

STATUS NOTE

Turkmenistan-Afghanistan- Pakistan-India Pipeline

Possibility or Pipe Dream?

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Introduction

Oil was the fuel of the 20th century. But depleting sources, volatility of prices and environmental concerns have made it imperative to look for alternate fuels. Natural gas provides one such solution for these concerns. Natural gas has a lower environmental impact than oil, emitting 30% less carbon dioxide, is generally priced at a fraction of the price of crude, and given its suitability as a substitute for oil in industries, makes it an attractive alternative to oil. Natural gas emits 45% less carbon dioxide than coal, making it an equally attractive substitute to itⁱ. With the rapid depletion of most fuel sources, the need to tap into existing and unexplored natural gas reserves has become central to the energy debate.

In order to secure a constant source of supply of natural gas to India, the Government of India is looking into the ambitious Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline. This will be an addition to the existing domestic production and LNG (Liquefied Natural Gas) imports. This project has been in the pipeline for the last 15 years though India signed on to it in early 2008. Since this pipeline passes through Afghanistan and Pakistan, both restive regions, security concerns have triggered wide debate on its viability.

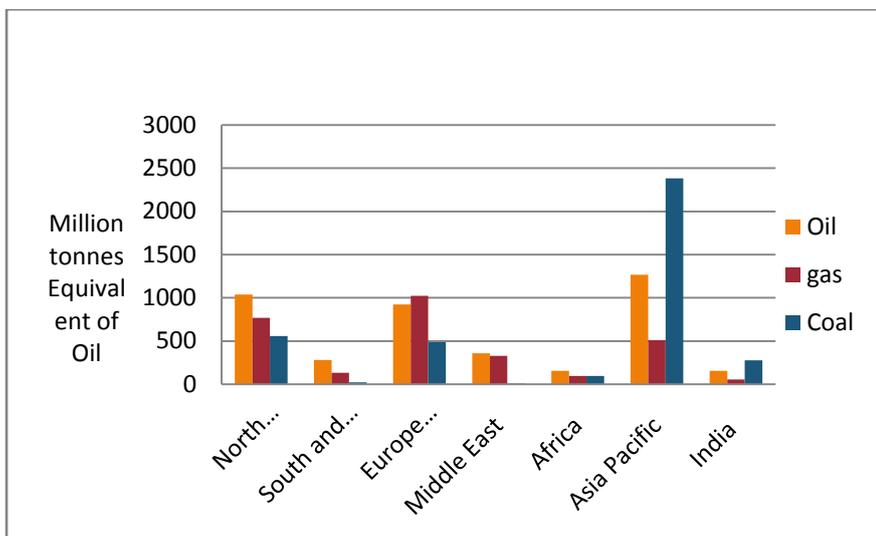
This paper briefly looks at the position of natural gas in the world vis-à-vis other fuels. The paper also elaborates on the economics and politics of the TAPI pipeline to conclude that this will remain a very tempting but unfortunately, a 'Forever Project' where discussions can go on for years without any concrete results. The paper advocates caution given the tumultuous times prevalent in Afghanistan and Pakistan and lists alternate options and possible courses of action for India.

Natural Gas

World Consumption of Natural Gas

According to BP’s Statistical report of June 2011ⁱⁱ, natural gas surpassed coal in 2010, in total primary energy consumption in most countries of North America, South and Central America, Middle East, Europe and Eurasia. It has overtaken oil’s share in Argentina, Bangladesh, Malaysia, Pakistan and 11 countriesⁱⁱⁱ in Europe and Eurasia.

Figure 1: World Consumption of Oil, Gas and Coal



*Source: BP Statistical Report 2011

Asia Pacific, however, remains largely dependent on coal as its primary energy resource. Yet, the nations in this region are also looking to expand their natural gas supply. The subsequent section shows how China is actively tapping into the various natural gas options available. Even Japan is considering a subsea pipeline from Russia to diversify its energy base. If the Japanese decide to reduce their dependency on nuclear fuel, the efforts to secure more natural gas supplies will gain traction.

Transitioning to natural gas will have two positive impacts; one is environmental^{iv}, since it emits less carbon dioxide, and the second is a reduction in the demand of oil and consequently a reduction in its price volatility. The discovery of shale gas and the increasing consumption of natural gas in the US - 5% increase from 2009 to 2010 relative to 2% increase in oil - has brought some stability in world oil prices.

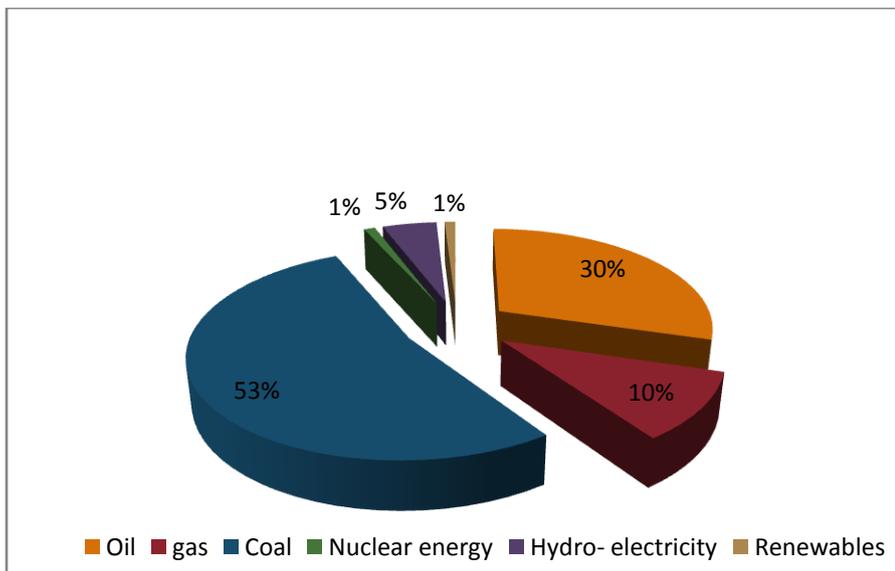
Natural Gas Consumption in India

The Integrated Energy Policy (IEP)^v published by the Government of India states that the primary energy consumption of India has grown at an average rate of 5% per annum and is expected to increase to 7% over the next 30 years. The

total share of natural gas will increase from 9.75% to 12% according to IEP and 15% according to a McKinsey report^{vi} of March, 2010. Figures 1 and 2 show that compared to many developed and developing nations, India’s share of natural gas in total consumption is very low.

Figure 2: India’s Primary Energy Consumption

(Million tonnes Equivalent of Oil – MTOE)



*Source: BP Statistical Report 2011

Table 1 shows the past, present and possible future consumption of natural gas in comparison to coal and oil in India.

Table 1: Projected Energy Consumption (MTOE)

Year	Coal	Oil	Gas	Total Energy
2007-08	216	140	40	410
2011-12	257	166	44	496
2016-17	338	214	64	665
2021-22	464	278	97	907
2026-27	622	365	135	1222
2931-32	835	486	197	1651

*Source: Integrated Energy Policy, Government of India

Figures 2 and 3 indicate that coal remains the main resource with 53% share in India’s total energy consumption; it is extensively used for generation of power. This dependency is unlikely to decline. More than 40% of the country does not have access to electricity and coal is still the cheaper option to natural gas for production of electricity. This explains why even though 46% of total natural gas production was used by the power industry in 2009-2010, it formed only 12% of total electricity production^{vii}.

Natural gas is a good alternative to coal and liquid fuels in industries. Since the power sector is price sensitive, it buys natural gas at the government controlled Administered Price Mechanism (APM) rates, which is lower than the market price. This makes it economically difficult to produce. On the other hand, industries dependent on liquid fuels will find natural gas the cheaper alternative to oil, and thus can buy at a higher price than the power sector. Though, the estimated demand for natural gas in 2031 is 197 Mtoe, it is expected that an excess, constant supply will be easily absorbed by industries.

Natural Gas Pricing in India

A typical LNG plant requires investment in deep-water sheltered ports to harbour LNG tankers and in liquefaction and re-gasification plants on both ends of the transport route. According to some experts, an estimate of an LNG train (process of liquefaction, transportation, and re-gasification) would be about \$8 billion. This would comprise the cost of setting up a 5 Mtoe liquefaction unit for about \$5 billion; shipping for about \$2 billion, and the cost of re-gasification unit at about \$1 billion. In addition, local transport charges will raise the cost to \$10 billion. Freight rates are prone to fluctuations and the cost incurred is high, adding to the cost of the train.

In comparison, the initial investment for piped gas is lower. After the initial sunk costs of constructing the pipeline, there are no recurring expenses of liquefaction and re-gasification, other than the transit fee (which would be significantly lower than shipping charges). The gas pipeline can be connected to domestic grids and supplied from the source directly.

The price of piped gas is generally cheaper than the LNG import price. In 2010, the price of imported LNG ranged from the Japanese Crude Cocktail Price (JCC) at \$10.91 to Henry Hub (USA) at \$4.39 and Alberta (Canada) at 3.69^{viii}. The South and the East Asia regions follow the JCC price. Natural gas prices may be lower than the JCC price. For example, the price of gas in the Turkmenistan-China gas pipeline deal is \$5.4/mmbtu (million British Thermal Unit).

It is also cheaper than oil. The oil price at \$100 per barrel is roughly equivalent to an \$18.5/mmbtu gas price. This makes the price of \$18.5/mmbtu for oil higher than the price for LNG imports and piped gas. Therefore, most industries dependent on oil for their energy requirements will be able to pay the market price of natural gas.

But it is more expensive than coal. The price of domestic and imported coal in India at \$50/ton is roughly energy equivalent to \$2.2/mmbtu^{ix}. Since even a slight increase in the price of natural gas will make production of electricity difficult, the importance of coal for the power sector cannot be ignored. In 2010, when the government increased the APM rates from \$1.79 to \$4.2 (Reliance KG-D6 price for gas), the power sector found it difficult to supply electricity without a concurrent increase in electricity prices. Because the power sector and the fertilizer sector both of which are regulated to pay at APM rates, and form 70% of natural gas consumption in India, the domestic price is dictated by their use. Natural gas also caters to the sensitive fertilizer sector. Since both electricity and fertilizer sectors are closely connected to agriculture, farmers and agricultural units get subsidized rates. High natural gas prices have a direct impact on the

price of farm produce and consequently impact larger challenges such as India's food security woes. .

One solution to bring natural gas pricing to market rates is to reduce the dependency on natural gas in the power sector and to limit its use to urban markets where power prices are deregulated. This will make natural gas available for industries which can afford a much higher price. The Prayas energy report to the Chawla Commission suggests increasing the imports of fertilizers and recommends the re-examination of the policy to use natural gas for fertilizers; it further suggests that importing may be a better option. If the dependency of power and fertilizers on natural gas can be reduced, the government can look at deregulating the natural gas sector without much adverse effect to priority sectors.

India and China's Piped Forays

India's aspirations of establishing gas pipelines have remained pipe dreams, while China has made considerable strides in this area. For instance, India has tried and so far been unsuccessful in securing the natural gas contract from Myanmar even though India's Oil and Natural Gas Corp. (ONGC) and Gas Authority of India Ltd. (GAIL) hold stakes in the gas blocks in the region. In December 2008^x, China was awarded a thirty year contract by Myanmar, a definite blow to India's aspirations. Similarly, the much touted peace-pipeline, the Iran-Pakistan-India pipeline, after a series of negotiations, has gone into cold storage mainly because of US pressure against the pipeline.

On the other hand, the Chinese have been actively increasing their piped tentacles across the central Asian region. China signed a deal with Kazakhstan in 1997 for an oil pipeline which was completed in July 2009^{xi}. In December 2009, it tapped into Turkmenistan for a new natural gas pipeline travelling 1,833 km through Uzbekistan and Kazakhstan to reach western China where it will connect with the Chinese line east to Shanghai^{xii}. Then in 2011, China commissioned an oil pipeline which will come through Russia. In addition to providing an energy source, these deals have helped China further their bilateral relations with the different countries. For example, along with the gas deals, China has deepened its economic engagement with Myanmar by offering lines of credit for trade.

Similarly, TAPI is very important, not only to meet some of India's energy needs and requirements but also to establish India's geostrategic presence. It could be a means of extending India's presence and improving relations with the Central Asian countries. The question that looms large is - how secure is this project?

A Brief Overview of the Pipeline

The 1,680 km pipeline route will start from the South Yolotan-Osman field in Turkmenistan^{xiii} and will pass through Herat, Helmand and Kandahar in Afghanistan to Quetta and Multan in Pakistan, finally ending at Fazilka in India. The agreement signed among the four countries envisages the delivery of 90 million cubic metres per day (mmcnd) of gas from Turkmenistan to South Asia with 38 mmcnd (around 42%) each going to Pakistan and India and 14 mmcnd (around 15.5%) going to Afghanistan.

Turkmenistan has sufficient reserves to supply the TAPI line. According to the BP Statistical Review 2011^{xiv}, Turkmenistan has 7.94 trillion cubic meters of reserves of natural gas ranking fourth in the world, after Qatar. The new South Yolotan-Osman field contains between 4 and 14 trillion cubic meters of gas based on an initial audit conducted by the oil advisory firm, Gaffney Cline & Associates. This field could produce about 70 billion cubic meters a year which is approximately equal to Turkmenistan's current total annual production of gas from existing sources^{xv}.

The Asian Development Bank estimated the cost of the pipeline at \$7.6 billion. The Express Tribune, Pakistan^{xvi}, recently reported that a formal offer was made by the ADB to work as the coordinator and financier of the project. The construction and maintenance of the project would be given to a consortium of private companies which will ensure the flow and supply of gas through Turkmenistan. ADB envisions this project to be completed by 2017.

Reasons for Hope

Turkmenistan

The successful completion and implementation of this project will have economic benefits for the countries involved. Turkmenistan has abundant gas but is land-locked with two energy giants—Iran and Russia as its neighbours. Its relations with Russia have cooled and the pipeline along with its other regional initiatives will help Turkmenistan diversify its markets. The pipeline provides Turkmenistan an opportunity to tap into India's large market base and deepens ties with India. The support of the Asian Developmental Bank is beneficial as it represents a nod of approval from its member countries. ADB's involvement will help raise the finances required for the project and will help mitigate the political risks from an investment perspective.

Afghanistan

At \$300 million, this project could be one of Afghanistan's largest developmental projects. The transit fee, estimated at \$300 million, can be diverted for building human and physical infrastructure of the country. Additionally, according to some reports there are more than 100 industrial units planned near the pipeline route in Afghanistan^{xvii}. A dedicated industrial corridor along the route would help the economy.

Pakistan

The pipeline will bring much needed energy to energy deficient Pakistan. Industrial and power units planned along the route can use this natural gas for their production. Moreover, Pakistan's transit fee to Afghanistan can be subsidised by transit fees from India to Pakistan; consequently the total price of gas would decline for Pakistan. The project also provides an opportunity for Pakistan to export gas beyond the region from its port at Gwadar and the income accruing from these exports should benefit the economy.

It is to be hoped that economic development in the region and distribution of profit through reinvestment in developmental work can reduce turmoil in the troubled regions. On a very optimistic note, Dr. Robert Wirsing, of the Asia-Pacific Center for Security Studies^{xviii} hypothesis a permanent end to the insurgency in Baluchistan, by promising to make it an energy corridor and providing opportunities for economic development.

India

For India, this pipeline will definitely be a cheaper and economically more efficient option to the import of LNG through the sea routes. The increase in natural gas supplies will help meet between 12.5%-16% of future demand^{xix}. Also, if this project turns out to be successful, a parallel pipeline along the same route can be planned to increase the supply. The project has a special advantage as it provides a point of entry into Central Asia making it possible to have future energy deals or similar pipelines from the energy rich region. The pipeline could lead to a trade corridor between the four countries even extending up to Kazakhstan. Once a secure route and smooth functioning of the route is achieved, the same or alternate routes can be looked into to build a trade corridor.

The pipeline can play a bigger role in Afghanistan especially after the withdrawal of the NATO troupes. India can work with Afghanistan to help increase the security of the country and stabilise it. The pipeline provides a good opportunity to increase India's economic involvement with Pakistan. Perhaps TAPI can bring new energy in the relationship through a bilateral flow, where finished petroleum products can be exported to Pakistan from India and gas from TAPI can come to India from Pakistan.

India's land locked refinery in Bhatinda, Punjab can find a convenient market in land locked Lahore for its excess production. India can look at increasing trade ties and reviving negotiations on a Free Trade Agreement involving Pakistan, Afghanistan and perhaps expanding it to Turkmenistan. India can also use it as a basis to be more involved in the development and capacity building of Afghanistan and Pakistan by extending credit lines and support in return for guaranteeing the safety of the pipeline.

Despite the many benefits of the pipeline, there are some major obstacles, the solutions to which, though not impossible, are very difficult and require negotiations, sustained efforts, a strong will on the part of the individual governments facing the problems and a lot of time.

Reasons for Despair

Security Concerns

While the economic benefits of a successful, insurgency-free, TAPI are listed above, the first and foremost concern of this project is security. Though the consortium is responsible for providing security of the line, it can work only under sovereign guarantees. AON, a risk management services provider company, in a political-risk map of the world in 2011 shows Afghanistan and Pakistan as 'very high risk' countries^{xx}. Some of the criteria in the country risk profile were risks involved in exchange transfer; war/civil war; strikes, riots, civil unrest, terrorism; sovereign non-payment; political interference; supply chain disruption; legal and regulatory disputes.

Afghanistan

Afghanistan's ability to secure the line even in the presence of the U.S. led coalition forces has been in question; once the NATO forces withdraw from the region in 2014, the doubts will become more grave. A number of districts in Helmand and Kandahar are under Taliban control^{xxi}. A classified United Nations risk assessment map of Afghanistan revealed that the security risks from March to October 2010 in Afghanistan had worsened^{xxii}. There is a strong fear of a resurgence of Taliban forces after the withdrawal of NATO forces. Many believe that any political settlement would include some power-sharing agreement between the Taliban and the government in Kabul, while others speculate that the Taliban may be given semi-autonomy in the eastern and southern, Pashtun-held territories^{xxiii}. If either of the options is exercised, the level of governance, the law and order situation and the level of commitment to a project sanctioned by Kabul will become a cause of worry for India.

The pipeline passes through both Pashtun and Baloch dominated areas, where the drug trade is rampant. There is a fear that if the project is successful, it will strengthen the drug lords because of the economic benefits that will ensue. There are examples of US forces paying the local head of private armies - warlords - to guard the supply routes of NATO forces^{xxiv}. While in some cases they have managed to secure the area, it has corroded the already unstable authority of the government at the centre.

In response to the insecurity concerning the project, the Afghan government has plans to increase the number of forces to protect the pipeline from 7,000 to 12,000^{xxv}. In this context, it is good to bear in mind that there are approximately 150,000 US and NATO troops in Afghanistan fighting against a Taliban-led insurgency against the Afghan government^{xxvi}, without much success. The countries involved in the project cannot rely on Afghan forces to guard the line.

It has been suggested that Afghan forces could be bolstered with NATO support to protect the pipeline in Afghanistan. However, NATO nations are sceptical about extending their engagement with Afghanistan and the Afghan government would object to such an arrangement. There are examples of repeated closures of pipelines due to the Kurdish separatist armed groups on the Baku-Tbilisi-Ceyhan (Azerbaijan-Georgia-Turkey) Oil pipeline (launched in 2006), a clear failure of the Turkish military to quell them. Similarly, the US-led coalition forces and the Iraqi military have also been unsuccessful in putting an end to

attacks by insurgents on the Iraqi oil and gas pipelines. After the assassination of Ahmed Wali Karzai, President Hamid Karzai's brother and the head of Kandahar provincial council and Burhanuddin Rabbani, the former president of Afghanistan, the dynamics of the country have further changed.

Pakistan

The security of the pipeline in Pakistan would be under threat from Lashkar-e-Taiba. With Pakistan's military under severe scrutiny given some recent revelations, the degree of protection that can be provided by the state of Pakistan is questionable.

One of the most crucial problems is that the pipeline passes through Baluchistan which is restive and poor, a lethal combination. Armed clashes between the military and the private militia continue. The South Asian Terrorism Portal reports that there have been at least 126 bomb blasts and grenade explosions across the province in 2009 alone^{xxvii}. Rocket attacks on gas pipelines, railway tracks, power transmission lines, bridges, communication infrastructure and government and military facilities occur frequently. Ordons News reports that three gas pipelines in addition to eight others, including two high pressure ones were blown up in Baluchistan in a span of ten days in February, 2011^{xxviii}. Under these circumstances, such a sensitive pipeline, especially one where a disruption will have impact on Pakistan and India, will become a glaring target for the militants.

The South Asian terrorism portal also reports an increase in incidents of targeted killings in Balochistan. There are at least six active insurgent groups in the region. If the government and the military of Pakistan are not able to secure their domestic pipelines, how can they guarantee the security of an international one? In fact, the Asia Times reported on 19th February, 2011 that the Iran-Pakistan gas pipeline project was declared as officially suspended by Iran, at least until next spring^{xxix}, this in spite of Iran having completed most of the construction work on its part. This pipeline was supposed to pass through the troubled Baluchistan area. While there might be other reasons for the suspension, it cannot be a coincidence, that this decision was announced after the series of attacks on gas pipelines in the region.

In the case of the Iran-Pakistan pipeline, Pakistan is liable to pay \$8 million for each day the project is delayed after the end of the deadline^{xxx}. It stands to reason that if TAPI takes off, provisions to cover the losses in case the gas is stopped will be necessary. While it is the responsibility of the consortium to maintain the flow of gas to the countries involved in the project, it will be the death knell of any insurance and re-insurance company given the frequency of the terror attacks. Imposing legal and financial instruments will help ensure that the states conform to the agreement; it will also help boost the efforts to secure the pipeline but it will not have any effect on terrorist activities in the region.

India, being the last country in the supply line, is vulnerable. Closely linked to the security issue is the glaring lack of trust between India and Pakistan. An additional cause for concern stems from the threat of leakages and theft along the route not only in Pakistan, but also in Afghanistan. Pakistan alone is losing around 300 million cubic feet per day causing a loss of almost 20 billion Pakistani rupees^{xxxi}. This will give rise to a parallel black market and further fund the war lords in the region.

Economic Hurdles

Arriving at a consensus on the price of gas is an intractable issue. Turkmenistan had shown reluctance to export gas at a price below \$11.4/mmbtu while Pakistan and India had jointly offered a price of \$5.7/mmbtu in the 10th Steering Committee Meeting in 2008 at the Turkmenistan-Afghanistan border^{xxxii}. \$5.7/mmbtu is higher than the APM rates set by the Government of India in May 2010 which is \$4.2.

At the time, Turkmenistan had a deal with Russia of \$4.25/mmbtu, with Iran of \$4.0/mmbtu and with China of \$5.4/mmbtu with China. India and Pakistan were offering a higher price but the Turkmen government was reluctant to accept a deal, which they considered below the market price. This gas would be viable for the consuming countries only if the rates were substantially lower than LNG rates^{xxxiii}. Currently the delivered price of LNG long-term contracts is close to \$7.5/mmbtu. Therefore, to get gas at the LNG market price^{xxxiv} from a sensitive area while LNG trains and spot cargoes exist is not economical.

Also, the Turkmen government wished to negotiate bilateral pricing deals with the countries involved in the project. However, the Pakistani government suggested a flat rate for all.

There have also been conflicts regarding linking piped gas prices to other energy commodities. Pakistan and India do not want the gas prices to be linked to Liquefied Petroleum Gas (LPG) or crude oil as proposed by Turkmenistan. Instead, Pakistan prefers linking to the domestic price of gas, while India prefers linking to coal. The three buyer countries got together and proposed that the project links the price of gas to the cost of production by Turkmen gas authorities. However, this formula, which can restrict Turkmenistan to a fixed profit margin, was rejected by Turkmenistan. The buyer countries have been forced to link the gas price with some percentage of the world crude oil prices.

Finally, there is the issue of linking transit fees to gas prices. Recently, Afghanistan increased problems for the Indians by refusing to accept a blanket transit fee, which Pakistan had 'informally accepted' in the Iran-Pakistan-India pipeline deal. Afghanistan wants it linked to the price of gas instead^{xxxv}. India has insisted that the transit fee be kept to a minimum for the project to be successful. Our analysis indicates that Afghanistan should accept a fixed transit fee if the gas price is agreed at around \$5/mmbtu. However, if the gas price is around \$10/mmbtu, then it should link to gas prices. Since both Pakistan and India would agree to a figure closer to their \$5.7 mark, it implies that a fixed transit fee would be the better option for Afghanistan. The agreement on transit fee is a prerequisite for negotiating the Gas Sales Purchase Agreement which was expected to be signed by July 31, 2011. At the time of writing this paper, the date for the signing of the crucial Gas Sale Price Agreement had been pushed forward once again. Till an agreement is reached the project cannot proceed further.

From the above analysis, it is evident that the economic issues need to be ironed out before progress on the construction can take place.

Recommendations

There are examples of World Bank projects such as the Chad and Cameroon oil pipeline, Songo Songo gas pipeline^{xxxvi} where energy pipelines have been the catalyst to developmental projects in the area. There are strict social and environmental offset programs which the countries have to follow. In fact, development was part of some of the preconditions for the pipeline.

While the TAPI project seems extremely attractive in theory, there are some serious challenges that must be overcome. Even if there is international support and financing for the project, security will be difficult to guarantee. The project cannot succeed just because it is promoted strongly by the West. The project needs a multi-level approach to tackle cross-border and intra-border issues. There has to be a stable and strong government with an equally strong will to implement the various policies required of this project.

Good local and stakeholder participation and reinvestment of a share of the profits from the sale of gas can go a long way in securing the pipeline. This will lead to regional development along with securing the energy needs of the countries. It will be particularly helpful in Baluchistan where the insurgency problem resulted from lack of infrastructure, development and poverty.

Some Lessons from World Bank Projects

Involvement of primary and secondary stakeholders from the initial stage of the project for greater participation and acceptance is a recommended approach; in this regard public consultations should be undertaken.

Compensation for displacement, if any, should be an integral part of such projects.

Comprehensive analysis of the environmental and social impact and taking the necessary steps to mitigate them is necessary.

A plan for indigenous people should form a crucial part of the project; this should keep the vulnerable ethnic groups and minorities within the vicinity of the project in mind. This encourages people to take ownership of the project and changes the project from one providing only for the needs of the urban civilization to a more inclusive one.

There can be immediate benefits in the short run through job creation during the construction phase. Through sustained capacity building, these jobs can extend to the maintenance phase. Also, it will be ideal for industrial units to establish themselves along the route of the pipeline to be close to the energy source as seen in Afghanistan. If the CSR responsibilities are well managed and the benefits of the pipeline are well diffused, the survival and the smooth functioning of the pipeline will increase.

Inviting the Right Stakeholders

The involvement of Russia's Gazprom along with Turkmenistan's Turkmenengaz and India's ONGC in the consortium for the construction of this project will help secure the pipeline. These organisations have the geostrategic muscle and technical prowess to secure the project. Gazprom, the Russian energy giant has been involved in the construction of several natural gas pipelines across Europe and Central Asia. With 1580.8 trillion cubic metres, Russia has the largest natural gas reserves in the world. Its production and consumption in 2010 was 588.9 billion cubic metres and 414.1 billion cubic metres respectively. It has a highly developed natural gas industry and is the major supplier to Europe. It has one of the world's best, if not the best, technical expertise and personnel for natural gas pipeline construction through difficult terrains. Gazprom has indicated an interest in becoming a part of TAPI. While Turkmenistan may have a problem with Russia, recent reports suggest that Russia and Turkmenistan could agree on new cooperation projects in the oil, gas and transport industries^{xxxvii}. A Turkish Weekly news article says that Russia's First Deputy Prime Minister, Viktor Zubkov, and Turkmenistan's Deputy Prime Minister, Rashid Meredov, confirmed the two countries intent to work together in various fields, particularly energy and the fuel sector.

ONGC India may not have been involved in trans-boundary projects but they have developed extensive experience in developing cross-country networks of oil and gas pipelines in India. ONGC owns and operates more than 22,000 km of pipelines in India, and its presence in the consortium could be valuable in monitoring in Indian interests

The Anglo-Dutch major, Shell, can also be considered as an additional or alternative member of the Consortium. It has the technical expertise and deep country relations. It has re-established good relations with Russia and the two have agreed to develop energy projects on a collaborative basis. It is one of the major buyers operating in Pakistan and hence would be interested in this project. Some of Shell's natural gas projects include Pearl GTL, the world's largest gas-to-liquids plant, located in Qatar. In 2011 Shell announced their decision to invest in Prelude FLNG -- a floating liquefied natural gas facility, to be located off the coast of Australia. This would be the first of its kind in the world. Shell Pipeline Company LP, its pipeline subsidiary, transports more than 2 billion barrel of crude oil and refined products through interstate pipelines in the United States. Shell is also a part of Mackenzie Gas Project in Canada which proposes to develop natural gas fields in the Mackenzie Delta of Canada's Northwest Territories and deliver the gas to markets through a pipeline system built along the Mackenzie valley.

With the impending withdrawal of the American led NATO forces in 2014, there will be an increased role for Russia and India in Afghanistan. A stable Afghanistan is important for both countries. The two nations can help secure Afghanistan through increased security collaboration. Currently, this project enjoys a lot of western support, especially from the USA. However, following the cooling of relations between Pakistan and the US, at least in the near future, Pakistan may not be willing to cooperate with the US. With the reduced influence

of the US in Pakistan, the security that it can guarantee will be drastically lessened. This is where Russia can step in. Its presence will deter Pakistan from being difficult in allowing the supply of gas. Consequently, TAPI could go from being a western backed project to one which will have regional involvement and support.

Financing the New Consortium

The financing of the project would work on multiple levels. First each consortium member would have to raise the equity stake required for the project.

Let us examine a possible scenario from India's perspective. In all likelihood the Indian oil and gas companies, both suppliers and buyers, will form a Special Purpose Vehicle (SPV) with either ONGC or GAIL holding a higher stake. It is this SPV which will be a part of the international consortium. This way the risk is diffused and no one Indian company will have the sole responsibility of such a risky project. To procure the financing required for the initial investment, they will first have to identify reliable buyers like NTPC and secure Take or Pay agreements from them as well as identify reliable intermediaries like BPCL or HPCL. Against this and a Project completion guarantee as well as a Suppliers' Supply or Pay agreement, banks will give loans. Typically the debt equity ratio here will be 2:1 or 3:1.

Each party of the international consortium will raise its equity stake in a similar fashion to procure the loan for the financing required for the project. In this case the possible members are the SPV from India, Turkmengaz, Gazprom and Shell. Each will hold the same equity percent with the operator, who will be responsible for construction of the pipeline, holding a percentage higher than the rest. In the possible member lists, Gazprom, Shell, GAIL and ONGC have the capacity to be the operators. If ADB is willing to finance the project it will also take an equity stake in the project. Its financing conditions are very similar to Export-Credit agreements of EXIM banks. In this manner, the risk of such a huge project can be diffused.

The biggest question which remains is that of insuring and reinsuring the pipeline. While even the insurance is broken down into various components such as supply risk, calamity risk, property damage, terrorist risk etc., it is the terrorist risk and the political risk which are most fraught with problems. There are examples of oil refineries in India, in relatively safe areas, which had to reduce their initial quotation of terrorist risk covers to get bids from insurance companies. In another example recounted by an executive in an Indian Insurance company, a Maoist attack on an oil pipeline in an Andhra refinery led to Rs. 900 crores (\$182 million) of losses. It was the biggest claim made by a company so far. However, the reinsurers in London found a lacuna in the clause and didn't pay the claim. Thus, even a broad based risk cover for this project seems difficult primarily because of the sensitive nature of the product and the territory it goes through.

The risks of this project never getting off the ground or stalling once it is commenced cannot be under-estimated. Adequate stability in Afghanistan and Pakistan are crucial and difficult to guarantee.

Non TAPI Alternatives for India

Membership of the SCO

Membership of the Shanghai Cooperation Organisation (SCO) presents a very good opportunity for India. Most of the member states - China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan - are energy rich. The SCO envisages launching an energy club, establishing a unified energy market and a free trade zone within the member countries. Even if the energy market appears not to be feasible, it will be the perfect bridge to connect Central and South Asia and bring about significant investment opportunities for India. India, Pakistan and Turkmenistan are already observer nations of the organisation and are likely to become members though there might be some preconditions about India-Pakistan settling their disputes before becoming members. However, the membership will give an impetus to TAPI as three of the four countries are potential members under the energy cooperation mentioned in the charter.

Reduce the Share of Natural Gas in the Power Sector

As seen above, the power sector gets the largest share of natural gas. Reducing the share of natural gas in the power sector, will help the move to market based pricing and also free up its use in the other sectors. Consequently, the share of renewable energy can be increased.

Free Trade Agreement between Afghanistan, Pakistan and India

Pakistan and Afghanistan finally signed the Trade and Transit agreement in February 2011. While the treaty still has to be implemented, it is a step towards greater cooperation and increased trade ties between the two nations. India should negotiate with Pakistan to extend this agreement to India as well. It can be the first step towards negotiating a free trade agreement between the three nations following successful implementation of the first treaty. Once transit of goods between the three nations is established, a sensitive commodity like natural gas can also be included in the future.

Diversify Supply Channels

India is heavily dependent upon the Middle-East to meet its energy requirements. While India has traditionally had good relations with these countries, excess dependence on only one region is not beneficial for India. There is a chance of disruption of supply in case of a revolt or political turmoil within the region. In the aftermath of the Arab spring, the Indian government should look at other regions to acquire gas reserves and facilitate energy-swap agreements especially in Central Asia. India should also try to establish and increase supply chains from Africa and the Asia Pacific region. While reducing dependency on the Middle East will be difficult, in the long run, well established supply chains with other parts of the world will help reduce domestic volatility and preserve some security of supply.

Extensive Exploration of Indian Coasts for Natural Gas Reserves

Indian waters are some of the least explored areas for natural gas reserves. Intensive and extensive exploration to gauge domestic availability is required.

Revive Discussions with Myanmar

India should recommence efforts to woo Myanmar for possible LNG exports to India and revive earlier talks of a pipeline from the region passing through Bangladesh. India's relations with Myanmar have improved and the Kaladan project linking land-locked North-East to Sittwe port in Myanmar is already underway. The bilateral ties can be deepened to include energy ties as well.

Aggressive Oil and Gas Diplomacy

However, to ensure and increase the supply of natural gas to the country the Government of India has to follow aggressive energy diplomacy. The possible steps are through increased LNG trains, exploring the possibility of piped gas through land and subsea pipelines from different countries, acquiring gas from overseas fields owned by Indian companies, and facilitating more energy swap agreements through explorations abroad. Efforts should also be made to extensively explore Indian seas for natural gas reserves and increase production of existing reserves. A note of caution should be added about over-production leading to depletion of a scarce resource to meet short term energy demands at the risk of long term energy security.

Subsea Routes to Consider

A recent study conducted by officials of Peritus International Ltd and South Asia Gas Enterprise Private Limited (SAGE) and presented at the Off-Shore technology conference in Texas in May 2011^{xxxviii}, builds on the possibility of Oman-India pipeline which was unfeasible in the 1990s. The research suggests that the technology in this domain has improved a lot in the last decade making it possible to build a pipeline at 3,000 mts depth and above. Though Oman's export of natural gas is not high, it will give an all important, continuous entry into the middle-east. The off-shore pipeline can be extended to either UAE or Qatar. The Baltic Sea portion of the Nord Stream pipeline between Russia and Germany is one such ambitious project. The on-shore pipeline in Russia and the off-shore route of 1,222 km (passing through Russian, Finnish, Swedish and Danish economic zones) would make it the longest pipeline^{xxxix}. The off-shore section is estimated to cost €8.8billion. There are examples of installed deep-sea pipelines at depths of 2,500-3,000 mt. For example Shell's Perdido pipeline in the US Gulf of Mexico is at 2,961 mts^{xl}.

India and Iran

Iran is extremely important to India - geo-strategically in terms of entry into Afghanistan and because of India's energy dependency. With western sanctions on Iran and pressure on India to review its relations with Iran, a subsea natural gas pipeline would find few financiers. However, India needs to cultivate and maintain independent relations with Iran and exploit the option of a natural gas pipeline if the opportunity presents itself. Historically India has imported oil and LNG from Iran and international opinion should not change that.

Conclusion

Demand for natural gas in India is bound to increase with improved living standards and a buoyant economy. However, India must remain wary of projects that are inherently risky. Much capital can be lost if the project becomes hostage to terrorist groups.

To answer the question posed in the title, unless some critical security and financial issues are ironed out, TAPI is likely to add to India's woes and increase threats to national security. Natural gas, however, is clearly an alternative fuel to consider, and thus in the interim, India should continue to emphasize consumption of natural gas and explore the use of alternative, cleaner fuels.

Citations

- ⁱ <http://www.naturalgas.org/environment/naturalgas.asp>
- ⁱⁱ BP Statistical Report of world energy, June 2011
- ⁱⁱⁱ They are Belgium, Italy, Kazakhstan, Romania, Russian Federation, Switzerland, Turkey, Turkmenistan, Ukraine, United Kingdom and Uzbekistan.
- ^{iv} However, a note of caution must be introduced. Natural gas will not do away with environmental concerns. It is simply a much better option to oil and coal and helps reduce emissions though not sufficiently. In the long term, renewable energy is the best option.
- ^v (Integrated Energy Policy of India, August 2006)
- ^{vi} (Gas in 2020: A perspective, McKinsey and Company, Asia Gas Partnership Summit April 2008)
- ^{vii} (Basic Statistics on Indian Petroleum and Natural Gas 2009-10)
- ^{viii} (BP Statistical Report of World Energy June 2011)
- ^{ix} (Sreenivas April 2011)
- ^x (Moe 2008)
- ^{xi} (CNPC announces Kenkiyak-Kumkol section of Kazakhstan-China Oil Pipeline becomes operational 15)
- ^{xii} (Foster 2010)
- ^{xiii} (Project Update: Turkmenistan–Afghanistan–Pakistan–India (TAPI) Pipeline 2011)
- ^{xiv} BP Statistical Report of World Energy June 2011
- ^{xv} (Chazan 2008)
- ^{xvi} (Bhutta 2011)
- ^{xvii} Ibid.
- ^{xviii} (Wirsing 2008)
- ^{xix} Number calculated on the basis of the predictions for the next 3-5 years in Gas Market Outlook published by India Infrastructure Research, April 2010.
- ^{xx} See map at (Terrorism and Political Violence Map: 2011 Political Risk Map 2011)http://www.aon.com/risk-services/political-risk-map2/map/Interactive_Risk_Map/2011_Political_Risk_Map/index.html
- ^{xxi} See map at (Ethnicities and Taliban presence in Afghanistan 2009)http://www.lib.utexas.edu/maps/middle_east_and_asia/afghanistan_ethnicities_and_taliban_presence_map_15Dec2009.jpg
- ^{xxii} See map at (Nelson 2010) <http://www.dailymail.co.uk/news/article-1341986/Classified-maps-security-Afghanistan-worsening-despite-Obamas-assurances-war-track.html>
- ^{xxiii} (Cunningham 2011)
- ^{xxiv} (Filkins 2010)
- ^{xxv} (Afghan Forces to protect gas pipeline 2011)
- ^{xxvi} (Filkins 2010)
- ^{xxvii} (Lakshman 2009)
- ^{xxviii} (Three more Gas pipelines blown in Balochistan 2011)
- ^{xxix} (Cutler 2011)
- ^{xxx} (Rana 2011)
- ^{xxxi} *ibid*
- ^{xxxii} (Gas pricing formula: Tapi technical talks inconclusive 2011)
- ^{xxxiii} Look at pricing above for various LNG market prices
- ^{xxxiv} See gas pricing in India for JCC market price.
- ^{xxxv} (Jacob 2011)
- ^{xxxvi} (Robelus 2005)
- ^{xxxvii} (Russia, Turkmenistan to Agree on New Projects in Oil, Gas, Transport 2011)
- ^{xxxviii} Nash and Roberts 2011
- ^{xxxix} (Nord Stream Report, Chapter 4, Description of the project n.d.)http://www.nord-stream.com/fileadmin/Dokumente/eia_permitting/Chapter_04/Nord_Stream_Espoo_Report_English_Chapter_04.pdf
- ^{xl} (Now that's deep: Technip sets records with Perdido pipeline installations 2009)
<http://cdiver.net/commercial-dive-companies/now-thats-deep-technip-sets-records-with-perdido-pipeline-installations/>

Bibliography

"Afghan Forces to protect gas pipeline." *Press TV*. June 6, 2011. <http://www.presstv.ir/detail/183508.html> (accessed June 2011).

Basic Statistics on Indian Petroleum and Natural Gas. New Delhi: Ministry of Petroleum and Natural Gas, Government of India, 2009-10.

Bhutta, Zafar. "TAPI pipeline: ADB offers to step in as transaction adviser ." *The Express Tribune, Pakistan*. June 13, 2011. <http://tribune.com.pk/story/187849/tapi-pipeline-adb-offers-to-step-in-as-transaction-adviser/> (accessed June 2011).

BP Statistical Report of World Energy. BP, June 2011.

Chazan, Guy. "Turkmenistan Gas Field Is One of World's Largest ." *The Wall Street Journal*. October 16, 2008. <http://online.wsj.com/article/SB122409510811337137.html>.

"CNPC announces Kenkiyak-Kumkol section of Kazakhstan-China Oil Pipeline becomes operational ." *Your Oil and Gas News*. July 2009, 15. http://www.youroilandgasnews.com/cnpc+announces+kenkiyak-kumkol+section+of+kazakhstan-china+oil+pipeline+becomes+operational_35798.html (accessed June 2011).

Cunningham, Erin. "Peace talks with Taliban in Afghanistan have begun, US confirms." *The National*. June 21, 2011. <http://www.thenational.ae/news/worldwide/south-asia/peace-talks-with-taliban-in-afghanistan-have-begun-us-confirms> (accessed June 2011).

Cutler, Robert. "Iran Ga Pipeline to Pakistan on Hold." *Asia Times*. February 19, 2011. http://www.atimes.com/atimes/South_Asia/MB19Df01.html (accessed July 2011).

"Ethnicities and Taliban presence in Afghanistan." *Texas University Library*. December 15, 2009. http://www.lib.utexas.edu/maps/middle_east_and_asia/afghanistan_ethnicities_and_taliban_presence_map_15Dec2009.jpg (accessed June 2011).

Filkins, Dexter. "Rule of the Gun: With U.S. Aid, Warlord Build Afgha Empire." *The New York Times*. June 5, 2010. <http://www.nytimes.com/2010/06/06/world/asia/06warlords.html> (accessed June 2011).

Foster, John. "Afghanistan, the TAPI Pipeline, and Energy Geopolitics ." *Journal of Energy Security*. March 23, 2010.

http://www.ensec.org/index.php?view=article&catid=103%3Aenergysecurityissuecontent&id=233%3Aafghanistan-the-tapi-pipeline-and-energy-geopolitics&tmpl=component&print=1&page=&option=com_content&Itemid=358 (accessed June 2011).

Gas in 2020: A perspective, McKinsey and Company, Asia Gas Partnership Summit. Mckinsey, April 2008.

"Gas pricing formula: Tapi technical talks inconclusive." *Business Recorder*. February 12, 2011. <http://www.brecorder.com/top-stories/single/595/0/1154209/> (accessed July 2011).

"Gas pricing formula: Tapi technical talks inconclusive." *The Business Recorder, Pakistan*. February 11, 2011. <http://www.brecorder.com/top-stories/single/595/0/1154209/> (accessed June 2011).

Integrated Energy Policy. Report for the expert committee, New Delhi: Planning Commission, Governemtn of India, August 2006.

Jacob, Jayanth. "Kabul Rider on TAPI shocks Delhi." *The Hindustan Times*. June 18, 2011. <http://www.hindustantimes.com/Kabul-rider-on-TAPI-gas-pipeline-shocks-Delhi/Article1-711066.aspx> (accessed June 2011).

Lakshman, Kanchan. "South Asia Intelligence Review ." *South Asia Terrorism Portal*. November 2009, 2009. http://www.satp.org/satporgrtp/sair/Archives/sair8/8_20.htm#assessment1 (accessed June 2011).

Moe, Wai. "China Signs Burmese Gas Deal for 30-year Supply." *The Irrawaddy covering Burma and South East Asia*. December 26, 2008. http://www.irrawaddy.org/article.php?art_id=14849 (accessed June 2011).

Nash, I.F.J., and P. Roberts. "MEIDP -The deep sea gas route to India." 2011.

Natural Gas and the Environment.

<http://www.naturalgas.org/environment/naturalgas.asp>.

Nelson, Sara. "Revealed: The classified maps that show Afghanistan is becoming more dangerous... with number of high risk areas spreading." *Daily Mail, UK*. December 28, 2010. <http://www.dailymail.co.uk/news/article-1341986/Classified-maps-security-Afghanistan-worsening-despite-Obamas-assurances-war-track.html> (accessed July 2011).

Nord Stream Report, Chapter 4, Description of the project. Nord Stream

"Now that's deep: Technip sets records with Perdido pipeline installations." *The Commercial Demand Network*. March 18, 2009. <http://cdiver.net/commercial-dive-companies/now-thats-deep-technip-sets-records-with-perdido-pipeline-installations/> (accessed August 2011).

"Project Update: Turkmenistan-Afghanistan-Pakistan-India (TAPI) Pipeline." *Global Gas Transport: Information and analysis on global gas transport and storage*. June 1, 2011. <http://www.globalgastransport.info/archive.php?id=1246> (accessed June 2011).

Rana, Shahbaz. "Gas Imports: Pakistan to build offshore LNG terminals." *The Express Tribune, Pakistan*. March 12, 2011. <http://tribune.com.pk/story/131460/gas-imports-pakistan-to-build-offshore-lng-terminal/> (accessed July 2011).

Robelus, Robert. "World Bank Safeguard Policies in Four African." In *Oil and Gas Pipelines Social and Environmental Impact*, by Robert Goodland, edited by Robert Goodland, 29-42. 2005.

"Russia, Turkmenistan to Agree on New Projects in Oil, Gas, Transport." *Turkish Weekly*. August 13, 2011. <http://www.turkishweekly.net/news/121730/russia-turkmenistan-to-agree-on-new-projects-in-oil-gas-transport.html> (accessed September 2011).

Sreenivas, Ashok. *Strengthen inclusive growth through transparency and allocation efficiency in the gas sector*. Note for the Government of India committee on natural resources, Prayas Energy Group, April 2011.

"Terrorism and Political Violence Map: 2011 Political Risk Map." *AON Risk Solutions*. 2011. http://www.aon.com/risk-services/political-risk-map2/map/Interactive_Risk_Map/2011_Political_Risk_Map/index.html (accessed June 2011).

"Three more Gas pipelines blown in Balochistan." *Ordon News*. February 13, 2011. <http://www.ordons.com/asia/southeast-asia/10200-three-more-gas-pipelines-blown-up-in-balochistan.html> (accessed June 2011).

Wirsing, Robert. "Balochistan Nationalism and the Geopolitics of Energy Resources: The Changing Context of Separatism in Pakistan." *The Strategic Studies Institute Army*. April 17, 2008. <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=853> (accessed June 2011).