Security of energy supply and the geopolitics of oil and gas pipelines

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Key words: cross-border, transit countries, interdependence, politicization, power game, geopolitics

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Abstract

The geopolitical factors related with oil and natural gas derive from the mismatch of location between reserves/production and consumption. Among major fossil fuels, this mismatch is the largest for oil, and the smallest for coal. Natural gas stands in the middle in this regard. The majority of oil and natural gas is transported by ship or pipeline. While almost 90 % of oil trade relies on ship, nearly 70 % of natural gas trade is shipped by pipeline.

A cross-border pipeline is more secure than people may think. Most of newly built pipelines are buried in the ground, and they may not be attractive targets of terrorism. The difficulty of a cross-border pipeline exists in its geopolitical complexity. It is not only oil or natural gas but political messages that flow through a pipeline.

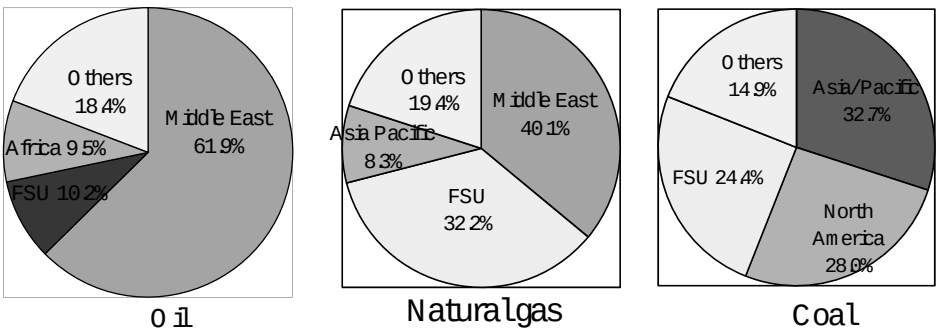
While economic rationale may justify the construction of a cross-border pipeline, geopolitics can kill it. However, geopolitics alone cannot materialize a cross-border pipeline without economic rationale.

1. The geopolitics of energy

In order to explain the concept of the geopolitics of energy, it will be most appropriate to quote what the late Melvin A. Conant said. He served as the editor of a journal called "Geopolitics of Energy" over years. He wrote that "geo" refers to the location of reserves, and that "politics" reflects the decision of importing and exporting governments affecting access to suppliers.[1] This concept is generally applicable to natural gas and other hydrocarbon or mineral resources.

If oil and natural gas were consumed in the same region of production, there will be no need for long-haul transport by oil tankers, LNG carriers or cross-border pipelines. The pie charts below show the location of proven reserves of oil, natural gas and coal.

Figure 1. Location of Proven Reserves



Note: FSU=Former Soviet Union At end 2005 BP Statistics

5

Geopolitical factors tend to gain greater importance as the mismatch between reserves/supply and consumption becomes larger. The mismatch is most obvious in the case of oil, therefore, geopolitical factors play an important role in the world of oil. History shows that many wars were

[1] John F. Devlin, The Universe of Oil (p.265), Canadian Energy Research Institute, 1999.

fought in quest of oil resources. Coal reserves are well diversified over the main consuming regions including Asia-Pacific. This is why we hear very little about geopolitical concerns over coal. Natural gas stands in the middle of those two fossil fuels.

Natural gas used to be traded within the three regions, namely Asia-Pacific, Europe and North America. Even Asia-Pacific was almost self-sufficient in natural gas as the exports from Indonesia, Malaysia, Brunei and Australia almost satisfied the import needs of Japan, Korea and others until recently.

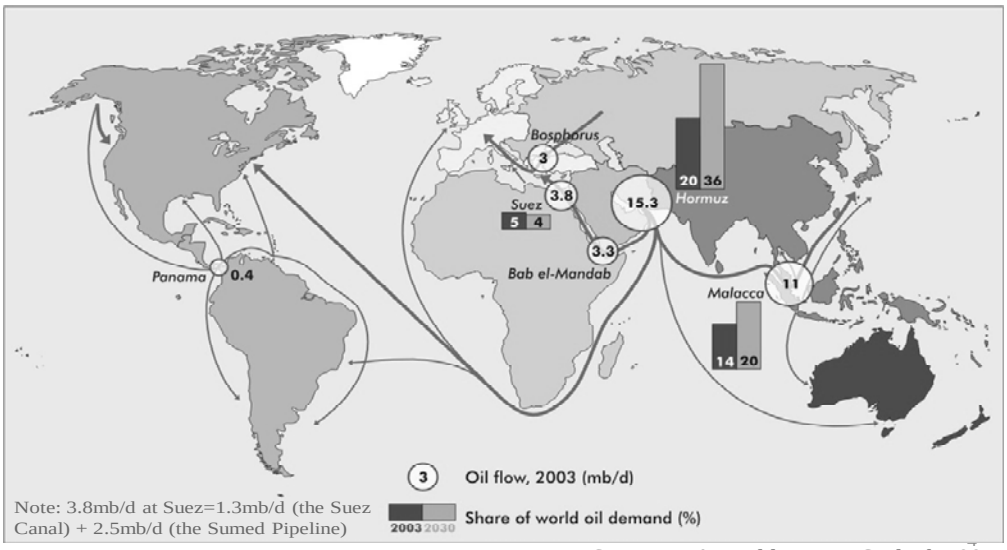
2. The transport of oil and natural gas

The transport of oil and natural gas was mostly done by pipeline and ship. Almost 90% of cross-border trade of oil is done by ship and pipelines will be competitive if they could be built onshore (e.g. the Druzhba pipeline from Russia to Europe with a capacity of 1.2 to 1.4 mb/d). Natural gas offers a good contrast to oil as nearly 70% of cross-border trade is done by pipeline. However, the volume of natural gas traded in the form of LNG is constantly increasing. The IEA projects that more than 50% of all inter-regional gas trade will be by LNG carrier by 2030.[2]

Marine transport faces security problems due to sea-lane chokepoints. There are six major chokepoints where oil, natural gas, coal and various cargo ships go through. The chart below shows the volume of oil flow in million barrels per day.

[2] World Energy Outlook 2004 (p.141), IEA, 2004

Figure 2. Chokepoints of Maritime Transport

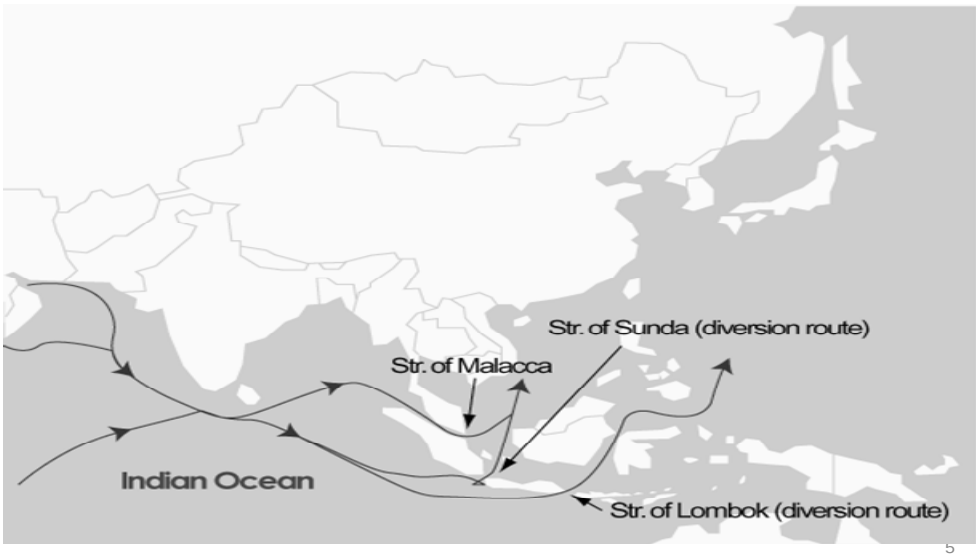


Source: IEA World Energy Outlook 2004

The Strait of Hormuz has the largest oil flow from the Persian Gulf to the international market. This strait is deep and at least 9.8 km wide, therefore it is impossible to block the strait even if several tankers may sink in the middle of the water way. The security concern is particularly serious in the Strait of Malacca, where most of oil tankers and LNG carriers from the Middle East and Africa go through to East Asia. For example, almost 90 % of Japanese oil imports and around 80 % of Chinese oil imports are transported through this strait. It is 900 km long and the narrowest part is only 500 meters wide near Singapore. It is congested with the transit of some 180 ships (over 300 tons) per day. In 2006, there were 65,649 transit traffic, of which 33% was tankers including 3,851 transit of VLCCs (Very Large Crude Careers).[3] Piracy and armed robbery are serious daily concerns and the risk terrorism is real. Although there are diversion routes as below (the Straits of Sunda and Lombok), the use of those routs requires four to five extra days for a double journey. On top of this, the navigation aid facilities are not upgraded enough to allow passage of many ships.

[3] Maritime Department Peninsular Malaysia, 2007.

Figure 3. Sea Lane Chokepoints in Asia



Source: APERC

3. Transport by a cross-border pipeline

A cross-border pipeline faces a set of problems much more complex than marine transport. It may take a decade of longer before the actual construction starts. The following conditions will be required to materialize a cross-border pipeline.

(1) The availability of oil or natural gas reserves to justify pipeline construction,
(2) The availability of oil or natural gas demand to justify pipeline construction,
(3) Strong political will to promote pipeline construction,
(4) Support from the transit countries and local authorities/communities,
(5) The availability of risk capital and finance to support massive investments,
(6) Appropriate financial regime to make pipeline business sustainable,

(7) Political and social stability of the transit countries and the neighbouring regions,
(8) Proper management of geopolitical risks as political messages may flow through a pipeline.

3.1. Landlocked countries

Pipeline transport gains particular importance for landlocked countries. The international community, notably the United Nations, had been discussing the issue of landlocked countries over years. There are about 30 countries of this category, the majority of which are either least developed countries or economies in transition. The disadvantage is that they have to depend upon the transit countries to have access to the sea and international market. Attention became even higher as new gigantic oil fields were discovered in the Caspian region, notably Azerbaijan and Kazakhstan.

3.2. The Almaty Program of Action

From 28 to 29 August 2003, the United Nations General Assembly convened the International Ministerial Conference of Landlocked and Transit Developing Countries in Almaty, Kazakhstan. The Conference adopted the Almaty Program of Action (APA) addressing the special needs of landlocked developing countries. Part of which was devoted to pipelines as follows:[4]

"26. Pipelines provide a cost-effective means of transport for both oil and natural gas. The planning and construction of pipelines require close cooperation between landlocked and transit developing countries. The substantive investments that are required for the construction of pipelines necessitate capital investment from the private sector as well.

27. The following specific action is required: landlocked and transit developing countries should cooperate and coordinate to construct pipelines along the most cost-effective and most suitable or shortest routes, taking into account the interests of parties concerned."

Those paragraphs underscore the conditions necessary to materialize a cross-border pipeline mentioned above.

[4] Almaty Programme of Action, paragraphs 26-27 (Pipelines), August 2003.

4. The security of supply by pipeline

The historical record may suggest that oil and natural gas transport by pipeline is surprisingly secure. Apart from the special situation in Iraq, there were virtually no serious damages to pipelines as to cause significant disruption of oil and natural gas supply. I followed up pipeline security when I was serving at the IEA. Being responsible for the oil market and emergency preparedness, I visited several countries to discuss pipeline security. Two examples are shown below.

4.1. The Petroline of Saudi Arabia

In 1997, during my visit to Saudi Arabia, I had a discussion on the security of the Petroline crossing Saudi Arabia form the Persian Gulf to the Red Sea. Its capacity was 3.5 mb/d, but it could be expanded up to 5mb/d in an emergency such as the closure of the Strait of Hormuz to shift as much oil as possible away from the outlet through the strait. What if this pipeline were attacked and damaged? It was understood that even the most serious damages to the Petroline could be repaired within a week or two by mobilizing some 3000 workers if necessary.

4.2. The Kirkuk-Ceyhan pipeline

The Kirkuk-Ceyhan pipeline runs from Kirkuk, a major oil producing region in the northern Iraq, to the Ceyhan terminal in Turkey on the coast of the Mediterranean Sea. With a capacity of 1 mb/d, this pipeline serves as the outlet of Iraqi oil to the European market. Part of the route of the pipeline belonged to an unstable region. At my visit to Turkey in 1998, I was told that this pipeline was bombed by guerrillas several times in the early years after the completion. Every time bombed, the damages were repaired very quickly. The guerrillas used to watch how the reparation works went from behind the mountain. They lost interest in bombing as the reparation went so smoothly causing a very limited disturbance on oil flow from Kirkuk.

4.3. Pipeline as target of terrorism

Those episodes may suggest that oil and gas pipelines are not an ideal target of terrorism, if any. Generally, pipelines are built in the area remote to densely inhabited areas. The video image of pipeline bombing may not necessarily be appealing or shocking to the eyes the general public. You could recall the shocks given by the attacks against the twin towers of the World Trade Centre, NY, on 11 September 2001. Above all, more and more pipelines constructed today tend to be buried in the ground. For instance, the Baku-Tbilisi-Ceyhan (BTC) pipeline, completed in May 2005, is mostly buried in the ground through its 1,760 km long route. Therefore, oil and gas pipelines are assumed to be relatively safe from physical attacks.

5. The four phases of a cross-border pipeline

In my understanding, there will be four phases before a cross-border pipeline is put into actual operation. They are "conceptual phase", "politicization phase", "commercialization phase" and "construction phase".

5.1. The conceptual phase

Every big project has its beginning. It may starts with someone dreaming of or putting an idea on the table. Then a blueprint will be made and feasibility studies may follow. There should be enough oil or gas reserves at one end of the pipeline and sufficient demand at the other end. Some projects may disappear in this earliest phase, particularly when it is not economically viable.

5.2. The politicization phase

This phase is usually inevitable for a cross-border pipeline. In a sense, this process will be necessary to evaluate the scope and extent of geopolitical complexity associated with the project. Again, some projects may disappear in this phase even if it might be economically viable. The pipeline route may be changed or fine-tuned to accommodate with the conflicting interests

among players concerned. Support from the transit countries and the local authorities/communities bears critical importance.

A pipeline carries not just oil or natural gas but political messages. It often changes the power balance in the region and consolidates interdependence among countries connected by the pipeline.

5.3. The commercialization phase

This process is important to decide economic and commercial viability of a pipeline. As the investment need will be massive, the availability of risk capital and finance is critical. Again, some projects may be abandoned in this phase.

An appropriate financial regime needs to be worked out such as pipeline tariffs, transit fees, return on investment, and pricing formula of oil and natural gas. Pipeline business model should be carefully designed to be sustainable over the decades to come after the commencement of its service. This is a very long-term business.

5.4. The construction phase

Once all the earlier phases have passed, pipeline construction will be carried out within a relatively short period. This does not mean that the construction process is not challenging. In the case of the BTC pipeline, it crossed 150 rivers and the highest part reached by the pipeline was over 2,800 m high from the sea level. However, the quality of steel used for pipeline has improved over years to become lighter and stronger and engineering technology has advanced too.

Another point to be mentioned is that the construction work proceeds at several points simultaneously. Therefore it is not surprising to find that a pipeline could be laid down a few kilo meters per day once preparatory works have been completed.

6. The case studies of three pipelines

Eurasia is like a showcase of oil and gas pipelines at various phases. Some have been in service over decades. Some are just completed. Others are under construction or yet to be constructed. Three pipelines are selected, here, for case studies.

(1) The Baku-Tbilisi-Ceyhan (BTC) oil pipeline offers an interesting example where the interests of superpowers, landlocked countries and transit countries inter-wind.

(2) The Eastern Siberia-Pacific Ocean (ESPO) oil pipeline presents a unique case of ongoing tripartite power games among China, Japan and Russia

(3) The Iran-Pakistan-India (IPI) natural gas pipeline currently stands on a delicate position between the politicization phase and the commercial phase.

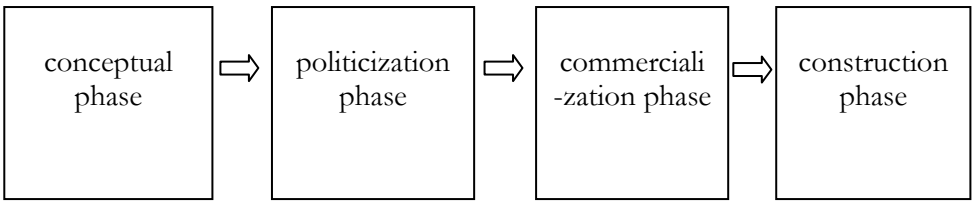
The table below shows the comparison of the basic data of the three pipelines.

Table 1. The Comparison of the Three Pipelines

	BTC	ESPO	IPI
Full Name	The Baku-Tbilisi-Ceyhan Pipeline	The Eastern Siberia-Pacific Ocean Pipeline	The Iran-Pakistan-India Pipeline
Company	BTC Company (BP, AzBTC, Chevron, Statoil, others)	Transneft (Russian state's pipeline company)	Not known yet
Construction	2003-2005	1st stage (2006-2008)	The earliest possible in 2010? (commencement)
Countries	Azerbaijan-Georgia-Turkey	Russia (with a spur to China)	Iran-Pakistan-India
Length	1,760km	4,300km (1st stage 2,760km)	2,600km
Capacity	1mb/d (oil)	1st Stage 1.6mb/d (oil) 2nd Stage 1mb/d (oil)	2.8mt/year (natural gas)
Costs	$3.6bln	$5bln(2002) - $10bln(2003) - $16bln(2006)	$7bln
Reserves	The Azeri-Chirag-Gunashli field (Azerbaijan)	Eastern Siberia (Russia)	The South Pars field (Iran)
Consumers	European countries (by oil tankers from Ceyhan Terminal, Turkey)	China (1st Stage) North East Asia (2nd Stage)	India, Pakistan (in future)

It will be interesting to apply the four-phase approach mentioned above to those three pipelines. Publicly available data and information suggest the following chronological developments:

Figure 4. Four phases of a cross-border pipeline



BTC	1991-1994	1994-1999	1999-2003	2003-2005
ESPO	2001-2003	2003-2005	2005-2006	2006(1st Stage)
IPI	1994-2000	2000-2007 (?)	2007 (?)-	

7. The Baku-Tbilisi-Ceyhan (BTC) pipeline

In November 1905, Mr. J. D. Henry, a British journalist who visited Baku reported as follows;[5]

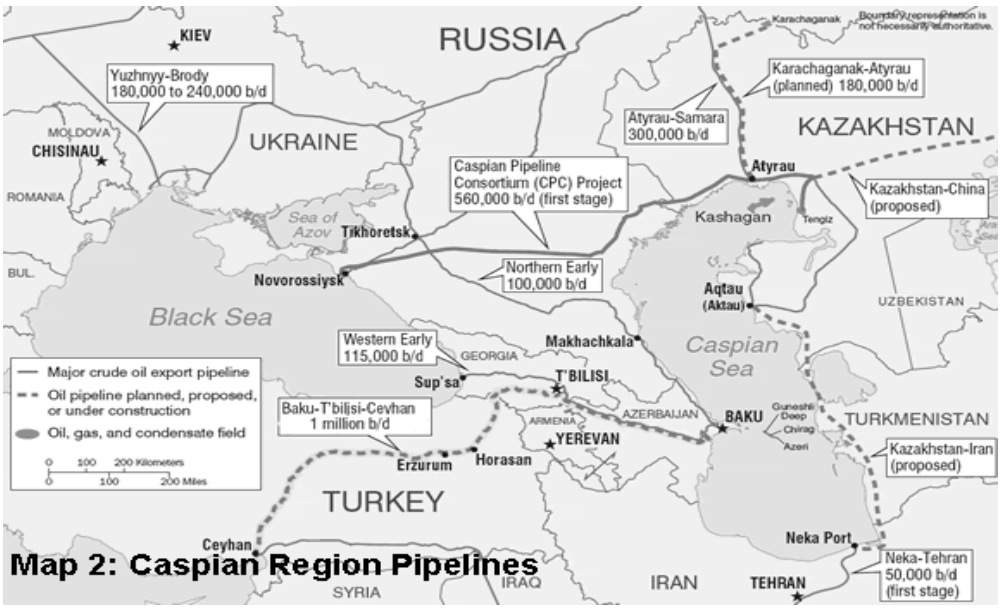
"The Caucasus is endowed by nature with a practically inexhaustible mineral wealth ------ British interests should be well represented in this country (Azerbaijan) of great potentialities, and steps should be taken to strengthen the bonds which connect Britain to it."

It is both interesting and even romantic to find that someone dreamed of something like a BTC pipeline of today a hundred years ago. At the end of the 19th century, Baku was the largest oil producing region in the world, and the access to natural resources like oil was one of the core drivers of the

[5] Central Asia and Caspian Pipeline Study 2006, MEC International Ltd., 2006.

Great Game, the rivalry and strategic conflict between the British Empire and the Russian Empire for the supremacy in Central Asia through the 19th century to the beginning of the 20th century..

Figure 5. The Map of the BTC pipeline



Source: USDOS

7.1. The conceptual phase

The concept of the pipeline became visible in October 1992, when the Azerbaijan Pipeline Accord was signed by the President of Azerbaijan and the President of Turkey at the Turkic Countries Summit held in Ankara.

The feasibility studies were carried out with the destination of the pipeline at Ceyhan, a deepwater Mediterranean port of Turkey. The Ceyhan terminal was known as the northern outlet of Iraqi oil transported by the Kirkuk-Ceyhan oil pipeline. The starting point was Baku, however, the difficulty existed in the choice of the transit countries; Iran, Armenia and Georgia.

7.1.1. Baku-Iran (Nakhichevan)-Eastern Turkey-Ceyhan

This route was the shortest cut and the easiest from engineering point of view. The mountains in Eastern Turkey were not so high compared with the Anatolia Mountains. Therefore, from economic rationale, this must have been the most attractive choice. However, there was a strong opposition from the USA against the transit through Iran for obvious reasons.

7.1.2. Baku-Armenia-Iran (Nakhichevan)-Eastern Turkey-Ceyhan

This was another short cut from Baku to Ceyhan, and also was considered as a means to bring peace to Nagorno-Karabakh. However, the Nagorno-Karabakh conflict was ongoing and the US Government opposed to this option too.

7.1.3. Baku-Georgia (Tbilisi)-the Anatolia Mountains-Ceyhan

This route was free from the obstacles faced with the two options above. However, the longer distance and the higher mountains meant the increased costs of construction. Engineering became even more challenging.

7.2. The availability of resources

There was a solid market for Azeri oil if transported to the Mediterranean coast of Turkey. However, the biggest issue was when and how oil could be extracted from under the ground. More importantly, the feasibility studies above were, in a way, nothing more than academic in the absence of the oil production arrangement. Therefore, the signing of the production sharing agreement in September 1994 by BP, its partners and the Azerbaijan Government to develop the Azeri-Chirag-Gunashli (ACG) oil field marked a critical step for the materialization of the dream pipeline. Following this, in February 1995, the Azerbaijan International Operating Company (AIOC) was formed to develop the ACG field. Ten companies participated in AIOC: BP (34.1%), Unocal, SOCAR, Lukoil (later sold to Inpex), Statoil, ExxonMobil and others.

7.3. The politicization phase

In October 1998, I visited Ankara and Ceyhan as part of the mission of the IEA. I recall it was a very delicate period for the BTC pipeline. By that time, the only route left was the current one to transit through Georgia. The problem was its economics as mentioned in 7.1. Oil prices were very low (around $12-14 per barrel) and still declining due to the Asian financial crisis since mid 1997. Oil companies, large and small or national and international, suffered from the price drop and were extremely careful in investing in a big project.

Due to the choice of the Georgian route, the construction costs of the pipeline climbed to $3.5 billion. The US Government strongly supported this route mainly for two reasons. Firstly, this pipeline allowed a landlocked country like Azerbaijan to have a new oil export route other than those through Russia. Ultimately, even oil from Kazakhstan could be exported by this pipeline. Russian influence in the Caspian Region would be diminished to that extent. Indeed, political messages flew through this pipeline well before it was built. This is part of the New Great Game. Secondly, this route bypassed Iran and Armenia.

However, the most serious player might have been Turkey. Dr. Yigitguden, Undersecretary of the Ministry of Energy and Natural Resources, impressed me with his firm determination to materialize this pipeline. The biggest concern of the Turkish Government was the possible accidents of oil tankers in the Strait of Bosporus. The strait connecting the Black Sea and the Mediterranean Sea was already extremely congested, and an accident of a fully-loaded oil tanker could cause serious environmental damages due to oil spill. If explosion may occur, the fire will seriously damage the inhabited areas on both sides of the strait. Those were the nightmares for the Turkish authorities, and they wanted to mitigate the congestion of the traffic through the strait by shifting a significant portion of oil flow to the BTC pipeline.

The Undersecretary explained that $3.5 billion could be decreased to $3.2 billion if calculated on the basis of the wages of Turkish workers. According to him, the calculation of the costs by a foreign consulting firm was based on the wages of European workers. There was a rumour that this pipeline had a 50 to 50 chance of materialization due to its high costs. Even if the first oil from the Chirag 1 (part of the ACG field) started to flow in

November 1998, there were uncertainties about the future of the pipeline. Reflecting such situation in the market, one of the influential energy journals reported as the following;[6]

"Investors not governments decide what's commercial and what's not. Investors not governments will decide whether to place at risk $4 billion that the Baku-Ceyhan project might require. Under Clinton the government intrudes too frequently in foreign commerce to pursue policy goals too often flawed. The Baku-Ceyhan pipeline should be built only if – and only when – investors decide it makes commercial sense. Because the US has no proper say in that decision, it should quit saying anything at all."

7.4. The commercialization phase

A clear departure from the stalemate came when Lord Brown, the CEO of BP, formally addressed BP's interest in the BTC pipeline in October 1999. The Framework Agreement (including Construction Agreements) was signed by the Presidents of the three countries at the Summit of the Organization for Security and Cooperation in Europe (OSCE) in Istanbul in November 1999. The BTC Company was formed in August 2002 with BP as the main shareholder (38.21%) with SOCAR, Statoil, Unocal, TPAO, ENI, Itochu, and Amerada Hess.[7] In June 2001, detailed engineering work commenced.

Major efforts were made to secure external project financing from the International Finance Corporation (a member to the World Bank Group), the European Bank for Reconstruction and Development (EBRD) and a group of commercial banks.[8] Oil prices recovered from the lows and continued to rise, making the investment climate more favourable for such oil infrastructure development.

7.5. The construction phase

In April 2003, the construction of the BTC pipeline started. The latest technology and skill were introduced. The construction work was smooth and fast to celebrate the official inauguration of the pipeline in May 2005 in

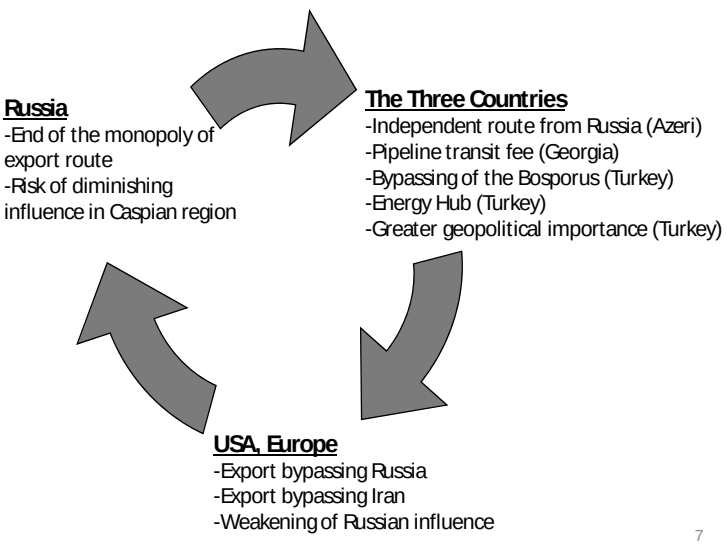
[6] The Oil and Gas Journal, September 1999.
[7] Alexander's Gas & Oil Connections, 23 August 2002.
[8] BP Homepage (The Baku-Tbilisi-Ceyhan Pipeline: Diary of a pipeline)

Azerbaijan. It took almost a year for oil to fill the pipeline till Ceyhan. British ship "Hawthorn" loaded the first cargo of BTC oil in June 2006. Kazakhstan President and Azeri President agreed to export Kazak oil by this pipeline around this time. The official inauguration was held at the Ceyhan terminal in July. Although the original capacity of the pipeline is 1m b/d, there is no technical difficulty in expanding its capacity to 1.5 m b/d.

7.6. The geopolitics of the BTC pipeline

There are three big players (or group of players) with vested interests in the BTC pipeline. The three countries (Azerbaijan, Georgia and Turkey) are the direct beneficiaries with different interests. Russian interests are affected negatively in contrast to those of the USA and Europe. The following cycle may explain geopolitical power game among them.

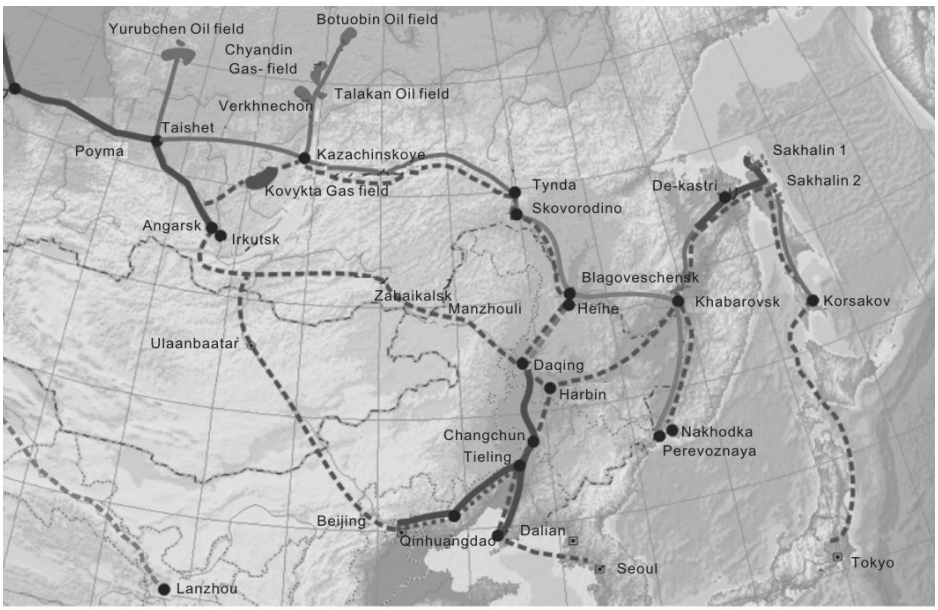
Figure 6. The Geopolitics of the BTC Pipeline at a Glance



8. The Eastern Siberia-Pacific Ocean (ESPO) pipeline

From geopolitical perspectives, the Eastern Siberia-Pacific Ocean (ESPO) pipeline presents a unique case of tripartite power game among China, Japan and Russia. Originally, it was Russia and China that discussed building an oil pipeline from Eastern Siberia to China. But, somehow, Russia approached Japan about a new pipeline plan from Eastern Siberia to the Pacific coast of Russia, Japan became very serious about this pipeline, thus the tripartite power game was kicked off.

Figure 7. The Map of the ESPO pipeline (including other planned pipelines)



Source: IEEJ

8.1. The pre-ESPO phase

From 1996 to 1998, Yukos (the largest privately held oil company in Russia) and CNPC (the largest Chinese national oil company) discussed building an oil pipeline from Eastern Siberia (Angarusk) to China (Daqing) with a capacity of 600, 000 b/d. The interests of those two countries seemed to have met. For oil-rich Russia, it was the diversification of the export market to the East. For oil-thirsty China, it was the diversification of the import sources. In July 2001, a basic agreement was reached on this pipeline between President Jiang Zemin and President Putin.[9] In December 2002, the two Presidents signed a joint statement to start building the pipeline from 2003 as planned.

8.2. The conceptual phase

While China and Russia were talking about the pipeline as above, there was an interesting approach from Transneft (the state-owned oil pipeline company of Russia) to Japan. In February 2002, the Symposium on Pacific Energy Cooperation was held in Tokyo. About two weeks before the symposium, Transneft sounded the organizer if they could make a presentation on a new oil pipeline. As the chairman of the relevant session, I accepted their request. Two senior stuff of the company came to Tokyo and presented a preliminary plan of the ESPO pipeline. The speech text clearly stated their intention as follows:[10]

"Namely in the framework of the idea of diversification of oil flows outing to new and perspective market of APR (note: Asia-Pacific Region) we in Transneft are developing a project of oil pipeline construction from the region of Angarusk to the Japan sea coast to the port of Nakhodka. Main consumers of oil in the Asia-Pacific Region are, as it is well known, Japan, China, South Korea and Taiwan. --------- Taking into account mentioned above a mutual interest of both countries we have in hand here – Russia as an oil supplier and Japan as an oil consumer equally and the other APR countries."

[9] Dr.Tsutomu Toichi, Japanese Energy Policy and Regional Cooperation in North East Asia, COE Summer International Seminar, July 2004.
[10] Y.Sayadov & Y.Zabaluev, Transneft ISC, The Symposium on Pacific Energy Cooperation, February 2002.

8.3. The politicization phase

The Japanese Government started to take a serious interest in this pipeline in mid 2002, and took actions relatively quickly. After several rounds of negotiations between the two governments, Prime Minister Koizumi visited President Putin in January 2003, and they agreed to promote the ESPO pipeline (the Nakhodka route with no spur to China). China must have lobbied Russia heavily after this. In May 2003, the Russian Government announced a plan to build an oil pipeline to Nakhodka with a spur to China (Daqing). This was thought to be a compromise struck by Russia reflecting both Chinese and Japanese interests.

However, this decision added fuel to the competition between China and Japan: namely "Chiba first" or "Japan first". In May 2003, President Hu Jintao asked President Putin to build the Daqing route first.[11] In the same month, Prime Minister Koizumi asked President Putin to build the Nakhodka route first.[12]

It was in October 2003 when Mr. Khodorkousky, the President of Yukos, was arrested. Yukos had been promoting the original Daqing route in collaboration with CNPC as mentioned earlier. There is no information, to my knowledge, regarding the impact of this incident on the competition between China and Japan to get the ESPO pipeline first. In December 2004, the Russian Government reportedly decided to build the Nakhodka route first.[13] However, this was just in the middle of the tripartite power game.

Another observation regarding the Sino-Russian relation reveals a slightly different picture about this pipeline. There were marked strategic and military cooperation between those two countries from around 2003. In December 2003, they signed a defence cooperation protocol to sell $2 billion worth of arms and technologies from Russia to China. In October 2004, they agreed to resolve the border conflict in Eastern Siberia, which marked the end of the border disputes between those countries sharing the longest border in the world. In August 2005, the People's Liberation Army and the Russian Army had a major joint military exercise in the Shantung Peninsula. This was the first time for China to allow foreign troops to operate in the Chinese territory after the Communist Revolution. It is quite

[11] Nikkei Shinbun (newspaper), 2 June 2003.
[12] Yomiuri Shinbun (newspaper), 31 May 2003.
[13] John Chan, World Socialist Web Site, 14 February 2005.

possible that those strategic and military relations between Russia and China might have affected the Russian decisions on the ESPO pipeline although it is very difficult to prove. This is another aspect of the geopolitics of this pipeline.

8.4. The commercialization phase

A Russian decision in April 2005 marked the shift from the politicization phase to a more commercial one. The decision was to construct the pipeline in two stages as follows;

Stage 1: From Tayshet to Skovorodino (near the Chinese border close to Daqing)

Stage 2: From Skovorodino to Perevoznaya (a pacific coast port near Nakhodka)

This was a very pragmatic and commercially viable decision as the availability of oil was not enough to justify anything beyond the first stage (600,000 b/d). An additional 1million b/d was necessary to proceed to the second stage, however, this required massive investments in the exploration and development of oil in Eastern Siberia.

As expected, President Putin announced to build the first stage first in July 2005. When he visited Tokyo in November 2005, Prime Minister Koizumi agreed with President Putin on the two-staged construction of the ESPO pipeline.[14]

8.5. The construction phase (the stage 1)

Transneft, the Russian state-owned oil pipeline company, started to build the first stage of the pipeline in mid 2006, which will be completed by 2008 if there were no major constraints. The total cost of the first stage was $ 11 billion including a terminal in Kozumino Bay (near Nakhodka). Transneft successfully placed $ 1.3 billion in Eurobonds in February 2007. The

[14] Nikkei Shinbun , 21 November 2005.

regional spread of the investors was the following; USA 46%, UK 17 %, Asia (except Japan) 7 %, Switzerland 6%, and others.[15]

8.6. The construction phase (the second stage)

The availability of oil is the largest challenge for the construction of this stage. Among several scenarios presented by the experts, I would like to introduce an optimistic one and a pessimistic one.[16]

8.6.1. An optimistic scenario

The first stage will be completed in 2008 (with the initial capacity of 0.6 mb/d), and the second stage in 2012 (with the total capacity of 1.6 mb/d). The oil production will reach 1.0 mb/d in 2015, and increase to 1.6 mb/d by 2020 to fill the pipeline. Until then, Western Siberian oil will be diverted to this pipeline to fill the gap.

8.6.2. A pessimistic scenario

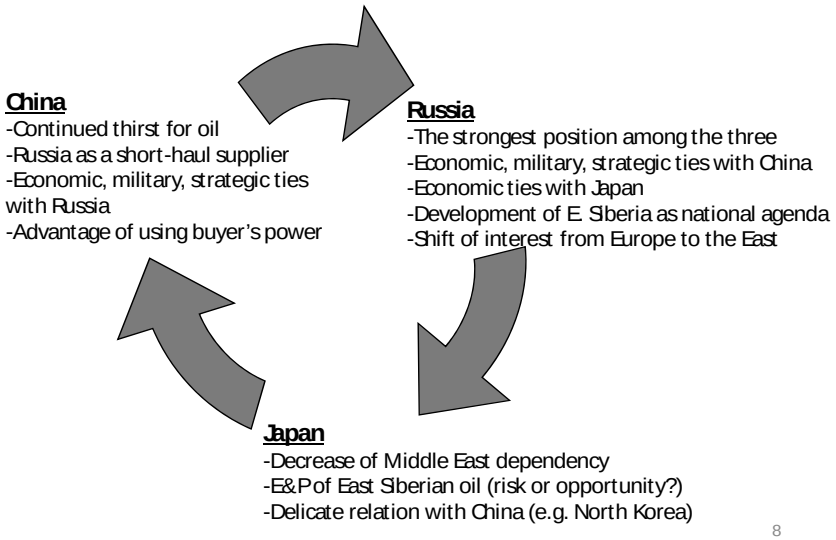
The first stage will be completed in 2012 and the second stage by 2016. The oil production will face some unforeseen constraints. It will be 0.3 mb/d in 2015 and only 0.85 mb/d even in 2020. The diversion of oil from Western Siberia will be constantly required to fill the pipeline.

8.7. The geopolitics of the ESPO pipeline

Among the three countries involved with this pipeline, Russia keeps by far the strong position as the holder of oil reserves. It is interesting to learn that Russia and China have economic, military and strategic interests in common while Russia and Japan shares economic interests. The following cycle may explain geopolitical power game among them.

[15] Interfax, 27 February 2007.
[16] Jeremy S. Maxie, The New Eurasian Energy Architecture, Columbia University Conference, December 2006.

Figure 8. The Geopolitics of the ESPO Pipeline at a Glance



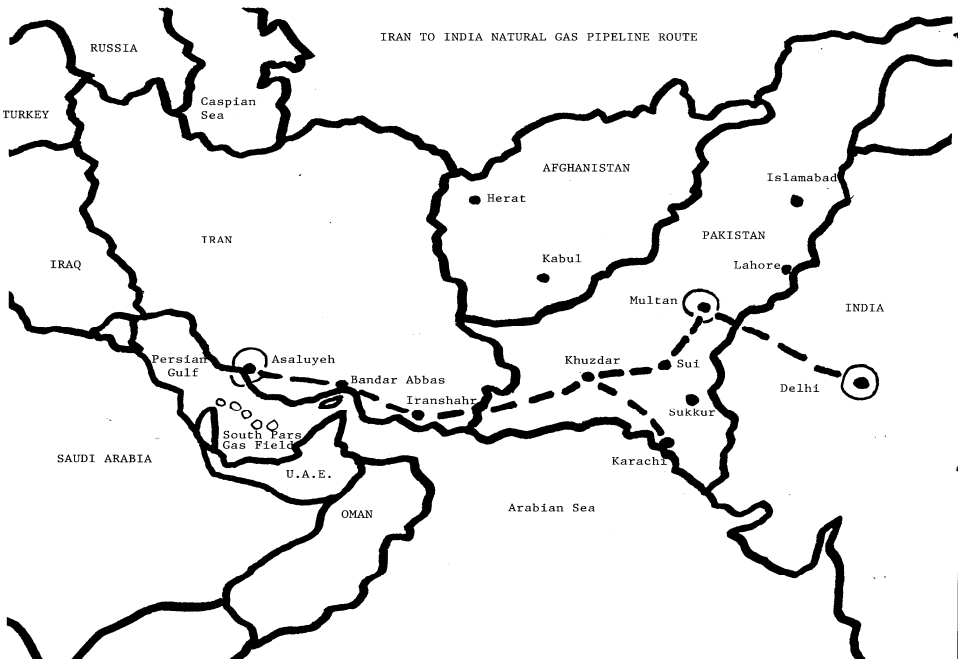
9. The Iran-India-Pakistan (IPI) pipeline

9.1. The conceptual phase

In 1988, Iran discovered the South Pars gas field offshore in the Persian Gulf, which has the world largest natural gas reserves combined with the Qatari part called the North Field. The development of the South Pars advanced step by step by NIOC (National Iranian Oil Company) and by the participation of foreign companies such as Shell, Total, Petronas, Repsol YPF, and others. As the second largest holder of proven natural gas resources next to Russia, Iran tired to find diversified markets for its natural gas.

A preliminary agreement was reached between Iran and Pakistan to build a cross-border pipeline from the South Pars to Pakistan (Karachi) in 1995.[17] Then, Iran proposed to India the extension of the pipeline to India, where a rapid increase of natural gas demand was expected. In February 1999, Iran and India signed a preliminary agreement on the bilateral collaboration on the pipeline, followed by the establishment of a task force to study the feasibility of the pipeline.[18] Most probably, around this time, the Indian Government might not felt comfortable with the idea of a pipeline through Pakistan. There was a long history of tensions between the two countries not limited to the well-known territorial dispute over Kashmir. Therefore, India reportedly studied even the possibility of building a sub-sea pipeline from Iran in order to bypass Pakistan. This option was too expensive to justify the construction, and was ultimately abandoned.

Figure 9. The Map of the IPI Pipeline



Source: TED Case Studies "Iran to India Natural Gas Pipeline" by Shamila N. Chaudhary

[17] Shamila N. Chaudhary, Iran to India Natural Gas Pipeline, TED Case Studies, 2000.
[18] The same as above.

There was no IPI pipeline until India and Pakistan accepted each other as reliable partners. In March 2000, Pakistani Secretary of Petroleum visited Iran and formally agreed to the pipeline crossing the three countries.[19] The secure transit through Pakistan was a matter of serious concern considering the situation in some part of the country. The Pakistani Government guaranteed the security of the IPI pipeline passage through Pakistan in July 2000. This is a typical example to show the importance of the security of the transit country.

9.2. The politicization phase

As the agreement had finally emerged among those countries making the cross-border pipeline closer to a reality, political attention started to increase because of Iran. The US Government had been imposing sanctions against Iran over the decades. Especially after the declaration of Iran as part of "axis of evil" by the Bush Administration in January 2002, the US opposition to the pipeline became tougher.

After the meeting with Iranian President Khatami, President Musharraf expressed Pakistan's willingness to participate in this project in New York in September 2000.[20] I had an opportunity to hear him speak on this project in January 2004, when I participated in the Annual Meeting of the World Economic Forum in Davos, Switzerland. As the guest speaker to a dinner of energy and automobile industry representatives, he expressed his strong hope for as well as optimism about the IPI pipeline as a catalyst of the long-waited-for regional integration. He said that a dream was becoming a reality.

On the other hand, the US opposition continued to be strong. For example, the White House reiterated the opposition to the pipeline due to the concern over "Iran's nuclear activities, support for terrorism, and serious human rights record" in March 2006.[21]

The first trilateral Governmental talks were held in Teheran in March 2006, signalling gradual shift to the commercialization phase.[22]

[19] The same as above.
[20] The same as above.
[21] Reuters, 7 March 2006.
[22] Nikkei Shinbun, 11 March 2006.

9.3. The commercialization phase

While the USA, and even Russia and China, were showing their own attitude to the IPI project reflecting their specific interest, the consultation among Iran, Pakistan and India was picking up. It is against this background that Pakistani Secretary of Petroleum mentioned, early in 2007, that the documentation for the IPI pipeline would be made by July.

The biggest agenda was the pricing of natural gas from Iran and the transit fees through Pakistan. In June 2007, the trilateral Vice-Ministerial meeting reached the basic agreement on the pricing of natural gas from Iran ($4.93/MBtu).[23] However, the agreement on the transit fees through Pakistan was not reached at this stage between India and Pakistan. The Ministerial meeting scheduled later in July is expected to reach the agreement on pricing including the transit fee.

9.4. Possible developments

It is extremely difficult to predict how this project may evolve hereafter due to the following reasons;

(1) As the prices of natural gas are expected to remain strong for a sustained period, the tension between Iran and India/Pakistan will continue to exist over pricing. Even at this stage, reportedly, there still remain differences among them although they have reached an agreement on the price level itself. Iran demanded a price review in every three years while India/Pakistan insisted on the review in every seven years, for example.

And even if they may settle the differences in late July, the price issue could be revisited in future in accordance with the development of the international price environment.

(2) The discovery and the development of gigantic natural gas fields in the Bay of Bengal by Reliance and ONGC may give India a breathing space. Therefore, for the time being, India may feel less thirsty for Iranian natural gas than before and be able to pay more attention to

[23] Nikkei Shinbun , 30 June 2007.

her relation with the USA, who agreed with India on a substantial assistance in civil nuclear technology in July 2005.

(3) Due to the US sanctions and, more recently, the UN sanctions against Iran, it will be extremely difficult to attract financing for the pipeline construction from the international financial institutions.

If India may withdraw from this game, it is likely that the pipeline will be built to Pakistan, making this the IP (not the IPI) pipeline, due to the following reasons;

(1) Iranian natural gas will be more attractive for Pakistan than for India due to the difference in the distance of transport. For Pakistan, this will be the most economic option to secure natural gas supply from abroad, which Pakistan may need sooner or later. It may be against this background that Pakistan is expressing her intention to go along with this project in the absence of India.

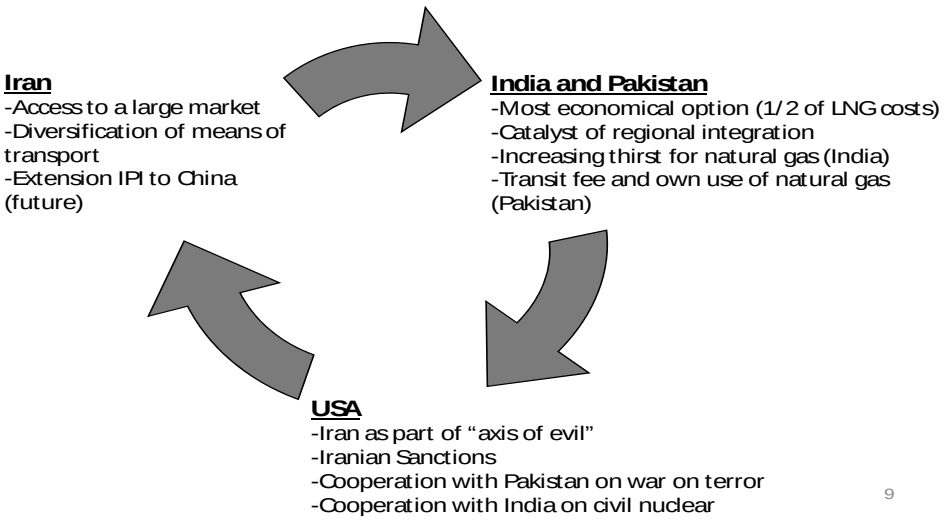
(2) There is a wide network of natural gas pipelines in Iran. She maintains a policy to use natural gas for domestic use first, and to keep oil for exports as much as possible. In any case, Iran will complete the construction of a pipeline close to the border with Pakistan by 2009 as part of domestic pipeline network. It will be relatively easy for Iran to extend this pipeline to Pakistan.

(3) The size of the pipeline to Pakistan will be smaller than the one extending to India, making the construction costs of the IP pipeline modest.

9.5. The geopolitics of the IPI pipeline

There are mainly three big players (or group of players) with vested interests in the IPI pipeline. This is one of the most geopolitically delicate cases due to the Iranian nuclear issue. The influence of the USA will have impact on India and, to a lesser extent, on Pakistan. The following cycle may explain geopolitical power game among them.

Figure 10. The Geopolitics of the IPI Pipeline at a Glance



10. Observations

This paper picked up three pipelines in Eurasia at different developmental phases: already in service (the BTC), under construction (the ESPO) and yet to be constructed (the IPI). This means that information available is somewhat limited about the ESPO pipeline and, in particular, the IPI pipeline. However, it might be useful to make some preliminary observations of some features of those cases.

10.1. The conditions necessary for a cross-border pipeline

The eight conditions necessary for a cross-border pipeline (in paragraph 3.) are all relevant to the cases discussed above. Among those, the availability of resources (oil or natural gas) and that of demand at the other end of the pipeline are the very basis of pipeline economics. From this perspective, the second stage of the ESPO pipeline is worthwhile following up.

Strong political will to promote a project makes a difference. This was the largest factor, to my knowledge, to have led the BTC pipeline to materialization in spite of disadvantageous environment in the late 1990s. Without the strong determination of the Turkish leaders, there would have been no BTC pipeline today.

The changes in the global business environment of oil and natural gas also affect pipeline economics and, resultantly, the fate of a cross-border pipeline. For example, a sustained increase in the international prices of oil and natural gas tends to accelerate investments in the upstream sector and the infrastructures. This applies to the case of the BTC pipeline.

Geopolitical factors tend to make the lead time for a cross-border pipeline long. However, this is an indispensable time to assess, digest, adjust and manage geopolitical risks prior to the commercialization and construction phases. In this regard, the BTC pipeline had a good reason to have such a long politicization phase.

10.2. The relative importance of economic and geopolitical factors

A delicate balance between economic and geopolitical factors could be identified in each case equally but differently.

(1) In the case of the BTC pipeline, a longer detour to bypass Iran made pipeline economics unfavourable. The article quoted in 7.3 is representative of a wide-spread perception of that time. In other words, this was a heavily geopolitically oriented project. I still believe that this pipeline could not have been materialized without strong political will of the Turkish leaders.

(2) The ESPO pipeline offers a case where economic and geopolitical factors are relatively well balanced. From the Russian perspective, it makes an economic as well as geopolitical sense to seek for an export market of their oil other than Europe. In the same token, China and Japan find good economic and geopolitical reasons in diversifying their import sources of oil.

In this regard, it is interesting to learn that the politicization phase of the ESPO pipeline was relatively short. This may suggest that this project is reflecting economic rationale well in spite of its

overwhelmingly geopolitical outlook. Another economic rationale is found in the decision to construct the pipeline in two stages as recoverable oil resources in Eastern Siberia do not seem to be enough to justify a full-scale construction of the pipeline through to the Pacific coast of Russia yet. There still remains a possibility that the second stage of the ESPO pipeline may not be materialized in spite of the assurance given by Russian Energy Minister in April 2006.[24]

(3) It will be rather premature to say anything decisive about the IPI pipeline, however, it looks more economically oriented than the other two. Iran is the second largest holder of natural gas reserves next to Russia, and India is one of the fastest growing markets of natural gas with huge potential. The other party, Pakistan, will be benefited twofold: a transit fee as the transit country and a cheaper transport cost than India as an importing country. Unless there were any serious geopolitical constraints, it will make a perfect economic sense to establish a pipeline connection between those three countries forming a natural market of natural gas. However, the nuclear development by Iran will remain a serious geopolitical factor negatively affecting the progress of the IPI pipeline, which could push this project back even to the politicization phase again.

10.3. Impact on the security of supply to Europe

10.3.1. First impact

The BTC pipeline allows land transport of Caspian oil bypassing Russia, which will naturally enhance the security of supply to Europe. Caspian oil, now flowing through the BTC pipeline, could have been exported by pipeline system via Russia in one way or another. However, this could have put Europe in even more disadvantageous position in her energy deals with Russia given the ongoing tension between Europe and Russia over natural gas supply. Bypassing the Strait of Bosporus is another important factor in this regard as referred to in 7.3. The security of oil supply to Europe, therefore, has been improved twofold due to the BTC pipeline.

[24] Nikkei Shinbun, 24 April 2006.

10.3.2. Second impact

The ESPO may have slightly negative impact on the security of oil supply to Europe. The current estimate suggests that oil recoverable in Eastern Siberia may not be enough to fill the pipeline as mentioned in 8.6. Therefore, a portion of oil produced in Western Siberia needs to be diverted to the East to fulfil the commitment with the new customers in Asia. Russia might utilize this situation to strengthen her bargaining power over Europe.

10.3.3. Third impact

The IPI pipeline may also have impact on the supply of Iranian natural gas to Europe. The Iranian government intends to export as much oil as possible by encouraging natural gas use to satisfy domestic energy needs. For this purpose, the prices of natural gas are reportedly set low, and its consumption is growing rapidly. On top of this, the development of natural gas is suffering from serious delay, let alone the impact of the US and UN sanctions. The conditions of Iranian buyback contracts are perceived to be too severe for foreign companies to smoothly continue the development of natural gas. For those reasons, the export potential of Iranian natural gas may not be as big as her proved reserves may suggest. Therefore, once natural gas from the South Pars may start to flow to India and Pakistan by the IPI pipeline, there is a risk that not enough natural gas may be left for export to Europe (e.g. the Nabucco Gas Pipeline Project).

10.4. Lessons

A few lessons drawn from the limited analysis above could be summarized as the following;

(1) While economic rationale may justify a cross-border pipeline, geopolitics could put it on hold or even kill it.

(2) However geopolitics alone cannot materialize a cross-border pipeline without economic rationale.

(3) Strong political will makes a big difference in materializing a cross-border pipeline as economic and geopolitical factors are closely intertwined.

(4) The politicization phase of a cross-border pipeline is a process indispensable for screening, analyzing and streamlining a complex situation prior to the commercialization and construction phases.