

# Russian Oil for Northeast Asia: Opportunities, Problems and Policies

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## Introduction

In January 2003, major developments with the potential to affect energy security in Northeast Asia became the focus of international attention. Firstly, there was the crisis caused by Kim Jong Il's decision to dump the 1994 Framework Agreement and withdraw the DPRK from the nuclear non-proliferation treaty. As the United States and other members of the Korean Peninsula Energy Development Organization (KEDO) decided to end monthly shipments of fuel oil to the DPRK, Pyongyang reactivated its graphite reactors to ensure additional supplies of electricity, removing at the same time the monitoring equipment installed by the International Atomic Energy Agency. The future of KEDO became highly uncertain, if not bleak.

The second problem was the mounting pressure arising from the Iraq situation and the threat of an invasion by the U.S. military, in the light of the potential impact of this on oil supplies to Japan, the ROK and China. The U.S. intensified pressure on Saddam Hussein, demanding from Baghdad full cooperation in weapons inspections and disarmament. However, Iraq's huge reserves of oil were probably an additional motivation for this policy.

However, positive signs also appeared on the regional horizon as Japanese Prime Minister Junichiro Koizumi prepared to visit Russia in January 2003. From the Japanese perspective, the geographic proximity of Russia combined with its potential to produce and export energy resources makes energy sector a desirable basis for bilateral cooperation. Indeed, the ongoing Sakhalin projects are the largest investment undertakings in Russia, involving Japanese investment of almost US\$1 billion and the prospect of this eventually totaling US\$8 billion.

During his talks in Moscow, Japanese leader expressed his support for an oil pipeline that would link large but as yet undeveloped oil reserves in Eastern Siberia and the Far Eastern region with an export terminal on the Pacific coast. Indeed, this project would be of mutual benefit from an economic perspective, contributing to the development of Eastern Siberia and the Far Eastern region, as well as from the energy security perspective of Japan and other economies of Northeast Asia. Junichiro Koizumi stressed the readiness of Japan to support the construction of the Pacific pipeline. Japan could provide export credit guarantees that would allow up to 100% of purchases to be from non-Japanese sources. Vladimir Putin agreed that the project is of great interest to Russia, while also admitting the need to review its economics and financing issues.

## The Impasse

Some Chinese observers were very quick to mention that the plan to build a Russian oil pipeline to China was left up in the air because the deal was not formally secured as had been expected before the Russian President's visit to Beijing in December 2002. Admitting that an alternative route to Nakhodka would allow Russia to reach markets in Asia and North America, in line with the goals of the new Russia-U.S. energy dialogue, some commentators warned that the cancellation of a pipeline to China would jeopardize bilateral economic links with Russia. The cost of this could be the cancellation by China of several projects, reportedly involving a combined total investment of about US\$33 billion. Other publications made reference to an unnamed Yukos Company official who reportedly said that the Russian government has promised to expedite the construction of the pipeline to China, partly in return for CNPC (China National Petroleum Corporation) dropping its privatization bid for the state-owned oil firm Slavneft. Indeed, CNPC withdrew its bid before an auction on December 18, 2002.

As the mass media reviewed the outcomes of the Japan-Russia summit, speculation also surfaced that an offer to support the Baikal-Pacific Pipeline (BPP) project was not only the product of the Japanese leader's political resolve, but a response to recommendations from Washington.<sup>1</sup> The truth is that the "oil segment" of the summit agendas of the December 2002-January 2003 meetings between Russia and China, as well as Russia and Japan did not strengthen Russia's diplomatic position in the region. The BPP project, which was unexpectedly emphasized by Japan as one of the pillars of cooperative links, is fully justifiable and desirable, provided that oil reserves are sufficient and funding is available. However, a situation with Russia's neighbors - both huge importers of oil - lobbying for mutually exclusive investment options, could lead to complications reminiscent of the Cold War era.<sup>2</sup>

In dealing with the potential discord in a constructive way, Japan, Russia, and China should adjust their interests and promote cooperative initiatives that respond to their energy security and development needs. This is precisely the goal of the "new energy security dialogue" between Russia and the U.S., which is aimed at the development of energy infrastructure throughout Russia, including Eastern Siberia and the Far East, the modernization of the power, natural gas and oil sectors for the sake of greater stability in global energy markets, and enhancing the security of energy supplies.<sup>3</sup> These ideas have also been reflected in the energy diplomacy concept paper published by the Japanese

<sup>1</sup> See *Sentakū*, no. 2, 2003, 48.

<sup>2</sup> Indeed, back in the 1970s, Japan and Russia were also considering building a Trans-Siberian oil pipeline to supply oil from Western Siberia to Japan. Reportedly, at some point, China interfered, exerting diplomatic pressure in order to prevent Russian oil exports to Japan.

Ministry of Foreign Affairs in November 2002.<sup>4</sup> While emphasizing efforts to develop an energy security regime in Asia, the concept advances the idea of interdependence and cooperation in the energy sector. China and Russia have also endorsed cross-border energy cooperation, as reflected in their Joint Statement signed in Beijing in December 2002.<sup>5</sup>

"Considering the great importance of bilateral energy cooperation, the two heads of state guarantee that the China-Russia crude oil and natural gas pipeline cooperation projects, on which agreements have been reached, will be implemented according to schedule. They also agree to coordinate the implementation of energy projects with promising prospects, which are vital to safeguarding a long-term and stable supply of oil and gas."

All these new policies and inspiring statements are very important for the future of energy cooperation in Northeast Asia. It is therefore crucial that the long-term validity of these strategic intentions is not questioned, in the event that the BPP overshadows the Angarsk-Chita-Daqing pipeline project. This overview is intended to provide some facts, figures and analysis regarding the overall picture of the demand for oil in Northeast Asia and Russia's potential capacity to supply oil to its neighbors.

### **Transneft and the Pacific Pipeline**

The BPP proposal was by no means new to Vladimir Putin when he met with Jiang Zemin in December 2002, and with Junichiro Koizumi in January 2003. The idea of building a 3,765 km-long pipeline linking Angarsk and Nakhodka originated from Semyon Vainshtock, President of the state-owned Transneft Company, Russia's principal oil transporter.<sup>6</sup> On April 9, 2002, he discussed this project with President Putin and prior to this, Transneft's representatives and the government of Primorskiy Krai signed an agreement concerning the company's intention to build a pipeline to Nakhodka. Later in April, similar agreements were signed with the other provinces involved.<sup>7</sup>

In addition, Presidential Order No. Pr-1315, dated July 17, 2001 and presumably solicited by Vainshtock,

authorized Transneft to draft a pre-feasibility study report. As a result, the pipeline's cost was estimated at US\$5.2 billion and its capacity at 1 million barrels per day (Mbd), or 50 million tons (Mt) of crude oil a year. For comparison, the cost of building the Angarsk-Chita-Daqing pipeline of 30 Mt capacity was estimated at US\$2 billion (Russian section). Oil for both pipelines should originate from Western Siberia, Krasnoyarskiy Krai, and Irkutskaya Oblast. Several routing options for the BPP were under review and Angarsk-Kazachinskoe-Tynda-Skovorodino-Khabarovsk-Nakhodka (Perevoznaya Bay) was selected. This route involves the BAM (Baikal-Amur Railway) and the TSR (Trans-Siberian Railway) infrastructure corridors.

In January 2002, the Russian Ministry for Economic Development and Trade approved the proposal and organized a presentation of the project, with the participation of the Energy Ministry and oil companies. Transneft also completed the environmental assessment report.<sup>8</sup> In June 2002, the project was presented at the APEC Investment Forum in Vladivostok and at the Baikal Economic Forum in Irkutsk in September.

Reportedly, a decision to postpone a pipeline to China and evaluate in detail the west-to-east option was discussed during the Security Council meeting on November 27, 2002. According to Sergei Darkin, Governor of Primorskiy Krai, President Putin questioned at the meeting the entire concept of the pipeline infrastructure proposed for Eastern Russia.<sup>9</sup> Apparently, the BPP option has gathered strong support on the part of regional leaders, who favored it from the standpoint of the impact on domestic economics, oil security and access to multiple export markets.

### **Angarsk-Daqing Pipeline**

On the other hand, China is rapidly turning into a massive net importer of oil and related products. Therefore, it is only natural that Beijing is keenly interested in an oil pipeline from Eastern Siberia to Daqing, as a way of maintaining employment and ensuring the continued use of its existing infrastructure in this strategically important region. Development in Daqing carried out with the assistance of Japan accounts for about 1.0 Mbd of crude oil production, providing about 30% of China's total oil output,

<sup>3</sup> Joint Statement by President Vladimir Putin and President George Bush on a New Russia-U.S. Energy Dialogue, Russia-United States Summit Meeting, Moscow-St. Petersburg, May 24-26, 2002, see [http://www.kremlin.ru/summit8/s8\\_doc4ru.html](http://www.kremlin.ru/summit8/s8_doc4ru.html)

<sup>4</sup> In summary, this document, entitled Strategy and Approaches of Japan's Energy Diplomacy, includes the following major points: (1) emergency response measures, (2) friendly multi-layered relations and bilateral and multilateral dialogues with Middle Eastern and other energy-producing countries, as well as countries along international shipping lanes, (3) diversification of energy carriers and energy supply sources, (4) energy saving and development of alternative energy sources, including promoting renewable energy in developing countries, (5) efforts to develop an energy security regime in Asia, advancing the concept of interdependence in the energy sector and promoting cooperation, and (6) response to environmental issues by simultaneous achievement of the "three Es" (economic growth, energy security and environmental protection).

<sup>5</sup> Joint Statement by the Chinese President Jiang Zemin and the Russian President Vladimir Putin, December 4, 2002. In addition, on August 23, 2002, after the Seventh Regular Meeting of the two countries' prime ministers, the Chinese Premier Zhu Rongji and the Russian Prime Minister Mikhail Kasyanov signed a Joint Communiqué, which contained the following reference to energy cooperation:

"To lose no time in implementing the Sino-Russian oil pipeline project, the two sides agreed that state-level administrative departments in charge should expedite the ratification of the project so that it could be advanced to the initial planning phase according to the General Feasibility Agreement. The two sides promised to create favorable conditions for the implementation of the project."

but capacity is expected to decline.

An oil pipeline from Russia has been in the planning process about a year longer than the BPP. Initially, Yukos and Transneft jointly backed this project and allocated US\$30 million for the feasibility assessment. However, Yukos was the main promoter of the project, which was close to being officially endorsed, on condition that all technical and financial details were finalized. The plan was to begin construction in 2003. Yukos was also acting as a prime potential supplier of oil from the Tomsk and Khanty-Mansiysk areas of Siberia, and was prepared to sustain the proposed export volumes alone.<sup>10</sup>

The distance to be covered by the pipeline is 2,247 km, of which 1,452 km crosses Russian territory (paid by Yukos and operated by Transneft), with the remaining portion on China's territory and owned and operated by CNPC. The pipeline is to traverse the territories of Irkutskaya Oblast, Buriatia and Chitinskaya Oblast, which were expected to benefit from this project economically (Table 1).

Table 1. Angarsk-Daqing Pipeline: An Economic Impact Assessment  
(US\$ million, persons)

|                    | Pipeline Length, km | Capital Investments | Budget Revenues | Construction Jobs | Service Jobs |
|--------------------|---------------------|---------------------|-----------------|-------------------|--------------|
| Irkutskaya Oblast  | 108.0               | 114.0               | 85.0            | 620               | 775          |
| Buriatia           | 552.3               | 554.0               | 320.0           | 1,120             | 453          |
| Chitinskaya Oblast | 792.1               | 453.0               | 427.5           | 1,415             | 462          |
| <b>Total</b>       | <b>1,452.4</b>      | <b>1,121.0</b>      | <b>832.5</b>    | <b>3,155</b>      | <b>1,690</b> |

Source: Yukos

Mikhail Khodorkovskiy, Chairman of the Board and CEO of Yukos was the key player on the Russian side. In March 2000, his project was discussed during the second session of the Russia-China Subcommittee on Energy Cooperation, part of the standing commission in charge of preparing for bilateral meetings of the heads of the respective governments. Shortly before that, he visited Beijing (November-December 1999) to sign agreements with CNPC to supply 0.5 Mt of oil by rail in 2000 and state-owned Sinopec (China Petrochemical Corporation)<sup>11</sup> to supply 1 Mt of oil. In January 2000, Khodorkovskiy visited Mongolia to discuss transit shipments of oil to

China. In July 2000, he visited Beijing again, this time as a member of the official delegation led by President Putin.

In July 2001, during a summit in Moscow, the Russian Ministry of Energy, Transneft and Yukos signed an agreement with the SDPC (State Development Planning Commission of China) and CNPC, regarding a feasibility study. In September 2001, when the Chinese Prime Minister visited Russia, a general agreement on the evaluation of the project was signed by the heads of the delegations, stipulating that by July 2002, the respective sides would determine the investment requirements, negotiate tariffs, and confirm the legal aspects of their cooperation. It was also agreed that China and Russia would adjust their construction blueprints by July 2003. In July 2002, CNPC proposed opening a credit line for Yukos to finance the construction of the Russian section of the pipeline and offered a guarantee to off take 30 Mt of crude for two decades, starting from 2010. China also agreed to increase oil purchases from Yukos by rail by 0.5 Mt a year, up to 3 Mt in 2005.

It seems that for the greater part of this period, China managed to develop two parallel negotiating channels with Russia, including, in addition to Yukos, the Russian federal ministries, apparently extracting benefits from this multiple setting. Coordination of the bilateral energy dialogue was the responsibility of the Energy Ministry. The opponents, who backed the BPP option, including Transneft and Ministry of Economic Development and Trade, were left on the sidelines. On the other hand, the Ministry of Foreign Affairs was actively participating in the process, including implicit references to the Yukos project made on various occasions, including those made by the minister.<sup>12</sup> In addition, a number of documents were issued at various stages at the federal level in support of the project.<sup>13</sup>

### China vs. Pacific vs. Atlantic

Initially, Yukos proposed the building of a pipeline via Mongolia. However, Beijing resisted this option, in order to avoid transit charges. Negotiations on the route and oil pricing continued and in one of his interviews, Mikhail

<sup>6</sup> In 2002, Transneft increased the intake of crude from oil producers to 376 Mt, 10% more than in 2001. Exports amounted to 188.5 Mt of crude oil, up by 9%. Deliveries to Russian oil refineries increased by 10%, reaching 186.9 Mt. Total turnover has increased by over 10%, amounting to 852.9 billion ton-km. Transneft's network incorporates 48,610 km of long-distance pipelines with diameters ranging from 420 mm to 1,220 mm, 336 oil pumping stations, and 849 storage reservoirs with a capacity of 13.24 million cubic meters. In 2002, Transneft transported 93% of the oil produced in Russia.

<sup>7</sup> The estimated cost of the project is US\$5.2 billion, including a deep-water port and an oil terminal with a stockpiling capacity of 4 million cubic meters. The pipeline, with a diameter of 1,220 mm, will be equipped with 26 pumping stations. A feasibility study is scheduled to be completed in 2004, while a pipeline could be commissioned in 2007. Oil for this pipeline will be shipped from Western Siberia, as well as new projects in Krasnoyarskiy Krai, Irkutskaya Oblast and Yakutia.

<sup>8</sup> "On Nature Conservation" # 7-FZ, Article 3, 11, 32, 33, 46 of January 10, 2002, Federal law "On Ecological Expertise" # 174-FZ, Article 12, 14, 27 of November 23, 1995, Order of the State Committee of the Russian Federation for Nature Conservation "On Endorsement of Provisions for Estimating the Impact of Planned Economic or Other Activities on the Natural Environment in the Russian Federation" # 372, Article 3, 4 of May 16, 2002.

<sup>9</sup> Svetlana Babaeva, Oleg Zhunusov and Maria Ignatova, "An Alternative Route for Oil", *Izvestia*, December 9, 2002, <http://www.izvestia.ru/economic/article27560>

<sup>10</sup> YUKOS - the second largest oil producer in Russia - is actively developing and exploring access to Northeast Asia, China in particular. While Russia's oil reserves amount to more than 350 billion barrels, YUKOS has 11 billion barrels in reserve, producing 1.1 Mbd and refining 0.6 Mbd.

Khodorkovskiy compared the bureaucratic practices of his negotiating partners with those of the Soviet era, suggesting that the BPP could be an alternative, if the Angarsk-Daqing project were delayed.

In the meantime, a domestic debate was unfolding concerning the advantages of the BPP, with a growing number of experts favoring this option. Some participants in the discussion proposed to evaluate not only the profitability of the project, but its role in regional development and from the standpoint of geopolitical interests. Others recollected that Yukos had experienced numerous difficulties and uncertainties in negotiating with Beijing. In addition, the idea was aired that building an oil pipeline to Nakhodka along with a gas pipeline in the same corridor would reduce the costs of both projects. According to Transneft's top management, Russia's economic security would be far better protected by the BPP because it accesses more than one destination,<sup>14</sup> serving domestic oil transportation needs along the way. On the other hand, Transneft did not rule out the possibility of constructing both pipelines, but indicated that it would operate the Russian part of the Angarsk-Daqing system.

It is hard to tell whether the assertive position of Transneft regarding the issue of controlling all export-oriented pipelines in Russia persuaded Yukos, Lukoil, Sibneft and TNK (Tyumen Oil Company) to propose a mega-pipeline from Western Siberia to Murmansk (3,600 km if an inland route were selected, or about 2,500 km if it were a mixed inland-sea route) to transport about 60 Mt of oil, mostly for exports to Western Europe and North America. The budget revenue from the project was estimated at US\$9.2 billion with 6,000 new construction jobs and about 2,000 servicing jobs being created.

The government, however, responded that there would be neither a privately owned pipeline to Murmansk, nor any other non-state pipeline projects in Russia. According to Mikhail Kasyanov, the oil majors' participation in funding new pipeline projects will be taken into account by means of reduced transportation tariffs. Moreover, Transneft indicated that, after completion of the second phase, the capacity of the state-owned BTS (Baltic Trunk Pipeline System), would support oil exports to North America.

What all these developments demonstrate is the highly competitive nature of relationships among various interest groups in Russia, including state-owned companies, privatized oil majors, federal government and its branches, regional authorities, and the administration of the President.

Worse, the rules of this game remained fluid for years, inspiring the private sector to lobby for its interests. In the absence of state coordination and clearly defined long-term development plans for Eastern Russia, including the role of natural gas and oil delivery infrastructure in long-term regional planning, federal agencies opted to follow proposals originating from private companies. These tactics provided only a fragile foundation for the Yukos pipeline when it came to impartial evaluation and alternative proposals.

### Russian Oil and Regional Markets

Russia is the world's third largest producer of oil and the second largest exporter of crude oil. Experts in Russia estimate proven oil reserves to be 130 billion barrels, or 10% of the world total. Without the Middle East, largely closed to foreign private investors, these reserves account for about a quarter of the world's proven oil reserves. According to Mikhail Khodorkovskiy, the West tends to agree that Russia's oil reserves are significantly larger than was previously thought. According to the World Energy Council (1998), proven reserves were estimated at 46.5 billion barrels. However, during the 1990s, the international audit of four oil majors, including Yukos, Lukoil, Surgutneftegaz and TNK (excluding Onaco) raised their combined reserves to 40.2 billion barrels.

In 2001-2002, three Russian oil majors were among the world leading oil companies in increasing production: Sibneft (20%), Yukos (17%) and Rosneft (11%). In 2001, the 0.5 Mbd increase in oil output in Russia required about US\$8,000 capital costs for per barrel per day capacity. This is less than half of the amount quoted in international estimates. Russia is now seen as the most dynamic player among the world's crude oil suppliers. In 2002, oil output reached 380 Mt (7.59 Mbd), with Sibneft expanding production by 31%, Yukos by 20%, Surgutneftegaz by almost 12%, and TNK by 9%, accounting for 74% of the national increase in oil output (Table 2).

Table 2. Oil Output and Non-CIS Exports by Transneft, 2001-2002

|                | Oil Output |      | Non-CIS Exports |      | Exports / Output, |
|----------------|------------|------|-----------------|------|-------------------|
|                | 2001       | 2002 | 2001            | 2002 | 2002              |
| Lukoil         | 1.49       | 1.51 | 0.46            | 0.52 | 34.2              |
| Yukos          | 1.16       | 1.40 | 0.49            | 0.51 | 36.7              |
| Surgutneftegaz | 0.88       | 0.98 | 0.32            | 0.35 | 35.5              |
| TNK            | 0.69       | 0.75 | 0.29            | 0.30 | 39.3              |
| Sibneft        | 0.41       | 0.54 | 0.15            | 0.21 | 38.9              |
| Tatneft        | 0.49       | 0.49 | 0.18            | 0.16 | 32.6              |
| Russia         | 6.96       | 7.59 | 2.57            | 2.66 | 35.0              |

Source: Ministry of Energy

<sup>11</sup> China has reorganized its state-owned oil and gas assets into two vertically-integrated, regionally focused firms. CNPC and the China Petrochemical Corporation (Sinopec) were ordered to carry out an asset swap that transferred some exploration and production assets to Sinopec and some refining and distribution assets to CNPC. In addition, CNPC siphoned off most of its high quality assets to its subsidiary PetroChina. The China National Offshore Oil Corporation (CNOOC) handles offshore exploration and production, and accounts for more than 10% of domestic crude output. These companies have successfully carried out initial public offerings (IPOs) of stock, bringing in billions of dollars in foreign capital, including about US\$2 billion of stock sold to ExxonMobil, BP, and Shell.

<sup>12</sup> People's Daily Online, Huang Ying, *People's Daily*, June 14, 2002.

<sup>13</sup> The instructions originating from the Federal Government of the Russian Federation were dated 22 January 1999, No. 8048 and 03 September 1999, No. 1367- . In addition, government orders were issued on 10 March 1999, No. M- 2-07669, 27 October 1999, No. HA- 2-35698, 29 November 1999, No. B - 2-8924, and 10 January 2000, No. HA- 2-00286.

<sup>14</sup> In a similar context, the Baltiysk Pipeline System (BTS) has been built with oil export terminal facilities in Primorsk, near St. Petersburg, in order to have an alternative route to the southern export route via Novorossiysk.

Russia's non-CIS (Commonwealth of Independent States) exports of oil through the Transneft system rose by over 3% to 133 Mt (2.66 Mbd), accounting for 35% of the total oil output. On the other hand, oil exports to CIS markets surged 77% to 32 Mt. In general, oil exports to all destinations grew 20%, reaching 189 Mt (3.78 Mbd), accounting for most of the additional output exported. In 2003, Russia is expected to produce more than 400 Mt (8 Mbd), also exporting the bulk of the additional output.

The main source of uncertainty, however, is the inadequacy of the country's current oil export infrastructure. According to oil majors, the delivery capacity shortage under the control of Transneft reached 50 Mt and this shortfall could expand further. In this context, the BPP project could contribute to the expansion in transportation capacity to a greater extent than the Angarsk-Chita-Daqing pipeline.

The strategic value of the BPP for Japan and other economies of Northeast Asia is obvious. Japan is the world's second largest importer of oil after the United States, with daily imports of about 5.6 Mbd (227 Mt a year). It is followed by the ROK, the fourth largest oil importer (2 Mbd, 102 Mt), China (1.4 Mbd, 70 Mt) and Taiwan (0.8 Mbd, 40 Mt), which are the ninth and tenth largest importers of oil. In 2000, China also imported 18 Mt of oil products, while Japan imported 45 Mt of oil products.<sup>15</sup> China is eventually expected to surpass Japan, consuming about 10 Mbd (500 Mt) of oil and oil products by 2020. The combined import of crude oil on the part of Japan, the ROK and China, including Taiwan and Hong Kong, may reach 550-600 Mt by 2010, exceeding 870 Mt by 2020 (Table 3).

Table 3. Oil Production and Consumption, 1999-2020

|           | Production |       | Consumption |       | Imports |        | Dependency, % |       |
|-----------|------------|-------|-------------|-------|---------|--------|---------------|-------|
|           | 1999       | 2020  | 1999        | 2020  | 1999    | 2020   | 1999          | 2020  |
| China     | 159.9      | 151.9 | 204.3       | 497.5 | 44.4    | 345.4  | 21.7          | 69.5  |
| Hong Kong | 0          | 0     | 11.2        | 23.9  | 11.2    | 23.9   | 100.0         | 100.0 |
| Taiwan    | 0.4        | 0     | 38.2        | 51.1  | 38.2    | 51.1   | 99.9          | 100.0 |
| Japan     | 0.7        | 0     | 266.4       | 288.4 | 265.7   | 288.4  | 100.0         | 100.0 |
| ROK       | 0.4        | 0.4   | 99.9        | 163.0 | 99.5    | 162.6  | 99.6          | 99.7  |
| Russia    | 304.9      | 377.7 | 127.3       | 197.8 | -177.6  | -179.9 | -139.5        | -91.0 |

Source: APEC Energy Demand and Supply Outlook 2002 (Tokyo: APERC, 2002), 56.

The demand projections, however, differ. Estimates provided by the U.S. Energy Information Administration contrast with those provided by APERC (Asia-Pacific Energy Research Center), particularly for China and Japan (Table 4). Oil demand in East and South Asia, including India and ASEAN,<sup>16</sup> is projected to grow rapidly from 15 Mbd in 2000 to 27 Mbd in 2020, including an increase from 11 Mbd to about 20 Mbd of oil cargo that will pass through the Malacca Strait. The main source of this demand is the expansion in the transportation sector, particularly in China, with a projected annual increase in fuel consumption of 5.7% compared with a 4% average increase in

transportation sector demand in the APEC region.

Table 4. Oil Demand and Imports, 2000-2020

|             | Demand, 2001 |       | Demand, 2020 |       | Imports, 2020 |     |
|-------------|--------------|-------|--------------|-------|---------------|-----|
|             | Mbd          | Mt    | Mbd          | Mt    | Mbd           | Mt  |
| Japan       | 5.6          | 280   | 6.4          | 320   | 6.4           | 320 |
| China       | 4.3          | 215   | 10.5         | 525   | 7.5           | 375 |
| ROK         | 2.1          | 105   | 3.0          | 150   | 3.0           | 150 |
| Taiwan      | 0.8          | 40    | 1.0          | 50    | 1.0           | 50  |
| India       | 1.8          | 90    | 4.9          | 245   | 4.0           | 200 |
| World Total | 74.9         | 3,745 | 118.6        | 5,930 | -             | -   |

Source: Energy Information Administration, <http://www.eia.doe.gov/oiaf/ieo/oil.html>

Currently, 60% of China's oil imports originates from the Middle East, while this dependence ratio for Japan and the ROK exceeds 88% and 79% correspondingly. The oil dependence of the APEC economies on imported oil is projected to increase from the current 36% to 54% in 2020. In East Asia, the share of oil imports in oil consumption will rise to 72%. In Northeast Asia, dependence on imported oil is expected to exceed 90%, with China becoming the third largest oil importer in the world, following only the United States and the European Union.

It is expected that with the development of new oil fields in Eastern Siberia and the Far Eastern region, including Sakhalin, oil exports from Eastern Russia could be a significant factor in regional oil balances. The greater part of Russia's export capacity will depend on the planned oil pipeline projects, including Angarsk-Chita-Daqing pipeline and the BPP. However, will there be sufficient reserves of oil to be delivered by the proposed pipelines?

The revised long-term assessments contained in the latest, but still intermediary version of the Energy Strategy of the Russian Federation 2020 indicate that in 2020, oil output will amount to 415 Mt. The good news is that this is 55 Mt higher than the initial target of 360 Mt, which was cited in the 2000 draft of the program. Nevertheless, these estimates are significantly lower than current forecasts. For example, the government has suggested that oil output in 2005 will reach 415-420 Mt, while the oil majors insist that Russia will be able to produce 450 Mt of oil by around 2010 and beyond. These startling differences lead to rather skeptical forecasts by national and international organizations, giving rise to nothing but confusion.

### A Need for Exploration and Development ...

According to evaluations by the Siberian Branch of the Russian Academy of Sciences, the proven reserves of oil in Eastern Siberia do not seem sufficient to justify a long-distance, high-capacity oil pipeline on the scale of the BPP. On the other hand, specialists admit that without such a pipeline it will be impossible to provide these known reserves with an infrastructure that supports their commercialization, let alone the investment required for further exploration. An alternative approach that the concept of the BPP seems to pursue is to stimulate the

<sup>15</sup> BP Statistical Review of World Energy, June 2001, pp. 6, 9 and 19.

<sup>16</sup> In the wider Pacific Asia region, only China, Indonesia and Malaysia produce oil in significant quantities. In 2000, their combined oil output was 266 Mt, including 162 Mt of crude oil extracted in China, 68 Mt in Indonesia and 36 Mt in Malaysia. Oil extraction is forecast to remain more-or-less at current levels in Indonesia and Malaysia, while declining in China, so the output of all three oil-producing economies would level at 280 Mt a year by 2010 and most probably decline thereafter.

exploration, development and production of local oil in Eastern Siberia and the Far Eastern region by relying on supplementary oil shipments from Western Siberia. In other words, oil resources that do not justify a pipeline in their own right could be developed, if supported by connections to the BPP.

By 2010, the oil fields of the Siberian Platform, with its 1,300 Mt of its proven oil reserves, could produce about 30 Mt, including, according to Yukos, 13 Mt at the Yurubcheno-Tokhomskeye field in Krasnoyarskiy Krai and about 10 Mt at the Verkhne-Chonskoye field in Irkutskaya Oblast. The development of these and other fields will require billions of dollars in investment, not to mention a considerable period of time. In addition, 10 Mt of crude oil can be produced in Yakutia (Table 5).

Table 5. Siberian Platform: Oil Reserves\*

|                               | A+B+C1 | C2    |
|-------------------------------|--------|-------|
| <b>Krasnoyarsk Krai</b>       |        |       |
| <b>Yurubcheno-Tokhomskeye</b> | 58.4   | 301.1 |
| <b>Sobinskoye</b>             | 3.0    | 8.2   |
| <b>Irkutskaya Oblast</b>      |        |       |
| <b>Verkhne-Chonskoye</b>      | 159.5  | 42.1  |
| <b>Yakutia</b>                |        |       |
| <b>Talakanskoye</b>           | 106.1  | 18.1  |
| <b>Chayandinskoye</b>         | 9.9    | 23.1  |
| <b>Srednebotuobinskoye</b>    | 54.4   | 11.9  |
| <b>Total</b>                  | 391.3  | 404.5 |

Source: Energy Systems Institute, Irkutsk

\* Russia employs its own methodology to measure reserves. One can roughly equate A+B+C1 with the "proven and probable reserves" classification used internationally, while C2 can be assumed to designate "possible reserves", although there are certain mismatches.

Moreover, the exploration of the Yurubcheno-Tokhomskeye zone (UTZ) was discontinued in 1991 but was resumed a decade later by Yukos. Less than 10% of the entire area of about 10,000 km<sup>2</sup> of oil fields has been explored thus far. The geologists from Yukos responsible for the exploration of the UTZ insist that the oil collectors of the zone are much older than those in Western Siberia, making the combined oil resources of the UTZ larger than those of the whole of Eastern Siberia.

Sakhalin provides an example of how proactive exploratory policies lead to development projects, creating new sources of oil imports. Sakhalin's recoverable offshore reserves of oil are estimated at more than 1.5 billion tons and those of natural gas at 3 trillion cubic meters. These resources are much better explored than those in Eastern Siberia (Table 6).

Table 6. Sakhalin Offshore Oil Reserves

|                   | Sea Depth, Meters | Recoverable Reserves, Mt | First Output, Year | Production Peak, Mt |
|-------------------|-------------------|--------------------------|--------------------|---------------------|
| <b>Sakhalin-1</b> | 30-50             | 307                      | 2005               | 8.0                 |
| <b>Sakhalin-2</b> |                   | 150                      | 1999               | 8.5                 |
| <b>Sakhalin-3</b> |                   |                          |                    |                     |
| Kirinskiy         | < 300             | 70 cond.                 | 2014               | -                   |
| East Odoptu       | < 500             | 70                       | 2014               | 6.9                 |
| Ayashskiy         | < 500             | 97                       | 2014               | 9.1                 |
| <b>Sakhalin-4</b> | < 30              | -                        | -                  | -                   |
| <b>Sakhalin-5</b> | < 140             | 600                      | 2010               | 35.5                |
| <b>Sakhalin-6</b> | 30-60             | 300 Mtoe                 | -                  | -                   |

Source: Rosneft, 2002

In addition, it seems that, compared with the BPP, the Sakhalin projects have a greater capacity to alter the almost complete import dependence of Japan, the ROK and China

on Middle Eastern oil. On the other hand, the investment parameters of these projects also reveal their high costs and long implementation time (Table 8).

The most advanced of the projects is Sakhalin 2, to which Shell and its partners have committed \$10 billion of investment. Its total confirmed reserves of oil are estimated at 350 Mt, permitting the extraction of about 8.5 Mt a year. Currently, export shipments of oil from Sakhalin 2 are seasonal due to access being limited during winter. However, after an oil pipeline is built to the south of the island, oil shipments will take place all year round.

Table 7. Profiles of the Sakhalin Projects

|                                      | Sakhalin-1   | Sakhalin-2   | Sakhalin-3   |
|--------------------------------------|--|--|--|
| <b>History</b>                       | 30 June 1995 - PSA signed; 10 June 1995 - PSA enacted  | 22 June 1994 - PSA signed; 10 June 1996 - PSA enacted                              | 1 May 1999 - Kirinskiy Block PSA approved, 5 August 1999 - commission appointed to define terms of development   |
| <b>Fields</b>                        | Chaivo (main), Arkutun-Dagi, Odoptu  | Piltun-Astokskoe (oil), Lunscoe (gas)  | (1) Kirinskiy Block<br>(2) East Odoptu and Ayashskiy Block   |
| <b>Reserves</b>                      | Oil - 340 Mt;<br>Natural gas - 485 Bcm   | Oil 150 Mt; natural gas 642 Bcm  | (1) Oil 70 Mt; natural gas 730 Bcm<br>(2) Oil 167 Mt; natural gas 67 Bcm   |
| <b>Investors</b>                     | Exxon-Mobil (30%), SODECO (30%), Rosneft (8.5%), Rosneft-Sakhalinmorneftegas (11.5%), and ONGC (20%) | Shell (55%), Mitsui (25%), and Mitsubishi Corporation (20%)                        | (1) Exxon-Mobil (33.35%), Chevron-Texaco (33.35%), Rosneft-Sakhalinmorneftegas (33.3%)<br>(2) Exxon-Mobil (66.7%), Rosneft-Sakhalinmorneftegas (33.3%) |
| <b>Operator</b>                      | Exxon-Neftegas Ltd.  | Sakhalin Energy Investment Co. Ltd.  | (1) PegaStar Company<br>(2) Exxon Neftegas Limited   |
| <b>Total investment</b>              | \$15 billion   | \$10 billion   | —  |
| <b>Investment as of January 2002</b> | \$670 million, including \$170 million in Russia   | \$2 billion, including \$181 million in Russia                                     | —  |
| <b>Targeted markets</b>              | Sakhalin, Khabarovskiy Krai, Primorskiy Krai, Northeastern China                                     | Oil - Asia-Pacific Region; gas - Japan, the ROK, Taiwan, China                     | —  |
| <b>Delivery mode</b>                 | Oil pipeline, gas pipeline   | LNG, 9.6 Mt / year   | —  |
| <b>Supply volumes, readiness</b>     | 20 Bcm / year, 20 years, from 2005   | Oil - 8.5 Mt / year, 4.2 Mt recovered in 1999-2002; gas - 19 Bcm / year, from 2006 | —  |

Source: Rosneft, 2002, Administration of Sakhalinskaya Oblast.

Another two projects are incorporated in Sakhalin 3, including the Kirinskiy Block, with an estimated 70 Mt of oil reserves, and the East Odoptu field, which has 97 Mt of oil reserves. Many specific parameters of the Sakhalin 3 project, including investment requirements, have yet to be finalized. Extensive exploratory work is needed and the first output is expected in around 2014. Eventually, Sakhalin 3 is expected to produce twice as much oil as Sakhalin 1 and Sakhalin 2 combined. However, the peak output from all these projects is unlikely to exceed 40-50 Mt a year. In this context, both CNPC and Yukos would contribute only a fraction of the investment package needed for producing and delivering an equivalent amount of oil from the fields offshore from Sakhalin.

### ... And Proactive Policies

The economies of Northeast Asia have yet to become active in promoting their own energy security interests and involving Russia in their efforts. These economies are all in the same boat, with growing oil imports and import

dependence on the Middle East, a region suffering from chronic political instability. Currently, about 60% of oil exports from the Middle East are destined for Asia, while European and North American oil markets are supplied from multiple and competing sources. This explains the so-called "Asian premium" - the US\$1-1.5 per barrel extra paid by Asian importers compared with the prices paid by European and North American ones. This adds considerable amounts of money to Far Eastern oil bills. Moreover, this also raises the price of imported LNG.

Promoting energy links with the northern neighbor, however, also requires the mobilization of billions of dollars of investment. The set of policy instruments required to deal with these problems includes a system for strategic oil stocks, and access to overseas oil reserves through exploration and development agreements. As the largest oil importer, Japan has been a pioneer in all these areas, apart from diversification. Oil stockpiling in Japan is carried out in both the private and public sectors. Petroleum stockpiling by private companies began in 1972. In 1983, a national program has been launched for developing public sector stockpiling facilities. In August 2002, state stockpiles of oil amounted to 91 days of domestic consumption, while private stocks stood at 81 days of consumption.

In 1967, the government of Japan established the Japan National Oil Corporation (JNOC) to promote overseas oil exploration. JNOC supported extensive investment programs by providing loan guarantees to Japanese exploration firms. In the mid-1970s, Japan and the consortium of several Japanese companies known as SODECO (the Sakhalin Oil Development Company), in cooperation with Russian partners, pioneered the exploration of the offshore area of Sakhalin. These activities allowed Russia to promote the commercial development of these reserves through production sharing. SODECO, meanwhile, became a stockholder in the Sakhalin 1 project.

The loss of drilling rights by Japan's Arabian Oil Company (AOC) in the Saudi Arabian portion of the Neutral Zone dealt a major blow to Japan's policy of seeking overseas equity in oil projects. In addition, the policy of subsidies for oil exploration created little incentive for Japanese companies to seek high rates of return on investment. All these put JNOC in a difficult position. Sales of some JNOC production assets already have begun, but even if the corporation is shut down, the government is likely to support overseas oil projects. As of today, of the overseas fields developed with the participation of Japanese companies, 4 sites are located in China, 16 in the North Sea, 10 in Africa, 12 in the Middle East, 41 in Southeast Asia and the South Pacific, 7 in Central and South America, and one in Russia. JNOC is also involved in exploration at 4 sites in Russia and 9 in China.

In the ROK, total oil stocks in 2000 stood at 37 days of demand. After KNOC (Korea National Oil Corporation) commissioned the world's largest oil terminal to store 30

Mbbl of oil, the stockpile increased to 51 days of consumption. By 2004, the storage capacity is expected to reach 84 days of consumption. Moreover, in 2000, ROK enterprises participated in 53 ventures in 23 countries, including 19 production projects, 4 development projects and 30 exploration projects. Among the producing fields were those in Yemen, Argentina, Peru, Venezuela and the North Sea.<sup>17</sup>

Oil stockpiling and overseas oil concessions are also on the agenda of the Chinese government, which plans to create its own strategic oil reserves, beginning with 8 Mt and reaching 20 Mt in about 10 years. Furthermore, CNPC has expressed an interest in Russian reserves of oil and investment in upstream oil projects. It holds oil concessions in Kazakhstan, Venezuela, Sudan, Iraq, Iran, Peru, and Azerbaijan. Sinopec has also begun seeking to purchase overseas upstream assets. The Chinese government has listed Central Asia and Russia, the Middle East, North Africa, and South America as "strategic regions" for domestic companies to access. Southeast Asian countries have also become targets because of their proximity. The government is developing finance and taxation policies, including a special support fund to encourage overseas oil exploration.

At present, China controls more than 500 Mt of oil reserves overseas, equivalent to 5% of its projected reserves at home. This is significantly lower than the lifetime delivery capacity of the Angarsk-Chita-Daqing pipeline, which is estimated at 700 Mt. In comparison, CNPC plans to produce overseas 35 Mt of oil by 2005, of which it could obtain only about 18 Mt based on its equity holdings. In 2001, its overseas production reached 21 Mt, with only half of this controlled by the company, amounting to 18% of its total output. In the case of Japan, the ROK and China, one obstacle to their gaining a stake in the Russian oil sector seems to be the complete dependence of their national oil companies on centralized decision-making.

In contrast, BP (British Petroleum) has recently invested as much as US\$6.7 billion in a new venture with TNK, acquiring access to huge reserves of crude oil and natural gas in Russia. The newly created company controls a 62% stake in RUSIA Petroleum, a license holder for the development of the Kovykta gas field.<sup>18</sup> This represents the largest foreign equity investment ever made in Russia. The acquisition means that multinationals are ready to make a commitment to Russian assets, accepting the current tax and legislative environment, without demanding PSA arrangements.

### Environmental constraints

It seems that the best conceivable way out of the Russia-Japan-China "oil pipeline dilemma" could be the combination of both pipeline projects, accompanied by a massive investment in exploration and development. A route proposed by Transneft (Angarsk-Nakhodka) could also serve Daqing. Skovorodino is almost opposite Tahe, which is on the Chinese side of the border, at the northern

<sup>17</sup> ROK. Country analysis briefs at <http://www.eia.doe.gov/emeu/cabs/skorea.html>

<sup>18</sup> RUSIA Petroleum is developing the Kovykta gas field in Eastern Siberia, which has reserves of 1,882 Bcm.

tip of Heilongjiang Province. Another option is a border crossing somewhere in the vicinity of Blagoveschensk-Heihe. The most important factor, however, is sufficient oil reserves to justify building and operating this kind of dual system with a capacity of about 80 Mt.

The "northern route" for a pipeline proposed by Transneft could also offer a way out of the environmental deadlock that the current Yukos plan creates,<sup>19</sup> including three alternative options for routing a pipeline. The proposed eastern route, bypassing part of Buriatia, passes through 39 rivers, streams and channels in Irkutskaya Oblast, including rivers that enter Lake Baikal. This route is as little as 16.5 km away from the lake in some sections. According to the feasibility study, the estimated time that would take an oil spill to reach the lake is between one and two hours. This prompted the authors of the feasibility study to designate the eastern route as the least acceptable.

In Buriatia, the eastern route is also problematic because all the rivers crossed by the pipeline are very fast, including the Snezhnaya River, which would be crossed at a distance of 120 km from the lake. On this route, the estimated time taken for an oil spill to affect the lake is between 5 hours and two days. The eastern route also cuts through four natural preserves in Buriatia.

The central route crosses rivers that are also connected with Lake Baikal via the Selenga River. This option includes 5 river crossings, with the estimated time for an oil spill reaching the lake in one-two days. In Buriatia, this route cuts through the Tunkinskiy National Park, Borgoyanskiy Preserve, Altacheiski Federal Preserve, and Tunguyanskiy Preserve. In the Tunkinskiy National Park, the law prohibits pipelines, electric power grids and trunk roads. The feasibility study, however, proposes that 80 km of the pipeline run through the most protected zone of the park.

Within the boundaries of Irkutskaya Oblast, the western route crosses the drainage basins of both the Angara River (21 crossings) and Lake Baikal (59 crossings), with the time taken for an oil spill to reach the lake in three days. This route also cuts through the Tunkinskiy National Park, but of the 125 km affected by construction, only 14 km would affect the most protected area.

In summary, the eastern route, which is designed to circumvent the Tunkinskiy National Park, creates the risk for Lake Baikal. The two other routes are less troublesome within Irkutskaya Oblast, but run through the Tunkinskiy National Park in Buriatia. It also seems that, even if the federal legislation is amended, the five administrative regions in Buriatia to be transited by a pipeline have identified 39 spots requiring archeological excavation and conservation before construction can take place. Even if fully financed and staffed, such massive research efforts would take at least two or three summers.

In Chitinskaya Oblast, a pipeline is also proposed to be routed through the drainage basins of Lake Baikal and the Amur River, crossing 123 streams, and both small and large rivers. There is also a section of the route that cuts through marshes, requiring a detailed feasibility study to ensure the pipeline's post-construction stability.

## Conclusions

As far as Russia is concerned, the problem of choosing between the Yukos pipeline and the BPP project is the choice between ever-present, legitimate commercial interests and the goals of long-term development and social advancement, which are not easily justifiable on the grounds of profitability alone. As one of the top managers at Yukos has mentioned, China has coordinated the pipeline route to Daqing with its regional development plans, but for his company, the economics of the project were the main priority, rather than the routing options.<sup>20</sup> On the other hand, Mikhail Khodorkovskiy, speaking of the long-term energy strategy for Russia, admitted that central coordination is necessary in planning pipelines and railways, even for privately funded ventures.<sup>21</sup>

As the final touches were added to the draft of this paper, a conference at the Energy Ministry in Moscow was taking place, during which it was proposed to integrate the Angarsk-Daqing and Angarsk-Nakhodka pipelines into a single project. The plan is to lay the Angarsk-Nakhodka pipeline with a branch line running to Daqing. Should the government agree with the proposal, this will be a victory for Russia-China energy cooperation, as well as for the energy partnership between Russia and Japan. We must, however, wait to see exactly which route the Energy Ministry will support.

In a presentation at the SPEC 2003 (Symposium on Pacific Energy Cooperation) organized by the Institute of Energy Economics Japan (IEEJ), Igor Kozin, Director of the Pipeline System Development Department at the Russian Ministry of Energy, provided an outline of a plan to build a high-capacity oil pipeline (90 Mt) from Eastern Siberia to the Nakhodka Port area on the Pacific coast. This plan also envisages building in parallel a high-capacity gas pipeline (about 30 Bcm) connected with the gas pipeline network in Western Siberia.

The proposed Baikal-Pacific pipeline system (BPPS) should follow the BAM (Baikal-Amur Railway) route up to Tynda, where it will turn south, to Skovorodino, to follow the route of the TSR (Trans-Siberian Railway). Skovorodino is very near the border with China and a branch of the BPPS could be extended to Daqing, serving as a substitute for the Angarsk-Daqing pipeline promoted by Yukos and CNPC.

The project's economics look reasonably sound. The cost of building the BPPS, including both oil and gas pipelines laid simultaneously, is estimated at about US\$11-

<sup>19</sup> *Investment Requirements Assessment for the Russia-China Pipeline*, vol. 7, Environmental Impact Assessment from the Construction and Exploitation of the Oil Pipeline, Book 1 <<OBOC>> Non-Technical Resume (Moscow, 2002), available at <http://www.yukos.ru/pdf/OBOC.pdf>

<sup>20</sup> See interview with Yuriy Beilin, <http://www.yukos.ru/119.shtml>

<sup>21</sup> See *Kommersant*, May 29, 2002., <http://www.yukos.ru/805..shtml>



13 billion, coinciding with the estimate made by the Transneft Company for an oil pipeline alone. This would allow the transportation tariff for 1,000 cubic meters of natural gas to be maintained at about US\$45-50.

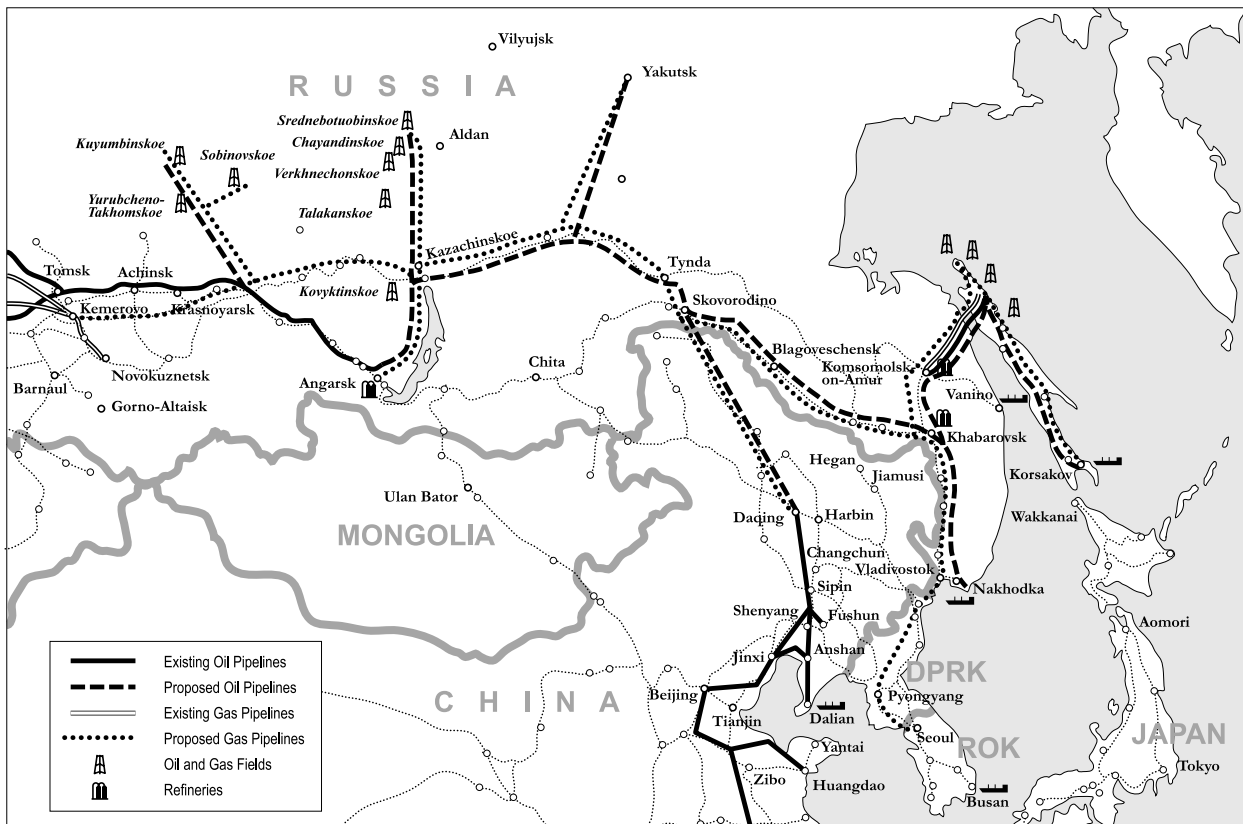
There is also the option of extending a branch of the gas pipeline to Pyongyang and Seoul, which would presumably be financed by the ROK. If China accepted the branch of a gas pipeline to the Daqing-Harbin area, the economics of the BPPS could be further enhanced, without any additional financial burden for Russia. All this makes the BPPS a preferable choice in oil and gas delivery infrastructure planning aimed at multiple sources of oil and gas in Russia and various markets in Northeast Asia.

In addition to reduced investment and operational costs, the advantage of the BPPS project is the strong positive impact on regional development and the investment climate in Eastern Russia, as well as much faster exploration and development of local gas and oil in Eastern Siberia and the Far Eastern region. A proposed connection with oil and gas reserves in Western Siberia would increase the reliability of the BPPS, justifying the commercial development of new and smaller oil and gas fields in remote areas that currently do not have trunk pipeline access.

The BPPS would allow for large-scale GTL<sup>22</sup> production in Eastern Russia, targeting, among other options, market created by motorization in China. On the other hand, if China agrees to build a gas pipeline in parallel with an oil pipeline to Daqing, the gas transformation technologies available in Japan could contribute to the oil security of China. This would obviously contribute to regional economic development and job creation. In this context, the potential of gas to reduce dependence on oil in the transportation sector should be assessed in much greater detail.

The chances of implementing this mega-project are generally good, given President Putin's attention to the Far Eastern region of Russia. In 2002, the government re-adopted a modified program for the economic and social development of the Far Eastern region and the provinces adjacent to Lake Baikal. Given that the Program's implementation requires much more investment than the provincial and federal budgets can provide, infrastructure projects such as the BPPS appear to be very important in many ways. The recent initiative by Japan (Koizumi-Putin talks), extending comprehensive support for a very similar plan, creates favorable conditions for the project's implementation.

## Baikal-Pacific Pipeline System



<sup>22</sup> GTL (Gas-to-Liquid) is a technology that converts natural gas into a liquid fuel by means of chemical reaction.