Sino-Russian Oil and Gas Pipelines: The Reality and Implications

Prepared for

The Second Colloquium on
“Eurasian Pipelines and East Asia: A Path to Integration or a Marriage of Convenience?”
Eurasian Oil and Gas to China, Korea and Japan

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by

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Table of Contents

1. Brief Review on China’s Oil and Gas Expansion

2. Sino-Russian Oil Pipeline Development

3. Sino-Russian Natural Gas Pipeline Development

4. Factors Affecting Sino-Russian Cooperation

5. Conclusion
1. A Brief Review on China’s Oil and Gas Expansion

Table 1. Projected Energy Demand in China

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (btce)</td>
<td>1.28</td>
<td>1.51</td>
<td>1.70</td>
<td>1.88</td>
<td>2.01</td>
</tr>
<tr>
<td>Coal (%)</td>
<td>67.0</td>
<td>62.7</td>
<td>57.1</td>
<td>53.2</td>
<td>47.8</td>
</tr>
<tr>
<td>Oil (%)</td>
<td>23.6</td>
<td>24.9</td>
<td>27.5</td>
<td>28.9</td>
<td>31.3</td>
</tr>
<tr>
<td>Gas (%)</td>
<td>2.5</td>
<td>4.8</td>
<td>7.4</td>
<td>9.4</td>
<td>12.0</td>
</tr>
<tr>
<td>Hydro (%)</td>
<td>6.9</td>
<td>7.7</td>
<td>8.0</td>
<td>8.5</td>
<td>8.9</td>
</tr>
</tbody>
</table>

Note: btce means billion tonnes of coal equivalent
Source: CNPC (2001)

Coal will be the main energy source in the coming decades, but the share of oil and gas in China’s energy balance will increase significantly. In 2020, the combined share of oil and gas will reach to 43%, while that of coal will be 48%.
Table 2. Projection on China’s Oil Demand  

<table>
<thead>
<tr>
<th>Source</th>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERI (2005)</td>
<td>360 - 390</td>
<td>420 - 500</td>
</tr>
<tr>
<td>ERI (2006)</td>
<td>380 - 400</td>
<td>480 - 520</td>
</tr>
<tr>
<td>CNPC (2006)</td>
<td>370</td>
<td>450</td>
</tr>
<tr>
<td>IEA (2002)</td>
<td>350</td>
<td>470</td>
</tr>
<tr>
<td>EIA (2005)</td>
<td>460</td>
<td>615</td>
</tr>
</tbody>
</table>

Source: ERI stands for Energy Research Institute, NDRC; EIA stands for Energy Information Administration under US Department of Energy.

According to ERI’s 2006 projection, domestic oil production will be 185 - 190 mt in 2010, and 190 - 210 mt in 2020. In other words, the demand and supply gap has to be covered by the import scale of 195 – 210 mt in 2010 and 290 – 310 mt in 2020.
Table 3. Projection on China’s Natural Gas Demand

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNPC</td>
<td>63.7</td>
<td>106.8</td>
<td>153.4</td>
<td>210.7</td>
</tr>
<tr>
<td>CNPC (2006)</td>
<td>120.0</td>
<td></td>
<td>200.0</td>
<td></td>
</tr>
<tr>
<td>SINOPEC (2006)</td>
<td>140.0</td>
<td></td>
<td>240.0</td>
<td></td>
</tr>
<tr>
<td>ERI/NDRC</td>
<td>64.5</td>
<td>120.0</td>
<td>160.0</td>
<td>200.0</td>
</tr>
<tr>
<td>CNOOC</td>
<td>61.0</td>
<td>100.0</td>
<td>150.0</td>
<td>200.0</td>
</tr>
<tr>
<td>BP</td>
<td>42.0</td>
<td>74.0</td>
<td>135.0</td>
<td>177.0</td>
</tr>
<tr>
<td>EIA/DOE</td>
<td>51.0</td>
<td>79.0</td>
<td>127.0</td>
<td>181.0</td>
</tr>
<tr>
<td>IEA</td>
<td>-</td>
<td>61.0</td>
<td>-</td>
<td>109.0</td>
</tr>
</tbody>
</table>


The projection figures by Chinese Institutions are much bigger than those of the western firm and Institutions. ERI’s very recent projection is that natural gas demand will reach to 150 bcm in 2010 and 200-200 bcm in 2020, and around 50-80 bcm of gas will be covered by import.
Table 4. China’s Natural Gas Production Projection
Unit: bcm

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNPC</td>
<td>35.3</td>
<td>65.0</td>
<td>70.0-75.0</td>
<td>80.0-90.0</td>
</tr>
<tr>
<td>SINOPEC</td>
<td>6.3</td>
<td>7.0-10.0</td>
<td>12.0-14.0</td>
<td>18.0-20.0</td>
</tr>
<tr>
<td>CNOOC</td>
<td>7.2</td>
<td>8.0-10.0</td>
<td>12.0-13.0</td>
<td>14.0-17.0</td>
</tr>
<tr>
<td>CUCBM</td>
<td>0</td>
<td>2.0</td>
<td>4.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Total</td>
<td>48.8</td>
<td>82 - 87</td>
<td>98 - 106</td>
<td>120 - 135</td>
</tr>
</tbody>
</table>

Source: Asia Gas & Pipeline Co-operation Research Center of China

According to CNPC’s recent projection, China’s gas production will reach 80 bcm in 2010 and 120 bcm in 2020. The figure from ERI is 85-90 bcm in 2010, and 120-140 bcm in 2020.
### Table 5. China’s Crude Oil Imports by Region

<table>
<thead>
<tr>
<th>Year</th>
<th>Middle East</th>
<th>Africa</th>
<th>Asia-Pacific</th>
<th>Europe/Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>16.37</td>
<td>2.19</td>
<td>5.47</td>
<td>3.00</td>
<td>27.32</td>
</tr>
<tr>
<td>1999</td>
<td>16.90</td>
<td>7.25</td>
<td>6.83</td>
<td>5.63</td>
<td>36.61</td>
</tr>
<tr>
<td>2000</td>
<td>37.65</td>
<td>16.95</td>
<td>10.61</td>
<td>5.05</td>
<td>70.27</td>
</tr>
<tr>
<td>2001</td>
<td>33.86</td>
<td>13.55</td>
<td>8.68</td>
<td>4.17</td>
<td>60.26</td>
</tr>
<tr>
<td>2002</td>
<td>34.39</td>
<td>15.80</td>
<td>11.85</td>
<td>7.37</td>
<td>69.41</td>
</tr>
<tr>
<td>2003</td>
<td>46.37</td>
<td>22.18</td>
<td>13.85</td>
<td>8.73</td>
<td>91.13</td>
</tr>
<tr>
<td>2004</td>
<td>55.79</td>
<td>35.30</td>
<td>14.16</td>
<td>17.57</td>
<td>122.82</td>
</tr>
<tr>
<td>2005</td>
<td>59.99</td>
<td>38.47</td>
<td>9.68</td>
<td>18.94</td>
<td>127.08</td>
</tr>
</tbody>
</table>


In 2005, there were five countries having supplied over 10 mt/y of crude oil to China: Three – Saudi (22 mt), Iran (14 mt), Oman (11 mt), from the Middle East; One – Angola (17 mt) - from Africa; and One – Russia (13 mt) - from Europe.
If the first stage schemes are all implemented, the total volume supplied to China will be 33.8 mt (48.3 bcm) annually.
2. Sino-Russian Oil and Gas Cooperation

Since 1993 when China became a net oil importer, CNPC began to explore the possibility of oil and gas development in East Siberia and Russia’s Far East. Despite many agreements between the two governments, no real progress for CNPC’s equity positioning in Russia was made. The failure of Slavneft asset auction participation at the end of 2002, and the collapse of Stimul oil deal at the end of 2003 were strong reminder the Russian oil assets are not available for Chinese state energy firms.

CNPC’s priority was the feasibility studies on the planned crude oil and natural gas pipelines. Based on the February 1999 agreement between Premier Zhu Rongji and Premier Yevgeny Primakov, two feasibility studies on natural gas – Irkutsk gas to north China and West Siberian gas to Shanghai - and one feasibility study on crude oil export from Angarsk to Daqing were completed.

At the end of 2004, the Russian Government made a decision to construct Taishet-Skovorodino section until 2008. Once the pipeline is built, China is set to receive a 20 mt/y of crude. It is worth noting that China agreed to lend a US$ 6.0 billion to Rosneft in early 2005 in return for 48 mt (10 mt/y for five years) of crude oil supply, without demanding any equity in the supply source. China chose to be practical rather than pursuing an unrealistic target (upstream asset buy-out).
During the President Putin’s State visit to Beijing in March 2006, there were three major agreements between Russia’s state energy firms and CNPC:

• The Memorandum of Understanding between Gazprom and CNPC with regard to natural gas supply to China. Gazprom said it will build two gas pipelines with a delivery capacity of 30-40 bcm/y each. The proposed gas supply timing is 2011.
• The Cooperation Agreement between Rosneft and CNPC. The two firms intend to form a JV that would spend US$ 2 billion on gasoline stations and an oil refinery with a refining capacity of 10 mt/y. The two firms also intend to set up an oil exploration and production JV to bid for oil blocks in Russia.
• Protocol between Transneft and CNPC to begin a feasibility to build a branch of the planned Eastern Siberian – Pacific Ocean pipeline to China. CNPC is going to offer US$ 400 million loan for the branch pipeline development.

In September, during the so-called Valdai Discussion Club meeting, President Putin said Russia plans a massive increase of oil and gas export to Asia, that is, 30% of its oil and gas to Asia in 10-15 years, compared with 3% today. Putin said “prospects for the eastbound energy links were very good and Russia with its border on the Pacific Ocean, had a certain natural advantage in developing ties in Asia”. This is the first time President Putin has publicly put his name to the 30% goal.

During Russian Premier Mikhail Fradkov’s visit to Beijing in Nov, Rosneft CEO Sergei Bogdanchikov said Russia’s crude oil supply to China will increase from 12 mt in 2006 to 20 mt in 2007 (of which 70% covered by Rosneft). In October CNPC and Rosneft announced to the JV scheme (E&P in Russia and 9.59 mt capacity of refinery in China. Plus to open as many as 300 gas stations)
2.1. Major Oil and Gas Fields in Russia (Asian part)

There are a number of major oil fields in Eastern Siberia and Far East: Yurubchensko-Tochomskoye (C1: 58 mt, C2: 301 mt) in Evenki AO, Verkhnechonskoye (C1: 160 mt, C2: 42 mt) in Irkutsk Krai, Talakanskoye (C1: 106 mt, C2: 18 mt) and Sredne-Botuobinskoye (C1: 54 mt, C2: 12 mt) in Sakha Republic. But these field’s proven reserves are not big enough to justify the long distance crude pipeline to Perevoznaya, next to Nakhodka.

This is the reason why Ministry of Natural Resources are accelerating the exploration in Krasnoyark Krai, Evenki AO, and Irkutsk Oblast. The result of this exploration will affect the ultimate scale of pipeline to Nakhodka.

There are also some major gas fields waiting for the development in Irkutsk Krai and Sakha Republic: Kovyktinskoye (C1+C2: 1980 bcm) in Irkutsk and Chayandinskoye (C1+2: 1240 bcm) in Sakha Republic. Besides this, Yurubchensko-Tochomskoye (C1+2: 773 bcm), Kuyumbinskoye (C1+2: 208 bcm), Sobinsko-Paiginskoye (C1+2: 201 BCM) in Evenki AO, Sredne-Tyungskoye (165 bcm), Sredne-Botuobinskoye (175 bcm), Sredne-Vilyuiskoye (130 bcm) field in Sakha Republic are boasting over 100 bcm proven reserves.
In Sakhalin offshore, the estimated oil reserves are 2,440 mt, of which Sakhalin 1 (305 mt), Sakhalin 2 (185 mt), Sakhalin 3 (450 mt), Sakhalin 4 (320 mt), Sakhalin 5 (900 mt), Sakhalin 6 (180 mt), and others (100 mt). The peak production is estimated at 12 mt, 9 mt, 20 mt, 7 mt, 40 mt, 5 mt, and 3 mt respectively.

In the case of natural gas from Sakhalin offshore, the estimated gas reserves are 5,510 bcm, of which Sakhalin 1 (485 bcm), Sakhalin 2 (800 bcm), Sakhalin 3 (1,400 bcm), Sakhalin 4 (950 bcm), Sakhalin 5 (1250 bcm), Sakhalin 6 (400 bcm), and others (225 bcm).

Based on these reserves, Russian specialists are projecting gas production from East Siberia in 2010 and 2020 will be 23.6 bcm (of which 7.5 bcm from Krasnoyarsk and 16.1 bcm from Irkutsk) and 70.0 bcm (of which 29.5 bcm from Krasnoyarsk and 40.5 bcm from Irkutsk) respectively. The combined figures from Sakha Republic and Sakhalin are 22.7 bcm (of which 11.2 bcm from Sakha and 11.5 bcm from Sakhalin) and 82.0 bcm (of which 40.5 bcm from Sakha and 42.4 bcm from Sakhalin) respectively.
2.2. Sino-Russian Oil Cooperation

China began to explore the possibility of Russian crude oil and natural gas import in the year of 1993 when China became oil importer for the first time.

In 1996 both countries set up the Joint Commission to arrange regular meetings between the two premiers to directly oversee the movement of bilateral co-operation. Under the Joint Commission, there are eight sub-committees, economic and trade, energy, technology, nuclear energy, aerospace, transportation, banking, and information technology.

The most important agreement was made in February 1999 when Premier Zhu Rongji and Premier Yevgeny Primakov signed 11 agreements, of which three are related with oil and gas.

• The first is on a preliminary feasibility study on crude oil export from Angarsk to Daqing through a 20-30 mt/y capacity pipeline
• The second is on a feasibility study on Irkutsk region’s natural gas export to northeastern China through a trans-national pipeline
• The third is on a preliminary feasibility study on a western Siberia’s gas export to Shanghai by a trans-national pipeline passing through Xinjiang region

Despite many years preparation, none of the three FS works are making a serious progress.
The Cabinet of the Russian Government approved the Energy Strategy 2020 which envisages a major oil and gas infrastructure development in East Siberia and Russia’s in Russia’s Far East in March 2003.

It is worth noting that at a Khabarovsk meeting on the development of Far East transport infrastructure held on Feb 26, 2004, a project proposal with oil and gas pipeline in a “Single Corridor” prepared by the Government of Sakha Republic along with Gazprom, Ministry of Natural Resources, and Surgutneftegaz was submitted to President Putin who designated the pipeline as a Strategic Interest and told Sakha Republic’s President V. Shtyrov to work the project.


In summer 2004, Transneft President Semyon Vainshtok said in a report for the Renaissance Capital Investment Conference that the crude oil pipeline from Taishet in the Irkutsk region to the Asia-Pacific region via Japan will cost around US$ 16.2 billion (As of 2004 prices, the estimate would be US$ 13.7 billion).

According to the report, the 4,200 km pipeline will be routed from Taishet to the Bay of Perevoznaya via Kazachinskoye, Skovorodino and Khabarovsk. Its diameter will be 1220 mm, with capacity of 80 mt/y of crude oil (of which 24 mt/y from west Siberia and the remaining 56 mt/y from East Siberia and Yakutia). The pipeline will have 44 pumping stations and a terminal with 4.3 mcm of tank-farm capacity at Perevoznaya.
Oil produced at Yurubcheno-Tokhom and Kuyumbinskoye fields will join the trunk pipeline at its source in Taishet, and oil from Srednebotuobinskoye, Verkhnechonskoye and Yaraktinskoye fields will join the main route at Kazachinskoye.

On Dec 31, Russian Government announced that a long distance crude oil pipeline between Taishet and Perevoznaya will be constructed. On April 2005, the approval on this 4,188 km crude oil pipeline was made. The first phase will cover the section between Taishet and Skovorodino (2,269 km, 30 mt/y) and the US$ 6.0 billion construction will be completed until 2008. The second phase covering the section between Skovorodino and Perevoznaya (1,919 km, 80 mt/y) will depend on the result of exploration schemes being pursued by Ministry of Natural Resources.

For this pipeline development, five state institutions are diving the roles: Transneft will be responsible for construction (including designing) of crude oil pipeline; Ministry of Natural Resources will evaluate the scale of reserves in east Siberia and Far East; Ministry of Transportation and Defense will research and analyse the details of shipping related from Perevoznaya; Russian Railway Co will research and analyse the details of transportation by railways until the completion of crude oil pipeline.

In April 2006, Transneft announced US$ 2.0 bn financing scheme (as part of 1st stage Financing), and as many as over 200 western financial institutions have shown their interest in lending the money.

The decision by Moscow authority offers a three years breathing space for Russia with regard to the crude oil pipeline development.
Table 7. Transneft Pipeline Routes

<table>
<thead>
<tr>
<th>Transneft : Route 1</th>
<th>Transneft : Route 2</th>
<th>Transneft : Route 3*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angarsk</td>
<td>Angarsk</td>
<td>Taishet</td>
</tr>
<tr>
<td>- Zabaykalsk</td>
<td>- Kazachinskoye</td>
<td>- Ust-Kut</td>
</tr>
<tr>
<td>- Skovorodino</td>
<td>- Tynda</td>
<td>- Tynda</td>
</tr>
<tr>
<td>- Khabarovsk</td>
<td>- Skovordino</td>
<td>- Skovordino</td>
</tr>
<tr>
<td>- Nakhodka</td>
<td>- Khabarovsk</td>
<td>- Khabarovsk</td>
</tr>
<tr>
<td></td>
<td>- Nakhodka</td>
<td>- Nakhodka</td>
</tr>
<tr>
<td>50 mt/y</td>
<td>50 mt/y</td>
<td>56 mt/y</td>
</tr>
<tr>
<td>3,765 km or 4,190 km</td>
<td>3,885 km</td>
<td>4,130 km</td>
</tr>
<tr>
<td>1,020 (-1220) mm</td>
<td>1020 (-1220) mm</td>
<td>1,020 (-1220) mm</td>
</tr>
<tr>
<td>22-29 pumping stations</td>
<td>32 pumping stations</td>
<td></td>
</tr>
<tr>
<td>US$ 4.0-5.0 billion</td>
<td>US$ 5.8 billion</td>
<td>US$ 12 billion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2005-6 : signing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2006-2010 : build</td>
</tr>
</tbody>
</table>

Note: The Route 3 details are based on the initial proposal.
East Siberia Oil Logistics: New Routes of Russian Oil Export

East Siberia – Pacific Ocean Pipeline (ESPO)

Stage 1: 220 mln. bbl
Construction of 2400 km pipeline including 42” 800 km. pipeline, 48” pipeline, 6 pump stations, storage tank farm and terminal in Perevoznaya

Stage 2: 586 mln. bbl
Construction of 2400 km 42” pipeline, expansion of Tiashet-Skovorodino pipeline, construction of 18 pump stations and expansion of the terminal in Perevoznaya

Source: Rosneft (2006)
Why the Angarsk-Daing crude oil pipeline development was so important to the Chinese energy planners?

The main factors are as follows:
• The Chinese authority began to worry about Daqing’s production decline in the coming years due to the depletion of the reserves.
• Unlike the gas project, both sides sorted out the thorny price formula after two years negotiation.
• Demand for oil in China is very strong and the scale of oil import is getting bigger. It is essential to diversify the source is for energy supply security.
• CNPC has seen the benefit of crude oil trade with Yukos through the railways transportation.

Table 8. Oil Production Decline in main oil fields in Northeastern provinces

<table>
<thead>
<tr>
<th></th>
<th>Daqing</th>
<th>Jilin</th>
<th>Liaohe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>56.0</td>
<td>3.4</td>
<td>15.5</td>
<td>74.9</td>
</tr>
<tr>
<td>2000</td>
<td>53.0</td>
<td>3.8</td>
<td>14.0</td>
<td>70.8</td>
</tr>
<tr>
<td>2005</td>
<td>45.0</td>
<td>5.5</td>
<td>12.2</td>
<td>62.7</td>
</tr>
<tr>
<td>2010</td>
<td>34.7</td>
<td>5.9</td>
<td>10.6</td>
<td>51.2</td>
</tr>
<tr>
<td>2015</td>
<td>30.0</td>
<td>6.0</td>
<td>9.4</td>
<td>45.4</td>
</tr>
</tbody>
</table>

Source: CNPC, quoted by Xinhua News Agency
Table 9. Existing Main Crude Oil Pipelines in Northeastern Provinces

<table>
<thead>
<tr>
<th>Pipeline</th>
<th>Diametre</th>
<th>Length</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daqing - Tieling 1</td>
<td>720 mm</td>
<td>517 km</td>
<td>45 mt/y</td>
</tr>
<tr>
<td>Daqing - Tieling 2</td>
<td>720 mm</td>
<td>524 km</td>
<td></td>
</tr>
<tr>
<td>Tieling - Qinghuangdao</td>
<td>720 mm</td>
<td>454 km</td>
<td>20 mt/y</td>
</tr>
<tr>
<td>Tieling - Dalian</td>
<td>720 mm</td>
<td>460 km</td>
<td>20 mt/y</td>
</tr>
<tr>
<td>Tieling - Fushun</td>
<td>720 mm</td>
<td>43.7 km</td>
<td>20 mt/y</td>
</tr>
</tbody>
</table>

Note: A 524 km (10 mt/y) pipeline will be built in parallel with the two existing Daqing-Tieling line, enhancing the total capacity of northeastern line grid to 55 mt/y.
Source: Xinhua News Agency

Initially Dalian PetroChemical, Wepec, Jinzhou PetroChemical, and Jinxi PetroChemical plants were slated to refine the Russian oil. Before 2010, 15 mt/y at Dalian plant, and 5 mt/y at Wepec. After 2010, a combined capacity of 11 mt/y at Jinzhou and Jinxi plant will take care of the additional 10 mt/y of Russian oil. Dalian PetroChemical plant is planned to have a 20 mt/y of capacity in 2005, from 7.1 mt/y in 2003.
The real turnaround came from CNPC’s lending of US$ 6.0 billion in return for 48 mt of Russian crude oil supply to China. The timely and massive lending played a pivotal role in transforming Rosneft from a virtually empty shell to a major production asset. The money was used for Rosneft’s acquisition of Yuganskneftegas asset by paying US$9.5 billion.

Rosneft’s IPO in July 2006 was successfully done, but interestingly the equity given to CNPC was only US$ 0.5 billion worth, despite CNPC wanted to purchase US$ 3.0 billion worth equity. Instead Rosneft placed more emphasis on the partnership with SINOPEC by pursuing the Sakhalin Block 3 Veninsky exploration and the US$ 3.5 bn worth Udmurtneft asset buy-out (as Rosneft’s main aim is to penetrate China’s huge down-stream market). Recently Rosneft also set up a JV with CNPC for exploration in Asian part of Russia.

The 2006 March Beijing Agreement (which failed to finalise the extension of Skovordino-Daqing) was a big disappointment to CNPC but Transneft could not take any risk by officially endorsing the pipeline between Skovorodino-Daqing section.

Transneft is seeking Japan’s commitment for the section of Skovorodino-Perevoznaya pipeline development, and any hurried announcement supporting Skovorodino-Daqing would wipe out any role of Japan in the pipeline development. This is the reason why only the FS on Skovorodino-Daqing line was agreed during the Beijing meeting.

Russia’s priority is to secure enough proven oil reserves that could justify the second stage (Skovorodino-Nakhodka) pipeline development, and Transneft is desperate to secure Japan’s commitment for the development. It remains to be seen whether Japan’s massive scale financing for the second stage development will be materialised without the settlement of the territorial disputes.
2.3. Sino-Russian Gas Cooperation

The essence of Gas pipeline project is to export 30-35 bcm/y of natural gas from the East Siberia to northern China and Korea through a 4,000 km trunk pipeline from 2008-2010.

Table 10. Kovykta Gas Development : Five Stages

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-1996</td>
<td>This period is characterised as “bilateral relationship development period” between CNPC and Mintopenergo</td>
</tr>
<tr>
<td>1996-1997</td>
<td>This is the first stage for the western investment, initiated by Korea’s Hanbo group and then by BP’s serious move</td>
</tr>
<tr>
<td>1998</td>
<td>This is the negotiation period for “five country FS work” (Russia, China, Mongolia, Korea and Japan). The driving force of this negotiation was Japan, but its initiative to lend a major loan for the FS work was not accepted.</td>
</tr>
<tr>
<td>1999-2000</td>
<td>The focus was once again on bilateral relationship between Russia and China until the three party FS work agreement is signed.</td>
</tr>
<tr>
<td>2000-2003</td>
<td>Both Russia and China had to invite South Korea for its 10 bcm/y gas market. (So a tripartite work format was established) After many months delay, the three years FS work was completed in November 2003.</td>
</tr>
</tbody>
</table>
The three years FS was completed in Nov 2003 and was submitted for governmental agreement. No decision on the project was made due to the Russia’s domestic energy politics.

Three main issues are key factors for the fate of the Kovykta gas project:

• Gazprom’s stance: As Gazprom has secured an exclusive position for the gas export negotiation, the firm is not in a hurry position with regard to Kovykta gas project.
• Border Price issue: This will be the most difficult hurdle for the negotiation. The price difference is too big.
• Route issue: Gazprom is pursuing a Unified Gas Supply System. The final decision on this route issue was supposed to be made at the end of 2005, but is being delayed.

Since 2004 Autumn, Gazprom has been floating the three options for its gas export to Asia, and the final decision will be made before the end of 2005. The options are elaborated in the discussion package for the Interagency Working Group to develop a programme for creating a Unified Gas Production, Transportation and Supply System in Eastern Siberia and the Far East with potential exports to markets in China and other countries in Asia and the Pacific.

The most interesting and realistic proposal is made by TNK-BP, and the proposal envisages a parallel oil and gas pipeline in the section of Taishet-Skovorodino-Daqing (It will help reducing the construction cost significantly). However, Gazprom shows no interest in supporting this proposal.
Framework for development of Integrated Gas Production, Transmission and Supply Network in the East Siberia and Far East

Gas production centers of shelf of Sakhalin island

Yakutia's gas production center

Irkutsk's gas production center

Krasnoyarsk's gas production center

"ALTAJ" Project
Gazprom’s Asian Policy

1997.02  Gazprom CEO Rem Vyakhirev announced the firm’s intention to formulate a comprehensive policy to penetrate Asian gas market.

1997.06  Vyakhirev revealed a detailed blueprint for Gazprom’s new Asian initiative in a speech delivered to the World Gas Conference.

1997.08  Gazprom and CNPC signed an agreement on cooperation in the gas sector.

1998.08  Gazprom announced the results of a preliminary FS on West Siberian-China exports were promising. The target supply source, Bolshekhetskaya Cavity region of West Siberia contains approximately 3 tcm of gas reserves, including 0.75 tcm of C1 reserves, 0.6 tcm of C2 reserves, and 1.2 tcm of C3 reserves.

1998.11  Vyakhirev disclosed the details of two promising export options to China at the Summit Conference in Kuala Lumpur:
• The Altay project: envisaging the export of West Siberian gas to the Shanghai region of China via Xinjiang province
• The Baikal project: envisaging the export of West Siberia gas to the Shanghai region via a 6,467 km pipeline passing through Krasnoyarsk, Irkutsk, Mongolia and Beijing.

2002.07  On July 4th, 2002, PetroChina finally signed the MOU on JVs with three international partners for the West-East Pipeline project and the partners are:
• Royal Dutch Shell + HK China Gas Co
• ExxonMobil Corp + CLP Holdings
• Gazprom + Storytransgaz
2002.07  Russian Governmental Order (July 16, 2002) authorised Gazprom and the Energy Ministry to prepare the document for Asian gas export programme, and the same order made Gazprom as the co-ordinator of carrying the programme out.

2003.06  Gazprom new CEO Alexei Miller’s speech at the 22nd World Gas Conference made very clear Gazprom is authorised to develop a Unified Gas Supply System (UGSS) for its gas export to Asia.

2004.06  Gazprom reconfirmed the firm will remain as Russia’s sole gas exporter and its 100% subsidiary Gazexport will negotiate with potential customers on volumes, scheduled and gas price formula.

2004.09  Gazprom’s Strategic Development Department made a presentation on “Eastern Siberia & Far East Natural Gas Production and Transportation Options Economic Feasibility Study” in Irkutsk. This is the so-called “Discussion Package” for the Interagency Working Group to develop a Programme for creating a Unified Gas Production, Transportation and Supply System in Eastern Siberia and the Far East with potential exports to markets in China and other countries in Asia and the Pacific.

2004.10  On Oct 14th, 2004, Gazprom and CNPC have agreed to sign a strategic Partnership agreement in Beijing.

2004.11  The first meeting of Gazprom and CNPC Joint Co-ordinating Committee was held in Sanya City.
2005.09  Alexander Medvedev, deputy chairman of Gazprom and head of Gazexport said Gazprom has no limitation on its potential investments in China market. He said “We are still interested, even though foreign participation in the West-East pipeline project has been stopped. Gazprom is interested in Chinese assets related to the transportation, distribution and sale of gas... The question of China Gas Holding shares is not on the agenda, but other gas distribution assets are of interest for us”.

2006.03. Alexei Miller announced during the March 2006 visit to Beijing that Gazprom will export 60-80 bcm of Russian gas by pipelines from 2011, but later it was reported that priority will be given to western pipeline rather than eastern line.

2006.12. The final decision on UGSS is unlikely as Gazprom plans to delay the decision until 2007.
4. Factors Affecting Sino-Russian Oil and Gas Cooperation

4.1. Central Asian Republic’s Oil and Gas Supply Options

When CNPC took a position in Kazakhstan in 1997, CNPC expected to secure 20 mt/y of oil production base in the country and to supply the oil to western China. The initial target assets are Aktobemunaygaz, whose production (Zhanazhol & Kenkiyak fields) reached 4.65 mt in 2003 and is set to reach to 7 mt in 2005, and Uzenmunaigaz (Uzen field). In March 2003, CNPC completed a 279 miles Atyrau-Kenkiyak pipeline with US$ 160 million investment (initial capacity 6 mt/y and in 2006 12 mt/y).

In September 1997, CNPC and Ministry of Energy & Natural Resources of Kazakhstan agreed to build a 3,200 km pipeline between Uzen & Aktyubinsk fields to Karamay field, with a capacity of 20-27 mt/y (US$ 3.5 billion investment). In May 1999, Atyrau Scientific Research Institute of Kaspiimunaigaz completed the Feasibility Study, and China revised the proposal in Autumn 1999. China was willing to start the pipeline development subject to the confirmation of the reserves in the Caspian Sea.

Learning a lesson from the Slavneft auction and twists over the Angarsk-Daqing line, CNPC came to realise the significance of the Kazak-China oil line at the end of 2002 when the company’s disappointment towards Russia peaked.
China seems to have realised it should not put all its eggs in the Russian basket. Mainly advised by CNPC, the Chinese government decided that China could hardly lose any time to diversify its oil import from Kazakhstan, and then the Caspian Sea.

In 2002, CNPC’s Aktobemunaigaz production capacity was only 4.3 mt/y and the figure will be 5.5 mt/y in 2005. To make the pipeline economically viable, the production capacity should be at least 20 mt/y.

This is the reason why the Chinese government has authorised both CNOOC and SINOPEC to take over BG’s 16.66% equity in Kashagan project with at least 10 billion barrels of proven reserves.

On June 2, 2003, President Hu Jin-Tao and President N. Nazarbaev agreed that the two sides will resume their study on building an oil pipeline from western Kazakhstan to China and a gas pipeline from Turkmenistan to China via Kazakhstan, as well as China’s participation in developing related oil and gas fields in Kazakhstan. And China’s E&D activities in the Caspian Shelf will be supported by the Kazakhstan government.

On June 3, 2003 CNPC president Ma Fu-Cai signed an agreement with KazMunaigaz for the construction of Kazak-China oil pipeline. With the 448 km Kenkiyak-Atyrau pipeline already partially operational in March 2003, the two countries aimed at building the other sections to realise the once-stalled 3,200 km oil pipeline.

- The first Phase : 1,010 km (10-20 mt/y) Atasu-Alashankou section
- The Second Phase : Kenkiyak-Atasu section
On May 17, 2004 CNPC and KazMunaiGaz signed an agreement to build a 1,240 km pipeline to supply Kazak crude oil to China, and the project would cost US$ 850 million. The pipeline could supply a 10 mt/y of crude oil from 2005 and the capacity could increase to 20 mt/y later. In Dec 2005, the second leg of the crude oil pipeline construction was completed.

In this context, it is not surprising CNPC decided to purchase PetroKazakhstan with 550 million barrels of oil equivalent reserves by payment of US$ 4.18 billion in Aug 2005, despite challenges from ONGC/Mittal consortium and Lukoil.

On top of this, China’s CITIC Group, a diversified state-owned investment vehicle announced its US$ 1.9 bn purchase of a Kazakhstan oil field from Nations Energy Co, with more than 340 million barrels of proven oil reserves and over 50,000 b/d of production capacity.
Kazakhstan-China Oil Pipeline

- Atasu-Alashankou First Stage Capacity: 10 mty
- To Be Raised To 20 mty
- Construction of Kenkiyak-Kumkol Section Envisioned

Source: BG (2006)
Besides these oil supply from Kazakhstan, CNPC has been doubling its effort to materialise Central Asian Republic’s gas export to western China. In late September 2003, Kazakh Premier Danial Akhmetov told the press after China visit that Astana and Beijing are going over three possibilities for the building a gas pipeline running from Kazakhstan to western China:

• The first option is to make use of the existing Tashkent-Almaty gas pipeline.
• The second option is to build a pipeline from western Kazakhstan through Kyzylorda, Chimkent and Almaty, also using existing stretches of pipeline.
• The third is to build a completely new line running 2,000 km along the Petropavlovsk-Astana- Karaganda-Balkhash from Kazakhstan’s north through the country’s centre to the border with China.

The issue was discussed during the premier’s meeting with Premier Wen Jia-Bao. All these three options envision joining the border between the two countries in the area of the international railway terminal at Dostyk-Alashankou.

China was not that confident about Kazak’s capacity of gas supply initially. In 2002 Kazakhstan produced a 14 bcm of gas, but the figure is projected to be 70 bcm in 2015, of which 40-45 bcm will be allocated for export.
On top of Kazak gas option, in early April 2006 Ashgabat and Beijing signed an agreement to supply 30 bcm/y of gas from Turkmenistan to China from 2009. China aims at signing a PSA for an upstream project before the end of 2006. The target exploration area is the Right Bank of the Amu Darya River, where the estimated reserves are 1,800 bcm (of which proven and probable 40 bcm, possible 161 bcm, and speculative 1565 bcm).

It is also worth noting that in May 2005, CNPC set up a JV with Uzbekneftegaz to explore and develop reserves on the Ustyurt Plateau, and in September 2005 the firm joined the consortium of developers near the Aral Sea. The area’s gas reserves are estimated at over 2,000 bcm.

What China learned during the period is that it should not put all its eggs in the Russian basket. Mainly advised by CNPC, the Chinese government decided that China did not lose any time to diversify its oil import from Kazakhstan, and then the Caspian Sea. To the Chinese energy planners, the Central Asian Republic’s supply option is a real alternative against Russian supply option.
4.2. Different Expectation level : Gas Price

According to Interfax’s Russia & CIS Oil and Gas Weekly Report, Gazprom and China National Petroleum Corporation (CNPC) are still far from compromising on the price of Russian gas. Gazprom Export Deputy General Director Sergei Chelpanov said on November 16 that the Chinese side is offering quite a low price for Russian gas. There is a "very large difference" between the price on the European market and the price being offered by China, so it could take a long time to "draw these together."

Despite the announcement of gas export from 2011, this gas price will be the most difficult factor in finalising the timing of gas export from Russia to China.

4.3. National Interest First Approach

When President Putin studied part time at St Petersburg’s State Mining Institute, he wrote a dissertation entitled “Mineral Raw Materials in the Strategy for Development of the Russian Economy. In it, President Putin argued Russia’s rich natural resource base would secure not only its economic future but also its international position”. He laid out a scenario of state-controlled, but in part privately financed large financial-industrial corporations in Russia that were able to compete with western multinationals.
In an interview with Financial Times (Oct 19, 2004), Andrei Illarinov, the Kremlin’s economic adviser said “The school of thought that natural resources are a very special commodity is spreading very fast. In the 1900s it was widely believed that natural resources could be privately owned and therefore private companies were accumulating reserves. But over the past several years, a near-consensus has emerged that natural resources should belong to the state – not to private citizens and private companies but the state. This is now very clearly understood and that’s why any decision by foreign investors to acquire natural resources is expected to be discussed with the state”. This interview confirms the direction President Putin and his confidantes are pursuing with regard of Russia’s oil and gas asset development.

On October 13, 2004, just before his trip to China, President Putin had an interview with the Chinese reporters at the Kremlin and said that “I would like to say a few words about our pipeline routes. I hope you will understand me if I say absolutely openly and frankly that we must be guided by our national interests, first and foremost. We must develop the Russian Federation’s eastern territories, as well as Far Eastern territories. Consequently we must plan and implement large-scale infrastructure projects there”.

On December 22, 2005 Russian President Vladimir Putin said Russia should become a world energy leader. At a meeting of the Russian Security Council, Putin said,
"Apart from fuel exports, it is important to promote our high-tech services in the construction and modernization of energy facilities". He also said "Domestic fuel and energy companies can reinforce their international positions through participation in national and joint projects. The government should give them adequate political, legal and organizational support".

He added “Russia has the big challenge of developing infrastructure to diversify fuel export routes. That [diversification] will cut potential risks and give us access to promising new markets, including the Asia Pacific region. The Pacific oil pipeline is just one of the infrastructure projects. First and foremost, it is a matter of the oil pipeline, but gas pipelines may be built as well. We have discussed that with representatives of oil companies and the government".
4.4. China’s massive foreign-exchange reserves set to top US$ 1.0 Trillion

According to the Wall Street Journal (Oct 17, 2006), as of Sep 30, China’s reserves totaled US$ 987.9 billion, and are growing by about US$ 20 billion a month. Roughly, 70% of the reserves are believed to be in the US dollar assets, 20% in Euros and 10% in other currencies, including the yen and Korean Won.

The US Treasury data tells as of June 2005 China’s public and private sectors held a total of at least US$ 527.3 bn of US securities, including about US$ 450 bn of long term US treasury or agency debt, making the country the US largest foreign creditor.

China’s vice president Zeng Qinghong advocates using the reserves to buy raw Materials that China lacks. Yi Xianrong from Chinese Academy of Social Sciences warned that using reserves to invest in oil and other commodities is far too risky, and instead advised buying fewer dollars and larger quantities of other currencies.

However, Chinese state oil firms have been engaged in massive M&A deals – Ecuador, Columbia, Nigeria, Canada, Kazakhstan, Angola, and Russia – in recent years and the trend seems unlikely to change. Securing a sizable proven oil and gas assets could serve as a very valuable collateral for the investment, and it is a very effective way to reduce the scale of dollar investment.

China’s upstream investment has been blocked until recently and it remains to be how far the Sino-Russian oil and gas cooperation can go.
5. Conclusion

• The driving force of Eurasian pipeline development is Sino-Russian oil and gas pipeline cooperation.

• The fundamental – that is Russia has a huge supply source and China has a big market - is very strong. Consequently, Sino-Russian oil and gas development is set to witness a new of cooperation in the coming years and the impact to the oil and gas trading pattern in Northeast Asian region will not be small.

• Initially China’s priority was given to the pipeline gas import but now pipeline crude oil became the priority. For the first time, Moscow authority made a real commitment for the Asian direction crude oil pipeline development and the construction will help the flow of sizable oil export to China by pipeline.

• When it comes to Russia’s natural gas export to China, there are a lot of uncertainties. Even though March 2006 Beijing announcement indicated a 60-80 bcm/y of gas export to China from 2011, a serious delay cannot be ruled out.

• China is taking a very pragmatic stance towards oil and gas imports by pipeline. Beijing’s energy planners learned a very expensive lesson from the collapse of Angarsk-Daqing pipeline development and are determined to prepare the alternative supply source.

• It remains to be seen how far Sino-Russian oil and gas cooperation will go but the potential is really huge.