oil and natural gas reserves in Turkmenistan is sufficiently high. Turkmenistan is in a position to export energy even after meeting its necessary energy needs. In 17th century Turkmenistan in the Caspian Sea area was a strategically important. Particularly for its production of mineral resources despite 90 per cent of the Turkmenistan's land covered by desert area, which called Karakum desert. Only 10 per cent is attached to Caspian Sea region.[16] Turkmenistan gradually and rapidly increases its oil and natural gas production.

Table 2. Spectrum of	l'urkmenistan's p	osition in respect	of oil and natura	l gas production during	, 1998-2007

Turkmenistan	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Oil (Thousand barrels per day)	126.8	154.26	156.64	167.8	192.57	200.00	213.94	196.65	177.31	180.39
Dry Natural Gas production	0.446	0.788	1.642	1.702	1.889	2.087	2.068	2.225	2.232	2.432

Source: Devendra, P., Economic Security Dimensions in Central Asia: Role of India, (New Delhi: K.W. Publisher, 2012), p.401-402

It appears from the above table that oil and natural gas production in Turkmenistan has been significantly increasing year after year.

Turkmenistan became an independent state on 27 October, 1991 it expresses itself as a 'neutral state' with the help of General Assembly of U.N. Turkmenistan is ruled by President. Constitution of Turkmenistan's foreign policy is a logical extension of domestic policy and is determined by the international legal states of permanent neutrality. The main objectives of Turkmenistan's foreign policies are:

- (i) Increase its role and importance in the international system
- (ii) Upholding and implementation of the national interest of Turkmenistan by all forms existing in the international practice of diplomatic contacts

China, East Asia and India have substantial trade relations with Turkmenistan.[18]

However, India sceptical about supply of oil and natural gas by making gas pipeline connecting through Pakistan. India has given emphasis on two pipelines transaction: Iran-Pakistan-India (IPI) and Turkmenistan-Afghanistan-Pakistan-India (TAPI). In fact, in future these pipelines project if materialized will provide India much headway in respect of import of natural gas and oil reserve. This TAPI project is now under negotiations.[19] Turkmenistan possesses explored reserves of energy resources 85 million tonnes oil and 290 billion cubic meters natural gas and; 2 billion KWh per year hydro energy.[20] It opens the gate for import of energy and natural gas supply from Turkmenistan.

The regional co-operation and integration day by day and India is giving pragmatic approach to the implementation of regional integration arrangement. India is always active and finding out avenues for new co-operation and solution. In fact, globalization has opened the gate for such negotiations at the national and global levels of decision making and policy formulation for the settlement of dispute, if any. Not only that, it will help the state Government as well as non-state actors that are given responsibility for international conference, agreement, control business-trade linkage, transportation and connectively. It appears from these that India is not only (iii) Development of constructive mutually beneficial co-operation with all international partners on the basis of equally and mutual respect.[17]

related to this but a group of states are related to these collective activities.[21]

Preferential trade agreement has opened the regional and economic development has begun through WTO negotiations. During the last few years India has made comprehensive economic co-operations agreements with many states. Besides South Asian Free Trade Area (SAFTA), the India-ASEAN agreement and trade related investment like, Gulf Co-operation Council (GCC) etc.[22]

Besides, these agreements, it may be said that India's relations with Central Asian Region (CAR) is very weak. The initiatives for the Central Asian republics are very insignificant. Since Central Asian location is land-locked, it is not possible for India to make trade relations because of distance, and inaccessibility. In that respect it can be said that Turkmenistan is a late comer in the area of trade relations with India.

Two great states Kazakhstan and Uzbekistan been able to provide a 'regional leadership'. Turkmenistan is still restricted within its provincial forum for participation. For which India's energy import from Turkmenistan is directly impacted. Turkmenistan has huge deposits of oil and natural gas, estimated at 320 million barrel of oil and 700 billion cubic feet of associated natural gas plus 1.9 trillion cubic meters of non-associated gas.[23] Turkmenistan is one of the most important energy exporter countries. At present, the state also trying to connect with pipelines among other countries.

Pipeline	Market Target	Length	Transit Through	Cost	
Chardzhou-Heart Gwadar	Pak-India	1699 miles	Afghanistan	\$ 3 Billion	
			Pakistan		
Turmenbashi-Neka-Tehran-	India	*	Iran	*	
Khark island					
Dauletabad-Multan-Karachi	South Asia	*	Afghanistan	*	
			Pakistan		
Dauletabad-Sui-Jan-nagar	Pakistan,	*	Afghanistan,	*	
	India		Pakistan,		
			India		
Iran-Pakistan-India (IPI)	Pakistan,	1,115 km	Pakistan	*	
	India				
Turkmenistan-Afghanistan-Paki-	Afghanistan,	1,680 km	Afghanistan,	*	
stan-India (TAPI)	Pakistan,		Pakistan		
	India				

 Table 3. The proposed oil and natural gas pipelines from Turkmenistan

Source: Dash, P.L., Caspian Pipeline Politics Energy Reserves and Regional Implications, (New Delhi: PENTAGON PRESS, 2008), p-24 and Routledge., India's Energy Security, (New York: Taylor Group, 2009), p.91

It comes to our knowledge that the proposal for pipeline connectivity of Turkmenistan and India and their foreign relations so far as energy import are concerned, are impressive. India- Turkmenistan's economic initiatives have been highlighted by their membership in different organizations. For example, Turkmenistan is associate member of Commonwealth of Independent States (CIA), and not only that Turkmenistan is also direct or indirect partner of India and also permanent member of Central Asian Co-operation Organisation (CACO), Economic Cooperation Organisation (ECO), South Asian Association for Regional Co-operation (SAARC), Central and South Asia Transport and Trade Forum (CSATTF), and Asian Highway (A.H. a network of 141000 km covering 32 countries in Asia).[24] The obstacles which confirmed its import and export are given below:

- (i) Turkmenistan has declared itself in its constitution as a 'neutral state'. But the
- In fact, Turkmenistan is depended on (ii) the small pipelines of the Soviet era. Most of the oil and gas supply of Turkmenistan is made through these pipelines; all of these are in wrong direction. Some of the proposals of South and East Asian pipelines are still in proposal from; all of these are lying unimplemented for long years. The dual faced policy of China and Pakistan have disturbed these initiatives. In fact the dominance of Taliban, terrorist activities all of these non-state and the probability of U.S. intervention in the region make the area if unattractive for business factor.
- North Caspian is known as "united (iii) macroregion". It is dominated by Russia, Uzbekistan, Kazakhstan and their modern technology. In fact for lifting of oil and natural gas, these technologies will largely help in the successive years. As compared to these, South Caspian basin, Azerbaijan and Turkmenistan to a large extent failed. In South Caspian a project of 20 bnbls lifting turns into a lifting rate of 6-8 bnbls. The main reason is lack of proper planning, adequate Government policy and modern technology for lack of deep water drilling trap. Azeri-Turkmen's off-shore areas are located in sand stone reserves that for

irony of the fact is that it is not at all neutral. For Turkmenistan is basically known and dominated by Afghanistan, Saudi-Arab and Pakistan's Taliban dominated areas. After the attack at Pentagon (9/11) event the USA's threat to Turkmenistan directly or indirectly. It appears from this that the great power America's presence in Central Asia region is for two reasons: secure energy exploration and safeguarding the energy site from terrorist attacks. India, being an energy deficient state, feels it an urgent necessity to implement TAPI (Turkmenistan-Afghanistan-Pakistan-India) project, a project which has been taken by India and Turkmenistan through Afghanistan and Pakistan, although the two countries are ridden by terrorism.

lack of technology cannot be broken for oil. South Caspian basin's oil explorations therefore face threat.[25]

(iv) Again, 26/11 Mumbai terrorist attack proves that the security of Indian Ocean, side by side Arabic Ocean is important,[26] because, this will safeguard the integrity along with connectivity of Chabahar port in Iran and Gujarat port. Energy import from Central Asia will depend on the India's maritime and energy security. The map given below shows that India has been importing energy from Afghanistan via Iran through Chabahar port. Not only this, India is also engaged in importing energy from energy rich countries like Turkmenistan and Kazakhstan using Chabahar port as a means of connectivity.[27]

It appears from the above discussion that India-Turkmenistan energy import and its relation with India is strategically very important. But the slow process in which it is being implemented is a matter of concern. Various obstacles are there.

But India with an eagle-eye expects to get supply of energy from Turkmenistan to meet its 70 per cent energy deficit. In fact India's 'vision-2035' reveals that Turkmenistan's as an oil and natural gas supplier of 1 million bbld oil and 230 bcma natural gas through planned pipelines is likely to be implemented.

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[27] On 2nd May, 2018, I interviewed, First Secretary, Embassy of Turkmenistan situated at New Delhi who apprised me of the fact that Chabahar port has become an important place for energy supply from Turkmenistan to India because India's relations with Pakistan is not congenial and there is the possibility of terrorist attack for which this port is used for energy import. It reveals from the interview that Turkmenistan is very much egger to establish relation with India in the sphere of supply of natural gas to India and India important market for energy. For this reason, Turkmenistan is very much interested in developing relations with India.

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