

特集 新潟・日ロエネルギーフォーラム2005 / The 2005 Japan-Russia Energy Forum

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The 2005 Energy Forum, which took place in Niigata on March 8-9 at the Toki Messe Conference Center, was the second international conference of this kind. Just over a year earlier, ERINA's first Energy Forum was held as the culmination of a project entitled *Energy Security and Sustainable Development in Northeast Asia: Prospects for Cooperative Policies*, which ERINA had implemented in collaboration with the Northeast Asia Economic Forum from 2001.² This dialogue and research project supported by the Japan Foundation Center for Global Partnership was aimed primarily at discussing energy security and relevant policy issues in a multilateral format.

Background

The spotlight of the Forum³ was on dialogue concerning such practical topics as the Eastern Siberia-Pacific oil pipeline project (the Pacific pipeline, for short) and the prospects for natural gas development in Eastern Siberia and the Far Eastern region. There were several compelling reasons for organizing this bilateral conference, which featured 34 speakers and almost one hundred observers.

The role of the East Asian region in the world economy is growing. In 2004, rapid economic expansion in China and a boom in car ownership coupled with electricity shortages boosted oil consumption by more than 15% to 6.4 million barrels a day (Mbd). By 2020, China's oil demand could reach 10 Mbd. In Northeast Asia, regional demand for oil is increasing fast, leading to deepened dependence on the Middle East. For example, the share of the Middle East in Japan's oil imports increased to 88%, closely mirroring the level of dependence prior to the first oil shock. Experts agree that these and other developments require proactive policies that promote additional and alternative sources of energy supply for Northeast Asia.

The primary goal of the organizers was to review the ongoing bilateral energy dialogue and government-level exchanges, including those concerning the Pacific pipeline. The significance of this project extends far beyond the bilateral government-level agenda. In December 2004, the Russian government formally adopted a plan to construct

a high-capacity oil pipeline from Eastern Siberia, linked to an export oil terminal in southern Primorskiy Krai. The problem of funding and international participation in this venture attracts continuous attention. Japan has thus far proposed the scheme for supporting this project, although there has been some interest shown by China and the ROK.

Secondly, there is growing interest in Japan in the abundant reserves of natural gas to be found in new sources in Eastern Russia, including Sakhalin, Eastern Siberia and Yakutia. Greater reliance on this fuel in the Northeast Asian subregion offers the prospect of reduced dependence on oil and higher efficiency in the power sector, compared with coal, as well as the significant environmental benefits that natural gas-based applications can offer. In this context, the progress made in implementing the Sakhalin II project and the success of marketing arrangements for its output serve as pioneering examples. On the other hand, with the Kyoto Protocol entering into force, the conditions are in the making for bilateral efforts to reducing carbon dioxide emissions, including possible efforts to promote the use of natural gas.

Thirdly, participants also discussed the problems of mobilizing finance for large-scale energy ventures, the improvement of legal and policy frameworks, new technologies for utilizing natural gas, environmental protection, energy efficiency, regional economic advancement and other subjects pertinent to the implementation of specific investment and development plans.

Day One: Opening

Susumu Yoshida, Chairman of the Board of Trustees and Director-General of ERINA opened the conference, after which welcome remarks were made by Hirohiko Izumida, Governor of Niigata Prefecture and Akira Shinoda, Mayor of Niigata City. Russian Ambassador Alexander P. Losyukov and the Trade Representation Office of the Russian Federation in Japan also offered greetings.

The keynote address was given by **Taro Nakayama**, Member of the National Diet and former foreign minister

¹ Please note that this is intended as an overview of the main points made at the forum. Due to the constraints of space and publishing deadlines, we are unable to provide an exhaustive account of all the presentations and accept responsibility for any inaccuracies that may inadvertently have arisen in the editing process.

² For a brief outline, see *ERINA Report*, May 2004, vol. 57, pp. 93-94; for the materials presented at the meeting, see Vladimir I. Ivanov and Eleanor Goldsmith, eds., "The Niigata Energy Forum 2004", *ERINA Booklet*, Vol. 3, December 2004.

³ The conference was organized in collaboration with the governments of Niigata Prefecture and Niigata City, with support provided by the Tohoku Electric Power Company. Other organizations offering their cooperation were the Asia Pipeline Research Society of Japan (APRSJ), the Far Eastern Center for Strategic Research on Fuel and Energy Complex Development (FECSRED), the Energy Systems Institute of the Russian Academy of Sciences in Irkutsk, the Embassy of the Russian Federation in Japan and the Trade Representation Office of Russia in Japan. The discussions were moderated and coordinated by Susumu Abe and Vladimir I. Ivanov.

of Japan, who emphasized that, as far as energy links with Russia were concerned, new opportunities for Japan had emerged since the end of the Cold War. Japan depends heavily on imported energy. This dependence did not decrease over the last decade, requiring a strategy for accessing the new energy sources, including those in Russia. During the decades of fierce confrontation in the Cold War, Western Europe nonetheless imported Russian natural gas. Today, intra-regional relationships are taking on a new shape with the establishment of free trade zones, including the NAFTA agreement and similar trends that encompass the EU and the economies of North, Central and South America. These regional trade arrangements cover energy trade and infrastructure links, including cross-border pipelines. In this regard, the EU has advanced its cooperative links significantly.

Asian countries are lagging behind in promoting trade and forming an integrated economic zone. Trans-border energy links are yet to be developed. Japan, for example, lacks such cross-border infrastructure links. The only natural gas pipelines in operation are those that link Niigata with Sendai and Tokyo. It is important to envisage the format that regional free trade zone agreements involving Japan should take and consider how the energy factor will be accounted for in these agreements. In this context, comprehensive energy links with Russia could allow a new economic map for Asia to be charted.

If we choose the right strategy, the next step should be the mobilization of funding. A significant portion of this funding should be invested in the exploration and development of new hydrocarbon reserves in Eastern Russia. A specialized financial institution established to deal with the energy needs of the region and energy projects for Northeast Asia could assist in determining the concrete direction of multilateral cooperation and the mobilization of investment for energy projects. This could contribute to the energy security of the region and the countries of this area. The global shifts that are currently underway encompass Northeast Asia, so the countries of Northeast Asia could determine the direction of these changes by promoting regional energy links and multilateral cooperation. We should learn from Europe in our efforts to promote regional economic integration, increased trade and improved energy security. The most important task is the creation of a multilateral framework for free trade in the area, which could incorporate energy cooperation if Russia were willing and able to participate.

Sergei N. Goncharov, Minister Counselor of the Russian Embassy in Beijing gave a special presentation, outlining his personal views with regard to Russia's energy posture *vis-à-vis* Northeast Asia. The central point of his report was that further development in the energy sector, including the expansion of delivery infrastructure to Eastern Russia and growth in exports and export earnings, would contribute to Russia's national unity, both political and economic, as well as its national security and modernization. At the same time, Russia's policy towards mega-projects in the energy sector and international

participation in these projects is becoming more selective and increasingly focused on domestic development needs. In other words, post-Soviet Russia is well positioned compared with the former Soviet Union with regard to utilizing oil and gas revenues effectively for the purpose of national economic advancement.

On the other hand, as far as the sources of foreign investment are concerned, China and India could be important participants, in addition to investment sources in the US, EU and Japan. Growing energy demand on the part of China and India could provide a clear-cut solution for the long-term marketing arrangements for oil and natural gas produced from new sources in Russia's eastern regions. However, Russia's long-term energy strategy should avoid a narrow geo-strategic focus, promoting diversification and the inflow of advanced technology. The option of becoming involved in partnerships in the energy sector should be open to all potential participants, depending on their own readiness to enter such long-term relationships.

In this context, a multilateral setting for energy collaboration in Northeast Asia could be an option, in addition to existing energy dialogues, such as ASEAN+3. It is also desirable, however, that both the existing and new frameworks account for the interests of energy producers and exporters. In reality, as far as energy cooperation in Northeast Asia is concerned, the interests of large consumers and importers of oil and natural gas such the US and India should be taken into account. Moreover, in terms of the broader energy equation in the Asia-Pacific region as a whole, one should also consider the role of energy sources in Central Asia. Finally, future energy dialogues should permit a comprehensive approach to international energy flows, including natural gas trade via pipelines and cross-border electric power transmission, in addition to oil trade and oil pipeline projects.

Natural Gas

The first panel focused on natural gas consumption and production trends in Japan, Northeast Asia as a whole, and Eastern Russia, including Sakhalin. The participants of this session did not discuss the rapidly changing positions of the state and the foreign oil majors in the development of hydrocarbon reserves offshore from Sakhalin. Through a merger with the state-run Rosneft oil company, Gazprom will soon acquire Rosneft's Far Eastern interests, including those in the Sakhalin venture blocks. On the other hand, this merger will enable Moscow to assume greater control over Gazprom and the expected increases in natural gas exports to the Asia-Pacific region, including possible LNG shipments to the US. In the meantime, the US Energy Information Administration's Annual Energy Outlook 2005 radically reassessed the prospects for LNG imports, which could grow tenfold by 2025. Subsequently, the share of LNG in the total natural gas supply in the US in the next two decades will increase from the current 2% to 20% or more, creating significant opportunities for new projects in Russia, including its Far Eastern region.⁴

Alexei M. Mastepanov, Advisor to the Deputy

⁴ See *Oil & Gas Journal*, March 28, 2005, pp. 33, 60.

Chairman of the Board of Directors of Gazprom indicated that Eastern Siberia and the Far Eastern region have a total of about 59 trillion cubic meters (Tcm) of natural gas reserves (25% of total primary reserves nationwide), including 14 Tcm in reserves located offshore, mainly on the continental shelf of the Sea of Okhotsk. This could allow the production of natural gas to grow by 50 billion cubic meters (Bcm) by 2010 and 110 Bcm by 2020. Currently, Gazprom is in the final stage of drafting a strategy for the development of gas reserves and gas transportation in Eastern Russia, which will be submitted for approval by the government this year. The program envisages the development of new centers of gas production, including those centered on fields discovered offshore from Sakhalin, the Chayanda field (Yakutia), the Kovykta field (Irkutsk region), and the Sobinsk-Paiginsk and Urubcheno-Tokhonsk fields (Krasnoyarsk region). All these new production centers contain natural gas with valuable components that would permit the establishment of natural gas-based chemical industries with total estimated investment needs of about \$15-20 billion. This will ensure increased value-added output, giving these resources a competitive edge in international and regional markets.

In this context, Dr. Mastepanov did not define the "Eastern natural gas strategy" so much in terms of plans to export natural gas to neighboring markets; rather, the emphasis is on long-term domestic energy needs and regional development goals. The long-term ambition is to develop, step-by-step, a unified regional gas production and transportation system in Eastern Russia with an annual production volume of about 100 Bcm and a total estimated cost of \$40-45 billion. Being integrated with existing gas delivery infrastructure in the western part of the country, this new infrastructure would allow a selective approach to the utilization of gas reserves (for domestic use and export), as well as the coordinated management of projects offshore from Sakhalin and those located in the continental part of Eastern Russia. At the same time, the company seems to prefer discussing export-oriented projects based on long-term offtake contracts and intergovernmental agreements. In general, Gazprom has made conservative estimates of the requirements of neighboring economies for pipeline gas from Russia, projecting combined natural gas exports to China, the ROK and Japan at about 35 Bcm by 2020.

Indeed, discussion of the natural gas projects in Eastern Russia is mostly conducted in the context of exporting this fuel to neighboring markets. In reality, both the central government and regional administrations are prioritizing projects aimed at local and regional gasification. In this regard, **Yuriy V. Schukin**, Director of Rosneft-Sakhalinmorneftegas's Oil and Gas Institute described the prospects for Sakhalin offshore projects in a way similar to the approach considered by Gazprom. He focused his presentation on the current situation and prospects for using natural gas from the areas offshore from Sakhalin Island.

The presenter examined five broad areas: (1) the current situation with regard to the regional fuel-energy complex; (2) sources of natural gas; (3) the program of gas supply in Sakhalinskaya Oblast, and Khabarovsk and Primorskiy krajs; (4) the management of initiatives aimed at translating this program into reality; and (5) the current

state of the gasification program in the Far Eastern region. In addition, Dr. Schukin also provided details concerning overall oil and natural gas production in Sakhalin, as well as its export potential. Apparently, under the optimistic scenario, the Sakhalin gas production center alone could sustain natural gas output at a level of 75 Bcm a year by around 2020, satisfying both domestic needs and significant export requirements, while peak oil output could reach 50 Mt a year.

Georgiy A. Karlov, Vice-Governor of Sakhalinskaya Oblast, emphasized that exports of hydrocarbons will constitute the backbone of trade and investment relations between Sakhalinskaya Oblast and Japan. In 2004, the volume of bilateral trade reached \$739 million, but with the first LNG train becoming operational and subsequent oil shipments expanding, Sakhalin's exports to Japan will grow rapidly. Currently, Japan imports more than 70% of the oil produced in Sakhalin. The speaker underlined the fact that Japanese companies, including SODECO, Mitsui and Mitsubishi, have taken on important roles in the Sakhalin I and Sakhalin II projects, while the Japan Bank for International Cooperation (JBIC) has provided most of the loans for the first phase of the latter project. Other Japanese companies, including Nippon Steel, Sumitomo Corporation and Marubeni Itochu Steel, as well as Chiyoda Corporation and Toyo Engineering, are also participating in these ventures as subcontractors. He also indicated that Japanese electric and gas companies have played a leading role in contracting shipments of LNG from the Sakhalin Energy Investment Company, operator of the Sakhalin II project. The joint exploration of oil and gas resources offshore from Sakhalin, and the development of natural gas-based chemical industry and infrastructure, including cross-border gas pipeline projects, could constitute additional areas for cooperation with Japan.

In his role as lead speaker, Ambassador **Takehiro Togo**, Senior Advisor to GSSI/Mitsui Co. stated that, in the longer term, Russia would serve as a reliable source of energy not only for Europe, but also for the economies of the Asia-Pacific region. Progress with the Sakhalin oil and gas projects would allow exports of oil and natural gas to Japan, the ROK and China, creating new foundations for political relationships. Currently, the reliance on natural gas in Northeast Asia is relatively low: it accounts for 13% and 8% of the total primary energy supply (TPES) in Japan and the ROK respectively, compared with an average of 20% for other OECD economies. In China, the share of natural gas in the TPES is less than 3%. In addition to other offshore projects, the Sakhalin I and Sakhalin II projects, combined investment in which is in excess of \$25 billion, would ensure significant volumes of natural gas flowing from Sakhalin both in the form of LNG and also via pipelines. In fact, the initial plan was to build a pipeline from Sakhalin to Hokkaido and Honshu and this option is still on the table. However, several contracts have already been signed for LNG shipments from Sakhalin II, both to Japan and the ROK. It is quite likely that the US will also join the list of buyers of hydrocarbons originating from Eastern Russia, including Sakhalin.

However, it is not only natural gas that promises new opportunities for developing cooperative relationships

in the region; other forms of energy and all types of mutually beneficial energy links require attention, eventually leading to a comprehensive energy cooperation framework, encompassing such aspects of the energy sector as exploration, recovery, trade, logistics and financing. Inter-governmental relations will also serve an important purpose, given the lingering shadow of the Cold War and the problems of the past that have yet to be resolved once and for all.

It is worth noting that an integrated system of oil and natural gas pipelines built in the Soviet Union allowed large-scale exports of these hydrocarbons to Eastern and Western Europe, including Germany and France. These cross-border gas pipeline projects were implemented during the Cold War years, but they now serve as the backbone in the formation of new cooperative relations between Russia and the EU.

The EU-Russia model of energy dialogue and cooperation in the energy sector could serve as a model for relations between Japan and Russia and within Northeast Asia in general. There are pending problems in Japan's bilateral relations with Russia, including the conclusion of a peace treaty and the resolution of their territorial dispute. The Korean Peninsula situation also requires attention. At the same time, energy cooperation involving China, the ROK, Japan and Russia could become a stepping-stone for establishing a regional community, providing foundations for vital projects in other areas. In this regard, the discussions, ideas and proposals aired during the Niigata forum could contribute to official dialogues, leading to the formation of a cooperative energy framework.

Viktor A. Snegir, General Commercial Manager of the Sakhalin Energy Investment Company Ltd. referred to a statement made by President Vladimir Putin at the Bangkok APEC Summit concerning Russia's contribution to "the new energy configuration in the Asia-Pacific region". From 2007, the first LNG train operated by Sakhalin Energy, representing its stockholders Royal Dutch Shell, Mitsui and Mitsubishi, is likely to take the lead in any such endeavor. This is the largest project in Russia based on foreign direct investment. The recoverable natural gas reserves in Sakhalin II are close to 500 Bcm. Together with the oil reserves, the project's share of total hydrocarbon reserves is close to 9% of total oil and gas reserves available offshore from Sakhalin.

Since 1999, oil production has been taking place on a seasonal basis, and from 2002, Japan became the main destination for oil exports. With the commissioning of the two new offshore production platforms, the pipeline and the offshore terminal, oil production will be able to take place throughout the year. The two 800 km-long pipelines, including one for transporting natural gas to the south of the island, are being constructed together and about two-thirds of this system is already complete. As far as LNG production is concerned, four offtake agreements and contracts have already been concluded with Japanese companies: Tokyo Gas and Tokyo Electric Power Company (TEPCO), as well as Kyushu Electric and Toho Gas. In addition, Shell Eastern Trading will supply LNG to the west coast of Mexico, and from 2008, KOGAS of the ROK will import 1.5 Mt of LNG annually, bringing the total volume

of shipments to 7 Mt a year.

In general, the advantages of the LNG delivery technology for natural gas from Sakhalin include: (1) its geographic proximity to regional markets, which reduces the transportation time; (2) the possibility for the diversification of supplies; (3) growing demand for LNG in the region; and (4) the relative simplicity of those offtake contracts that do not require inter-governmental agreements.

Koichiro Ebihara, Department Chief, Mitsui O.S.K. Lines predicted that global demand for LNG would grow from 135 Mt in 2004 to 182 Mt in 2015. The traded volumes, however, could be even larger, considering projections of demand growth in Europe and the US, as well as China and India. Moreover, in the oil sector, production volumes and tanker shipments of oil will also grow, creating new demand for tankers and generating orders in the shipbuilding industry. In 2004, 170 LNG tankers were employed worldwide. The projected annual increase in demand for LNG of 7% in the next decade means that in 2010, the number of tankers needed for LNG transportation would grow to 280, increasing further to 350 in 2015.

The existing capacity for building new LNG tankers and other large vessels, growing demand for transportation services and increases in the prices for raw materials are contributing to rises in both the price of these vessels and transportation tariffs. For example, shipbuilding enterprises in Japan are completely packed with orders for LNG tankers up to 2009. Other manufacturers in the ROK and China also have busy construction schedules.

In other words, even as we discuss Japan-Russia energy links and prospects for energy security in Northeast Asia in the broader global context of new sources of demand for LNG, increased demand for transportation and limited shipbuilding capacity could significantly influence future LNG flows and delivery costs. In this regard, long-term bilateral contracts between LNG producers and the providers of transportation services could help existing producers in terms of assured access to shipping services and overall flexibility in their operations.

Neil Beveridge, Marketing Director for Gas, Power & Upstream at TNK-BP discussed the general prospects for natural gas production in Eastern Siberia and Far Eastern Russia, stressing the importance of a comprehensive development strategy, including domestic demand, available reserves and access to neighboring markets. His company believes that the expansion of the natural gas market in Europe will be limited. According to official plans, as far as the pipeline delivery of natural gas is concerned, markets in Northeast Asia could require about 32 Bcm by 2020.

Indeed, Russia has a good chance of filling the growing niche demand for natural gas in Northeast Asia, contributing to the economic development of Eastern Siberia and the Far Eastern region and promoting the domestic use of natural gas. At the same time, consumers of natural gas in Northeast Asia would continue to rely mostly on LNG. Given continuing economic development in China and other countries, as well as environmental concerns that increase the attractiveness of natural gas, additional regional demand for LNG will be significant. Potentially,

Russia could direct up to 50% of its natural gas exports from Eastern Siberia and Sakhalin to markets in Northeast Asia, including China, Japan and the ROK.

By 2020 and beyond, the overall potential capacity to supply natural gas from Eastern Russia to regional markets is forecast to be huge, including 50 Bcm that could be available from sources in Eastern Siberia and 50-60 Bcm exported from Sakhalin. These supplies could include pipeline connections with Japan (from Sakhalin), China and the ROK (from Sakhalin and Eastern Siberia), as well as LNG shipments. However, giving priority to the domestic market is important.

In order to achieve these goals, Russia should meet four basic requirements: (1) the expansion of reserves; (2) the development of the natural gas market, including the achievement of a proper balance between exports and the domestic use of natural gas; (3) the mobilization of investment; and (4) the development of public-private partnerships in realizing natural gas projects in Eastern Russia. The resources to ensure the economic development of the eastern regions of Russia are available. Furthermore, the development of these territories and their increased reliance on natural gas would facilitate the expansion of the gas sector and the achievement of production volumes of 100 Bcm a year and more. What is needed is an effective marketing strategy for exporting natural gas to regional markets, combined with the construction of a second export corridor for natural gas deliveries from Eastern Siberia and Sakhalin to consumers in Northeast Asia.

Kazuaki Hiraishi, Secretary General of the Asian Pipeline Research Society of Japan provided an overview of the activities of the Northeast Asian Gas and Pipeline Forum (NAGPF), a non-profit international organization that has already conducted eight international conferences in five Northeast Asian countries, as well as sponsoring a number of research projects, some of which have been multilateral studies. These projects, which focused on national policies for promoting pipeline gas and conceptual options for constructing delivery infrastructure, as well as discussions and research concerning the pricing of natural gas delivered via pipelines, were supported by a number of research institutions and practical organizations based in the countries of the region, as well as international organizations. The mission of the NAGPF is to promote public-private partnership, encouraging approaches to Northeast Asian energy security from the standpoint of comprehensive, regional optimization with national governments taking the lead in coordinating these efforts.

The Pacific Oil Pipeline

The Pacific oil pipeline and relevant energy security issues were at the center of the second panel discussion. Initially, the project was not specifically designed to gain

support from Japan. However, Japanese energy planners became interested, leading to supportive remarks being made by Prime Minister Junichiro Koizumi when he visited Moscow in January 2003. Following the initial proposal made by Transneft, the project was revised and its routing altered, with the target capacity being raised by 30 Mt to 80 Mt a year. The project's total cost also increased to \$11 billion.⁵ On December 31, 2004, the government's official website announced that, earlier in the day, the Russian government had issued the ten-point Directive No. 1737-p concerning the project. Following the 2003 Russia-Japan summit, there were high-level exchanges, working-level discussions and technical visits. This obviously ignited intense hopes in Japan as a potential partner in the project. The expectations of an agreement were initially high on both sides, particularly in Russia. However, the process has since stalled, leading to some disappointment among its proponents, including Transneft, the operator of the project.

The main speaker from Japan on this subject was **Hirobumi Kayama**, Deputy Director of the Petroleum and Natural Gas Division at the Agency for Natural Resources and Energy, which is part of the Ministry of Economy, Trade and Industry. He stressed that the potential for developing links between Japan and Russia in the energy sector is very high. Japan has a deep long-term interest in diversifying the sources of its oil supplies, while Russia is interested in cultivating new markets in the Asia-Pacific region, in order to reduce its current dependence on Europe as a destination for its energy exports.⁶ In this respect, the Eastern Siberia-Pacific oil pipeline project is strategically important for both Japan and Russia.

This shared understanding has been documented by the leaders of Japan and Russia, reconfirmed by their respective energy ministers, discussed in detail by the heads of the two parts of the inter-governmental commission and negotiated through intensive expert-level exchanges during the 15 meetings of the bilateral working group. Depending on the outcomes of the feasibility study and the project's economics, Japan may consider providing support and funding for this project, which will bring benefits to the region as a whole by enhancing the security of regional oil supply. This understanding should be cultivated and shared by all interested parties.

Vladimir V. Saenko, Deputy Director of the Strategic Development Department for Fuel and Energy Complex at the Ministry of Industry and Energy gave an introductory presentation from the Russian side. Opening his presentation with a reference to the geographic proximity of Russia's energy resources and the complementarity that exists in terms of the demand for energy resources in Northeast Asia and the availability of oil, natural gas and coal in Eastern Russia, Mr. Saenko stated that cooperative energy links between Russia and neighboring economies

⁵ The length of the Taishtet-Kazachinskoe-Skovorodino-Perevoznaya Bay pipeline is 4,130 km; pipes with a diameter of 1,220 mm will be used. The pipeline route will cross seven administrative entities: Irkutskaya, Chitinskaya and Amurskaya oblasts, the Republic of Buriatiya, the Evreiskaya Autonomous Oblast, and Khabarovskiy and Primorskiy krais.

⁶ In 2003, 58% of Russian oil exports were to the EU and 22% of total net EU oil imports in 2002 came from Russia. This represented 16% of total EU oil consumption. In addition, 88% of its total natural gas exports were delivered to European countries. Approximately 65% of the natural gas exported to Europe in 2003 was delivered to the EU, representing 32% of EU gas imports and 19% of total EU gas consumption.

are not only possible, but also inevitable. In this regard, the government is prioritizing the development of the oil and natural gas sector in general, particularly in Eastern Russia.

The comprehensive plan for development in this sector envisages oil output reaching 530 Mt by 2015, including 65 Mt from new sources in eastern areas. Oil exports could reach 310 Mt by 2015, with 15-18% of this being directed to eastern markets. With the cost of adding new reserves on the increase, the total amount of investment required for the oil and gas sector in the next 15-20 years is estimated at close to \$250 billion, including the huge amount of investment needed for geological exploration, as well as delivery and production infrastructure in Eastern Siberia and the Far Eastern region.

Confirmed oil reserves in the eastern regions are close to 1,500 Mt, but the level of geological exploration is only 12% in the Far Eastern region and less than 8% in Eastern Siberia. Improving the situation requires funding to promote the geological exploration in these regions, which in the next five years would equal the funding available for Western Siberia. After 2010, the scale of geological work would surpass the scale of exploration in Western Siberia. The cost of developing hydrocarbon resources in Eastern Russia is also going to be relatively high because the composition of the fields is complex. In addition to oil, natural gas and gas condensate, these reserves contain propane, butane, ethane, helium and other components that require separation and treatment that would permit their commercial utilization.

As far as the Pacific oil pipeline is concerned, the speaker noted that the finalized plan is to build this infrastructure along the "northern route". This project will require an array of efforts, including additional exploration of known fields and the modernization of existing pipeline infrastructure between Western Siberia and Taishet, in order to make the new pipeline partially reliant on the oil from Western Siberia. Furthermore, the project needs a system for fixing licensing and production agreements with developers, a general economic assessment of the project in terms of its timing and phased construction, involving combined shipments of oil by a pipeline and by rail, as well as a comprehensive review of various options with regard to state support for this project and the legal and regulatory measures needed to make it more efficient.

Kensaku Kumabe from the Institute of Economic Research at Hitotsubashi University focused mostly on growing Japan-Russia business links, proposing that energy cooperation could become the most efficient way of developing business partnerships, as has already happened in German-Russia relations and is happening in Russia's trade links with Turkey as a result of the Blue Stream gas pipeline project. In 2004, JBIC published a country survey of investment attractiveness for Japanese companies. According to this survey, Russia occupied the sixth position, behind the US. The successful implementation of energy projects, including those in Sakhalin, could further promote Russia's investment rating. However, some concerns and uncertainties must be resolved in order to facilitate full-scale cooperation with Russia. The first source of uncertainty is the volume of oil reserves available in Eastern regions. These data are important for securing

external funding for the pipeline project. Secondly, it is desirable that negotiations concerning this project take a multilateral format. Thirdly, Japan and Russia should deepen their relationship of mutual trust in order to promote growth in energy trade. Finally, the stability of the investment climate in Russia is important. Improvements in the Russian economy are enabling JBIC to consider corporate financing schemes, which do not require sovereign guaranties. However, recent tax scandals and other negative developments that have affected Japanese companies are creating uncertainty.

Valentin I. Sergienko, Chairman of the Far Eastern Branch of the Russian Academy of Sciences spoke about environmental protection in the context of the Pacific oil pipeline project. It is going to be close to 4,200 km long, including several overland sections with a total length of 583 km. The project's design envisages the application of advanced technologies that will improve the safety of this infrastructure and minimize its environmental impacts. However, the geography of the project, its potential interference with unique ecosystems and protected zones, including those designated by UNESCO, and its extremely complex geological conditions require special measures to ensure that environmental risks are avoided. According to the designers of this project, about half of the infrastructure will be located in areas subject to extreme conditions, including earthquakes, flooding, landslides and avalanches, as well as forest fires. We suggest that a special four-stage research program be launched, in order to promote: (1) basic information gathering; (2) comprehensive information gathering; (3) field research along the route of the pipeline; and (4) monitoring of the construction process, as well as the operation of the system once it has been commissioned. Special regional centers coordinated by a regional council must conduct these activities. We also hope that international environmental cooperation in the context of this project becomes possible. In any event, we need to exchange information and construction technology with regard to infrastructure in disaster-prone areas.

Tadashi Sugimoto, Advisor to the Nippon Keidanren's Japan-Russia Business Cooperation Committee raised a number of very important issues relating to Japan's attitude towards the Pacific oil pipeline project, as well as such problems as energy security policy and policy towards Russia. His starting point was that the Pacific oil pipeline project could be an historic opportunity in terms of Japan's oil supply security. The share of the Middle East in its oil imports has increased to 88%, closely mirroring the level of dependence prior to the first oil shock, more than three decades ago. However, it seems that oil companies and the government may differ in their approaches to correcting this situation. The prevailing attitude has been that oil is mostly a commodity procured at competitive, lower prices. In reality, Japan is paying more for its oil imports than other advanced economies pay.

On the other hand, he touched upon some psychological constraints symbolized by the expression "red (Soviet) gas". This expression survived for two decades after Russia expanded its gas exports to Western Europe, while Japan also had the opportunity to promote similar links. There are also some who believe that the Pacific oil

pipeline project should be linked to the resolution of the territorial dispute, but logic dictates that such interference with national energy security needs should not be permitted; those of this view should simply accept the fact that Russia is a major world exporter of oil and gas.

Another problem is the efficiency of communications with Russia regarding Japan's position on the pipeline project, its financing mechanisms, geological exploration and other relevant subjects. It seems that the project will go ahead anyway, with or without the participation of Japan. In this regard, the concept of economic integration in East Asia deserves attention. The problem is that the sources of energy in Eastern Russia are important for regional economic integration interconnected with energy security issues and cooperative relations in the energy sector. Therefore, we have to think about establishing a consultative regional framework to discuss various problems, including regional gas supply and the management of relationships with the DPRK. Political commitments provide foundations for economic interdependence; this was the case with Europe, when politicians promoted natural gas supplies from the former Soviet Union.

Vladimir I. Syrkin, Vice-Governor of Khabarovskiy Krai discussed the impact on regional development and industrial advancement of infrastructure mega-projects, including the Pacific oil pipeline. He expressed confidence that opportunities to combine and integrate industrial and corporate strategies with regional development plans are emerging, in Eastern Russia in particular. In this context, the projects under discussion promise new prospects for producing large volumes of high value-added products. Mega-projects in the fields of infrastructure construction and the exploration and development of new reserves of oil and gas would therefore contribute to regional development, job creation, and increased economic growth, personal income and budget revenues.

In Khabarovskiy Krai, the De-Kastri export oil terminal project is underway, consisting of a pipeline from Sakhalin I, the onshore preparatory facility, and two oil storage/offloading complexes with a total annual capacity of 12 Mt. For comparison, the capacity of the nearby oil terminal operated from 1998 by Sakhalin-Morneftegas is 1.0 Mt a year. At the same time, a gas pipeline project between Sakhalin (Sakhalin I) and Khabarovsk is nearing completion, with 290 km of the main pipeline already laid down. This pipeline will become operational towards the end of 2006. Moreover, the two oil refineries located in Khabarovsk and Komsomolsk-na-Amure are undergoing modernization, with the aim of expanding production volumes and increasing the share of quality output that could be partially exported to regional markets.

Takumi Togashi, Director of the Hokkaido Intellect Tank (HIT) also referred to the regional development prospects and business opportunities emerging for Hokkaido-based companies in the context of the Sakhalin oil and gas projects. Mr. Togashi provided a number of examples of how private businesses are participating in the Sakhalin projects, supplying heavy construction machinery, cement, earth-moving and transportation equipment and providing various services, including ship repairs and the supply of household goods, food and fuel. These activities

involve companies based in Wakkanai, Sapporo, Kushiro, Muroran and Hakodate. *Vis-à-vis* Sakhalin, Hokkaido – Wakkanai Port in particular – enjoys a comparative advantage in logistics due to its geography and wealth of experience in dealing with counterparts in Sakhalin. The Bank of Hokkaido has established a venture fund to support new business connections with Russia. These links now incorporate promising new sectors, in addition to the traditional links in the fishery, agriculture, forestry and coal sectors. Developing relations are improving Russia's image as a destination for Japanese business, which now encompasses joint ventures with Russian companies, in addition to the traditional trade operations. For the last four years, HIT has maintained an office in Yuzhno-Sakhalinsk. The investment risks of doing business in Sakhalin are decreasing, but Japanese companies still tend to exercise a great deal of caution in large-scale ventures and contracts. In this regard, in order to establish new business links with Russia or Sakhalin, companies and business leaders should develop a longer-term vision, assessing their capacity and competitiveness, as well as considering effective mechanisms for penetrating new markets in Russia.

Sergei V. Vasiliev, Economic Counselor at the Russian Embassy in Japan redirected the attention of the audience to the bigger picture, including projected demand for oil worldwide and in Northeast Asia. By 2025, global demand for oil will reach 6,000 Mt (120 million barrels a day), while the economies of Northeast Asia will consume about 18-20% of this volume. By 2025, China's demand for oil is likely to be twice as high as oil consumption by Japan, with three-quarters of Chinese oil consumption reliant on imports. In view of these astronomical projections, even a project as big as the Pacific oil pipeline appears modest. Indeed, this mega-infrastructure delivering 80 Mt annually would supply about 10% of oil demand in Northeast Asia. However, this project is rightly characterized as "global" in many ways, including its scale, complexity, costs, capacity, potential participants and long-term impacts in regional economic development and the energy security of Northeast Asia. It is important to envisage which of Russia's neighbors could take an active part in this project and whose oil supply priorities are accounted for in the first place.

We hope that this project will contribute to the development of Russo-Japanese relations. Following Transneft's presentation of the project about three years ago, it took about a year before Japan revealed its interest in the plan, proposing its support at the summit meeting in January 2003. After that meeting, negotiations and exchanges followed for about a year, but this process subsequently tailed off, creating uncertainty. Obviously, the risks in implementing such a large-scale, long-term project are considerable, but for Russia this is a high priority project and it is hoped that Japanese companies will take part in its implementation, providing pipes and machinery, equipment and financing. In general, Russia and Japan have to develop further inter-governmental dialogue on energy issues, also considering adopting a program for bilateral energy cooperation along the lines established in Russia's relations with the EU.

Day Two: Opening

On March 9, 2005, during the second day of the conference, the participants discussed a mixture of topics important for implementing energy projects, including legislation in the energy sector, technology, financing, energy efficiency and the potential for cooperation within the framework of the Kyoto Protocol. The session reflected a broader approach to energy cooperation – one that envisages a more balanced, multidirectional engagement that transcends the traditional supply-demand equation.

Unlike Russia, the former Soviet Union possessed huge centralized investment resources that could be channeled into exploration and development projects in Western Siberia, as well as the construction of east-to-west delivery infrastructure. Today, the Russian government is ready to provide support for new west-to-east delivery infrastructure projects, but expects the private sector to take the lead in highly capital-intensive, risky exploration and development ventures. In fact, delivery infrastructure is seen as a device for monetizing the country's oil and natural gas reserves. Nevertheless, this is not the only goal, as the proposed mega-projects would contribute to exploration and development initiatives in new, currently inaccessible areas, as well as the industrial and social advancement of Russia's eastern regions.

The strategy adopted by the government assumes that Russia's overall competitiveness depends on the modernization and development of basic infrastructure, which should facilitate investment decisions by the private sector. Infrastructure projects require focused attention and participation on the part of government because these projects are normally large in scale and expensive, and also because basic infrastructure should be "open access", with services being provided to all potential participants in the field. The participation of the private sector in such projects is desirable and could be possible in the form of public-private partnerships, which are a long-term device that promote the interaction of the state and the business community. In other words, public-private partnerships are a form of industrial policy or legal framework for harmonizing the strategy of the state and with business interests.

Nobuyuki Higashi, Chief Representative for Energy Resources at the Japan Bank for International Cooperation (JBIC) discussed this problem, as well as the complexities of interaction between reserves, financing options and risks. Both "reserves" and "financing" are very abstract notions, unless the specific project becomes the focus of discussion. Specialists may differ in their estimates of reserves⁷ and, in these assessments, not only volumes, but also monetary estimates of recoverable reserves are important in order to evaluate profitability, financing conditions and risks.

Risk alleviation measures are important as well, such as sovereign guarantees provided by the state and the organizational structure of the project, including the

allocation of roles between the state and the private sector. JBIC normally provides financing to states with sovereign guarantees; in that case, the economic efficiency of a project (profitability) is a technical matter that does not define the position of the government, or JBIC.

In addition, financing risks may differ considerably, depending upon whether the exploration and development part is included, or whether it involves the construction of delivery infrastructure alone. For example, in the early 1990s, despite the ongoing energy security debate in Japan, the Sakhalin II project carried what might be termed a "futuristic" connotation. The government of Japan, nonetheless, went forward with an unprecedented initiative, supporting the project. This support, in general, poses a key question concerning the role of the state *vis-à-vis* the private sector: should the state merely provide the correct environment for entrepreneurs, or should it participate in certain key fields in partnership with private sector?

In the context of Northeast Asia, this dilemma is important for "optimizing" the energy sector on a regional scale. The bottom line here is that private companies – Japanese firms and those from other countries – are entitled to access adequate, precise information critical to their own strategies. Indeed, the investment decisions taken by the private sector are important for the development of energy resources and regional development in general. Therefore, it is the responsibility of governments to provide information that in turn could properly direct and facilitate investment decisions in a timely manner.

Evgeniy N. Galichanin, Chairman of the Subcommittee on Oil Complex of the Committee on Energy, Transportation and Communications of the State Duma touched upon legislation in the energy sector, including oil, gas and pipeline projects. Russia's natural gas industry is the key component in the activities of legislators responsible for energy issues and an improved regulatory regime. The list of problems on the agenda includes the following: (1) the liberalization of the gas market and systematic differentiated deregulation; (2) the promotion of equal access to pipelines and export channels; (3) the application of natural gas as a motor fuel; (4) the utilization of the associated gas in oil production; and (5) the promotion of natural gas-based products with higher added value.

Another important issue is the updated version of the Law on Subsoil Use. Here, the central goals of the improved legislation must be licensing, control over licensing agreements, and the management of undistributed subsoil reserves under state control. Russia should fall into line with other oil- and gas-producing countries in terms of a legal framework that regulates oil and natural gas production. This framework should include drilling standards for wells, standards for the collection of information from operators, safety and environmental standards, and guidelines for joint activities in the same

⁷ "The reserves of oil in these [Middle Eastern] countries are effectively state secrets, so it is impossible to check proved reserves, as presented in normal stock exchange reports. There are several industry databases, but they can do little more than report the official information since they are not themselves in a position to evaluate the geological or engineering parameters in detail." Colin Campbell, "Just how much oil does the Middle East really have, and does it matter?", *Oil & Gas Journal*, April 4, 2005, pp. 24-26.

area, including the utilization of shared infrastructure.

The Law on Trunk Pipelines has reached an advanced stage. This legislation will cover various important issues, including public-private partnerships in new pipeline projects, pipeline access and export quota regulations, transportation tariffs, quality banks for oil, and land use. Moreover, the Amendments to the Law on Production Sharing are likely to be adopted soon, providing much-needed protection for the ongoing Sakhalin projects, as well as facilitating new PSA-based projects.

Finally, in the context of multilateral cooperation in Northeast Asia, it seems there is scope for initiatives at the level of the national parliaments of the countries concerned, including the possibility of establishing a regional inter-parliamentary association that would steer and promote new approaches to cooperative energy security.

Yukio Endo, General Manager of the Tohoku Electric Power Company's Higashi Niigata Thermal Power Station confirmed in his presentation that, in addition to other natural and economic advantages, Niigata Prefecture possesses strong potential in the field of advanced technologies.

For power-generating companies in Japan, including Tohoku Electric, the cost of electricity directly depends on the cost of imported fuel. In this context, the interests of Japan, as an energy consumer, and Russia, as a supplier of fuels, differ. On the other hand, the higher efficiency of fuel use in power generation also contributes to the reduction of costs. Tohoku Electric supplies electricity to an area that accounts for 20% of the territory of Japan and approximately 10% of the total population.

Higashi Niigata is the largest power plant operated by the company, with a capacity in excess of 3.8 GW, including eight production units, four of which are conventional. These conventional units were retrofitted, switching from burning oil to natural gas. However, in the event of an emergency, oil can also be used as fuel. The other four units are "combined cycle", in which the high-pressure mixture of gas and air is burned by gas turbines, with the secondary high-temperature steam powering steam turbines. This ensures greater efficiency and reduces pollution.

From 1980, the company made efforts to improve the technology of the combined-cycle units by raising the temperature at which the fuel is burned to 1,150C°. In December 1984, it succeeded in raising the thermal efficiency to 49%, about 4% higher than conventional units. This was a pioneering achievement and many countries followed this path. In 1988, the temperature at which the fuel is burned was raised to 1,300C° and a joint research and development project was launched in 1988-1996 that succeeded in raising this temperature further to 1,500C°, increasing thermal efficiency to 50%.

Among the challenges were the turbine blades, the cooling system, the chamber for burning fuel and reducing emissions. The new production unit was launched in 1999, after experiments with a compact test turbine. In 2002, the average thermal efficiency reached 50%, while CO₂ emissions fell by 22%. When the next unit is commissioned towards the end of 2006, Higashi Niigata will become the second-largest power plant in Japan.

Vladimir N. Metelkin, Acting Trade Representative of the Russian Federation in Japan continued the discussion, focusing on technological issues. The focus of his presentation was on natural gas-based energy products such as dimethyl ether (DME) and gas-to-liquid (GTL) technology that could become a substitute for diesel fuel in motor vehicles, as well as for fuels with industrial and commercial applications. A number of Japanese companies are conducting R&D in these fields and, by 2015, the demand for DME in Japan could reach 20 Mt a year, including 15 Mt for power generation. This creates an opportunity for bilateral technological cooperation and DME production, given the availability of large natural gas reserves in Eastern Siberia.

Kazuhiko Ohashi, General Manager of the Energy Facilities Engineering Division of Nippon Steel shared his experience of working with Russian colleagues on various projects. He also discussed how bilateral scientific and technological cooperation could facilitate environmental protection in the construction and operation of the Pacific oil pipeline. In addition, examples of successful R&D activities concerning pipeline construction in Alaska and Canada were cited.

Valeriy A. Kryukov from the Institute of Economics and Industrial Production in Novosibirsk spoke about the investment climate in the oil and gas sector. The fundamental requirement in this context is a transition from the current regulatory regime based on tax collection to a new framework that promotes investment and development. This paradigm change is particularly important in the context of the Pacific pipeline project and the need to promote new projects in Eastern Siberia.

In the 1990s, the oil and gas sector became the leading source of budget revenue. At the same time, the regulatory framework was inadequate and weak. Privatization in the oil industry proceeded in a way that did not encourage investment in exploration and the development of new oil and gas reserves. As a result, oil output declined and production only started to recover in 2000, following an increase in investment. The problem, however, was that capital assets had become rather old, requiring replacement, but investment was still inadequate and the rate of renovation was slow. In recent years, capital expenditure has primarily been channeled into replacing old assets.

In other words, the existing investment climate could permit the restoration of the production potential that existed in 1990. The key question is whether the existing investment potential in the oil industry is sufficient. Indeed, in terms of profitability, oil companies in Russia are far ahead of their western counterparts, but despite high oil prices, investment is relatively low. The sources of this dilemma can be found in the following facts: (1) oil assets were privatized at bargain prices; (2) the reserves acquired were cheap; and (3) labor costs are low. This explains, in combination with the lack of a regulatory regime that stimulates new investment, the current pattern in the behavior of the oil companies.

The current tax regime, which is based on rather simplistic and rigid norms, is chiefly aimed at extracting from the oil companies the extra revenue they have obtained as a result of high oil prices. On the other hand, the tax

provisions that encourage investment have been revoked. In the context of such mega-projects as the Pacific oil pipeline, it is vital that a regulatory framework that stimulates new investment is firmly in place.

Boris G. Saneev, Deputy Director of the Energy Systems Institute in Irkutsk focused his presentation on the Kyoto Protocol mechanisms and the prospects for Japan-Russia cooperation in this field, including joint implementation and emissions quota trading projects. Opportunities for cooperation exist in such areas as the construction of new power plants, the modernization of existing power plants and units and their retrofitting to enable the utilization of natural gas, improvements in energy efficiency, the promotion of renewables, including small hydropower, and greater reliance on natural gas.

By 2010, the thermal power generating equipment that currently accounts for about 50% of electricity generation will require replacement. By 2020, nearly all currently installed equipment will require replacement. In other words, in the following fifteen years, about 5-6 GW of new generating capacity is to be introduced, compared with the current replacement rate of only 1-1.5 GW a year. On the other hand, the wider use of natural gas in power generation and district heating will create more opportunities for reducing emissions.

Evgeniy A. Vasilchikov of the Russian Federation's Trade Representation Office suggested that, despite the significant complementarity of interests that characterizes the positions of Japan and Russia in the field of energy production and trade, bilateral energy cooperation is, in reality, problematic.

Some of the projects discussed and prepared for implementation earlier went to companies from other countries. A significant share of the LNG contracts also has no connection with Japan whatsoever. The assessment of investment risk is unduly high, but in reality Japanese companies are doing business in countries with investment ratings even lower than Russia's. References were also made to the territorial dispute, but Japan has successfully developed trade and investment links with some other countries, despite pending problems of this kind. There were debates concerning the complexities of the submarine pipeline project from Sakhalin to Honshu and its interference with fishery interests, but in reality the impact on the fishery industry would be short-term and relatively insignificant.

The paradox of this situation is that, on the one hand, there is very little confidence in real progress in bilateral relationships, but on the other, both sides are creating an illusion and are keeping their public under this illusion that the progress is possible. What is missing is support for projects in Russia on the part of the government of Japan. Furthermore, a large-scale, mutually beneficial investment project could facilitate and invigorate economic relationships. However, it is unlikely that the Pacific oil pipeline could become this kind of project. It also seems that, in negotiating this project with Russia, it is only METI's Agency for Natural Resources and Energy that is playing an active role. This may not be enough, because the dialogue is not progressing well. In summary, Japan and Russia need to identify and implement joint projects that

will be significant economically, but not overly sensitive politically.

An Agenda for Action

Over the past decade, the prospects for cooperative energy links in Northeast Asia have vastly improved. However, these improvements are yet to trigger concrete actions and initiatives at the bilateral and multilateral levels. How and when such cooperative initiatives will surface depends on specific conditions within the Northeast Asian subregion. During the Cold War, European central governments were the primary promoters of cross-border gas and oil pipelines, with the private and corporate sectors fulfilling supporting roles.

This is not yet the case with Northeast Asia today. Geo-politics, investment flows, transportation technologies and other factors such as deregulation have shaped the preferences and policies of the energy-importing countries of Northeast Asia, resulting in a situation in which these preferences and policies are embodied in the actions of multiple actors. Although there is greater unanimity among them and the role of governments is decreasing, the barriers to energy trade in the subregion remain high; some of these barriers are attributable to bureaucracy. Without removing these barriers, the indigenous private sector may not be sufficiently encouraged to challenge the basically traditional (inward-looking, rather than flexible and future-oriented) energy stances of their own countries.

During the concluding session, the focus of discussion was on issues and problems that could contribute to forming an agenda for bilateral cooperation in the energy sector, as well as clarifying the prospects for cooperative multilateral efforts in Northeast Asia.

In his opening presentation, **Tsutomu Toichi**, Managing Director of the Institute of Energy Economics Japan, made three main points, concerning (1) the growing significance of energy issues in Japan-Russia relations; (2) differences in the division of responsibilities between the public and private sectors; and (3) the lack of clarity with regard to the prospects for region-wide energy cooperation.

In Japan, closer bilateral contacts in the areas of energy and the environment were accompanied by growing public and political interest in energy security, resulting from the September 11th terrorist attacks, rapid economic growth and energy imports in China and India, and soaring oil prices that cannot be explained on the basis of cyclical fluctuations and which could be a sign of a "paradigm shift".

Considering the level of attention given by the government to reducing GHG emissions, it is also important to note that the Kyoto Protocol is now in force, following Russia's ratification of the agreement. In this context, energy policy and the efforts aimed at reducing greenhouse gas emissions are two sides of the same coin and this linkage holds significant opportunities for bilateral cooperation.

Yet another issue under discussion is the development of hydrocarbon resources in Eastern Siberia and Russia's Far Eastern region. This development would facilitate both domestic economic advancement and the diversification of exports to the markets of East Asia. For Japan, as well as the ROK, the diversification of Russia's oil and natural gas

exports means the diversification of their imports, given their high dependence on Middle Eastern sources of oil.

Mutual understanding is important for effective cooperation and we have to recognize that public-private sector relationships in Japan and Russia differ. The role of the state in the oil and gas sector is significant and popular perceptions are revolving around the notion of “re-nationalization”. In Japan, over the last ten years, liberalization has become the main trend in the energy sector. As a result, private companies that now prioritize the economic feasibility of their investment plans and the profitability of their operations may not follow government directives. Therefore, the investment attractiveness of energy projects in Eastern Russia should be sufficient to attract companies from Japan.

On the other hand, governments could also contribute by implementing measures and regulations that reduce investment risks, especially in areas where private companies cannot do much on their own. Identifying projects of mutual benefit and those of regional significance could be among the goals of intergovernmental exchanges and multilateral consultations. In this regard, a forum for discussing issues of common interest to both energy importers and Russia, as a potential supplier of energy to Northeast Asia, could help in forming common ground for future actions at the private level.

For that matter, Japan-Russia bilateral energy cooperation could be more effective as part of a multilateral setting that includes China and the ROK. A multilateral framework that strengthens mutual trust and regional stability could also include, at some point in time, the DPRK. In any event, it is desirable that the picture of energy production and use in Northeast Asia include all possible opportunities, interests and limitations, thus representing a common vision and providing a road map for concrete implementation efforts.

Igor V. Scheulov of the Ministry of Industry and Energy, a specialist in charge of energy dialogues between Russia and the countries of Northeast Asia, agreed with Dr. Toichi that there are differences between Japan and Russia and the role of the state and the private sector in managing energy issues. He emphasized the role of the public-private partnership and transparency in preparing the ground for mega-projects such as the Pacific oil pipeline. From the Russian government’s standpoint, the interests of Russian producers are the guiding principle and the government should protect those. On the other hand, from 2003, when the Russia-Japan bilateral task force was established to detail the Pacific oil pipeline project’s parameters, the interested Japanese private companies, unlike their Russian counterparts, were left behind somewhat in this framework: on most occasions, information was unavailable to them.

In the energy sector, differences are also to be found between Russia and China, and Russia and the ROK. However, intergovernmental dialogues and commissions help in smoothing over such differences. In the case of Japan, establishing a subcommittee on energy issues as a substructure within the Russia-Japan intergovernmental commission could be very timely and useful, in particular for promoting specific projects. The subcommittee could assist in promoting contacts and information exchanges at

the corporate level, facilitating the decision-making process for companies. In addition, the time is ripe for adopting a bilateral program for cooperation in the energy sector. Japan possesses an advantage in terms of understanding the details of the Pacific pipeline project and participation in bilateral ad hoc groups on the exploration and development of reserves, as well as financing and construction issues. However, although Russia has adopted a program on energy cooperation with China, it has not done so with Japan.

In general, Russia will continue in its role as a reliable energy partner for Europe, but will exploit the available opportunities to become a similar partner in the Asia-Pacific region. However, both the oil pipeline project and the expansion of the gas pipeline grid to the eastern regions are national projects. These projects reflect Russia’s development interests, rather than export-oriented plans alone.

Keizo Takewaka, Director of the Economic Security Division of the Economic Affairs Bureau at the Ministry of Foreign Affairs touched upon a number of topics, including the significance of Northeast Asia for Japan, differences in the economic structures of the countries of this area, the role of perceptions in business relationships, and the Energy Charter Treaty. He emphasized that the energy security interests of Japan require cooperation with other countries and the diversification of oil supply sources, as well as coordination with partners in the International Energy Agency. The problem is how to go beyond traditional instruments in enhancing energy security, including possible collective efforts on the part of several countries. In this regard, high oil prices require some kind of rethinking, listening to various opinions and making adjustments in policies in a broader and longer-term context.

The next speaker was **Igor B. Svetlov**, Director of the Far Eastern Center for Strategic Energy Research, which was established in August 2004 to analyze key geopolitical and macroeconomic factors affecting fuel and energy complex development in Far Eastern Russia and neighboring countries.

The Center for Strategic Energy Research sees the prospects for cooperation with Japan as lying not only in gas transportation and exports, but also in developing the Far Eastern regional gas and oil complex, including production, transportation, services, oil refining and petrochemical production, as well as investment cooperation. It was established under the auspices of Konstantine B. Pulikovskiy, the President’s Representative in the Far Eastern Federal District, following a decision by the Coordinating Council of the heads of regional administrations of the Far Eastern Federal District. President of Sakha-Yakutia, Vyacheslav A. Shtyrov is Chairman of the Board of Trustees, which includes the governors of the Far Eastern provinces and Professor Valentin I. Sergienko, Chairman of the Far Eastern Branch of the Russian Academy of Sciences.

The Center promotes international collaboration in such fields as energy policies and development strategies, regional energy cooperation, energy markets trends, environmental protection and capacity building. Its mission is to combine the administrative resources of the regional governments and the scientific potential of research

institutions and universities with the concrete practical interests of regional power companies and businesses.

Russia and Japan are well positioned to promote long-term cooperation in the energy sector, including oil and gas projects. However, an inter-governmental agreement could assist in the realization of joint projects, including the Pacific oil pipeline. On December 31, 2004, the Russian Government made the first step in this direction, adopting a decision on constructing the Eastern Siberian Pacific Pipeline system from Taishet to Perevoznaya Bay, in Primorskiy Krai. This system would allow the delivery of 70 Mt of oil to regional markets. There are also opportunities for collaboration in projects focused on natural gas transportation and utilization. The highest profile project in this field is the natural gas pipeline from Eastern Siberia to the south of Primorskiy Krai; in addition, there are projects focused on liquefaction technologies for natural gas and joint exploration activities.

Koichi Sakai, Director of the International Affairs Department at Niigata Prefectural Office provided his perspective concerning regional economic cooperation, the conceptual basis for such cooperation, public support for this process and the impact of energy projects on regional development. He reiterated that cross-border energy projects in Northeast Asia, along with regional transportation networks, could put in place the foundations for regional economic integration. However, general public awareness of the benefits of such projects is low. Moreover, the energy riches of Eastern Russia, including those of Sakhalin, should be seen in the broader context of regional endowment and advantages over other areas. This development of energy potential is associated with an inflow of investment, job creation and an overall trend towards co-prosperity. From this standpoint, the government should adopt a broader policy perspective that goes beyond traditional economic calculations. The Japanese public should be properly informed about the significance of energy projects such as the Pacific oil pipeline in the context of creating a "common good" for Japan, its prefectures and regional development in general. Moreover, there is a hope that energy mega-projects could play a catalytic role in facilitating development in other sectors, including knowledge-intensive industries.

Pavel A. Minakir, Director of the Khabarovsk-based Economic Research Institute continued this line of argument, suggesting that cooperation in the energy sector should be seen as part of a broader and more complex picture of regional infrastructure development. Other layers of cooperation include finances, technology and institution building. In this respect, the configuration of cooperative engagement in this part of the world is complex, with Russia acting as an outsider compared with such economies as Japan, China and the ROK. What kind of setting will emerge in the energy sector? Will Russia join forces with the leading economies of the region in developing its energy sector and expanding energy exports, or will the importers of energy form a coalition to protect the interests of the buyers? On the other hand, by 2020, only about 15% of regional energy needs will be covered by regional sources, meaning that competition will be somewhat limited, even when a mega-project such as the Pacific oil

pipeline is commissioned.

On the other hand, the development paradigm for Far Eastern Russia is now changing again, with transport and energy projects leading in investment plans. The challenge is how to avoid a scenario in which high export earnings suffocate local manufacturing industries, some of which are not sufficiently competitive, even today. A mechanism is needed to enable mega-projects in the energy sector on a national scale to stimulate regional industrial development and the subsequent integration of Russia into the regional economic system at all levels.

Yuji Nakamura, Group Manager of the Overseas Business Division of the Nippon Steel Corporation proposed considering the follow-up steps that would facilitate a comprehensive dialogue on energy issues, as well as the formation of a system for implementing the proposals stemming from such a dialogue. For that matter, there are some problems relating to both Russia and Japan, such as the fact that the energy dialogue launched in January 2003 has stalled.

At the same time, Russia is demonstrating a spectacular economic recovery. Its fiscal situation has improved and export earnings are rising, creating enthusiasm with regard to the development of Eastern Siberia and the Far Eastern region. The perception is that Russia does not need any more foreign investment in the energy sector and that the Pacific oil pipeline project could be implemented without the participation of Japan. In other words, the common understanding that emerged as a result of exchanges with Japan's Russian counterparts in 2003-2004 is evaporating somewhat. If this is the case, the chances for cooperation in other fields that are important for Russia, such as energy efficiency and advanced technologies, are becoming slimmer.

There are also problems on Japan's side. Remarks were made during this conference regarding the Northern Territories. Some mass media sources tend to link this problem and energy cooperation, which is not helpful from the standpoint of business and perhaps even the public interest. On the other hand, this problem appears to be a relic of the Cold War, which ended in the 1990s. It is abnormal to carry this burden and we have to ask ourselves not only how the problem will be resolved, but also when it will be resolved.

On the other hand, as this conference demonstrates, there is a need to combine different experiences and expertise from various sectors in the spirit of the public-private partnership, in order to establish a joint structure that facilitates the flow of information, as well as providing the private sector with an opportunity to share its experience with government and academia. US-Russia energy summits could be an example of this. On the part of the United States, the agenda is simple, focusing on a strategy for the diversification of energy supplies, as well as concrete measures aimed at supporting American companies in relevant projects in Russia. This model for public-private partnership deserves careful attention. Japan and Russia need a similar structure that unites government officials and representatives from the private sector.

Concluding the session, **Susumu Yoshida** stressed that the discussions at the Japan-Russia Energy Forum

demonstrated that there is considerable practical interest in both Japan and Russia concerning the official bilateral agenda, including the Pacific oil pipeline project. The Forum provided an opportunity to deepen our understanding of the issues discussed and identify problems to be dealt with in the future.

The problem of the investment climate in Russia was among the key issues in our discussion that revealed both differences and similarities in approaches. Another extremely important topic in light of the close linkage between energy use and the environment was technological cooperation.

Moreover, among the outcomes of the dialogue was a plan to collaborate with the newly-created Energy Center in Vladivostok in establishing a network that would facilitate the flow of information between Japan and Russia concerning energy projects and other relevant areas. The bottom line is that enhanced energy security within the Northeast Asian subregion should be seen as a common goal. This goal should be pursued in parallel with efforts aimed at environmentally sound energy use.

Here, again, information exchange and transparency are indispensable. In this context, it is desirable to develop existing bilateral and multilateral frameworks to include new members. On the other hand, regional cooperation could benefit if new actors such as representatives of national parliaments participate. In general, public-private partnerships must be cultivated in discussing and promoting energy projects. On the other hand, cooperation in oil and gas projects requires attention at the summit level.

Conclusions

The Japan-Russia Energy Forum proved to be a significant and timely event in the context of bilateral, as well as regional economic relations. At the same time, the conference also appeared useful from the local perspective. **Susumu Abe**, Member of the Board of Directors of ERINA, and Acting President of the Asia Pipeline Research Society of Japan made a number of points during his luncheon presentation, focusing on Niigata's role as an energy production center. He referred to the structure of Niigata's power sector and the experience it has accumulated in the fields of energy efficiency and the promotion of hydropower and natural gas.

Ikuo Hirayama, former governor of the prefecture, also referred to a submarine pipeline project linking Sakhalin and Niigata. Considering the distances involved, natural gas delivered via a pipeline could compete with LNG. Furthermore, Niigata could also provide significant underground storage for natural gas and it is already linked to Tokyo and Sendai by means of gas pipelines. The capacity of these pipelines could be expanded, while the use of available underground storage capacity and new pipeline projects could contribute to the economy of Niigata Prefecture.

Governor **Hirohiko Izumida** mentioned that Niigata is paying close attention to the Sakhalin natural gas projects. As a clean fuel, natural gas is important for implementing the Kyoto Protocol and Niigata hopes to be a part of this process. Plans concerning a gas pipeline project linking Niigata with the Kanto region are under consideration. In

addition, the Pacific oil pipeline project could contribute to economic stability in Northeast Asia. Hopefully, in the future, there will be a need to locate an oil refinery in Niigata. In general, despite significant differences in national approaches to energy security issues, the expansion of cooperation in Northeast Asia will contribute to both the economic and political stabilization of this region.

In his remarks over dinner, **Yonghun Jung**, Vice President of the Asia Pacific Energy Research Center (APEREC) observed that the present world energy market is becoming tighter. The persistent and ubiquitous growth of energy demand for power generation, the automobile sector and industry has been met with depleting, unevenly located resources. Oil and gas resources in particular are found only in a handful of locations. The Middle East and Russia account for the lion's share of this resource endowment. Moreover, lagging upstream investment and the slow progress of cross-border energy projects seem to have added to growing pressure on the energy market. The high oil prices we see now are testament to the present conditions in world energy markets. The commonly held view is that the robust growth of global energy demand will continue well into the next decade, with China most likely leading this growth.

Most economic research institutions are not hesitant to become bullish about the long-term prospects of the world economy – including China and India – over the next two decades. As a sign of the burgeoning appetite for energy, most APEC economies have turned into net importers of energy. In the APEC region, all economies other than Brunei and Russia will become net importers within a decade. Energy projects require relatively large sums of investment. Power plants, oil refineries, oil and gas pipelines, and electricity transmission networks involve huge capital exposure. Unfortunately, however, the climate in the capital market for the energy industry is not necessarily looking up. In the extreme case, we may run out of money long before we run out of energy resources. In any case, securing financial resources will pose an overwhelming challenge that we must meet in the future.

Moreover, on February 16, the Kyoto Protocol finally entered into force after more than seven years of long and arduous negotiations following its adoption in 1997. This global effort to conserve the atmospheric environment will soon become a visibly important factor in shaping energy supply and demand decisions, combined with local air quality concerns. For sustainable economic growth, we need clean but inexpensive fuels. The supply security of clean energy will in no small part depend on international trade, either through ships, railroads or pipelines.

From a regional perspective, Russia is at a geographical and economical advantage *vis-à-vis* Northeast Asia. Russia has resources, while China, Japan and Korea have growing markets for them, coupled with the ability to pay. The recent success of the Sakhalin II project has demonstrated the viability of a region-wide project and highlighted a cause for regional cooperation in Northeast Asia and in the APEC region as a whole. There is still a list of areas in which regional cooperation could take place, including natural gas pipelines, oil pipelines and power interconnection.

In conclusion, Dr. Jung stated that Northeast Asia, including China, Japan, the ROK and Russia, would take the center stage in the world economy in the not-too-distant future. In order to achieve a seamless transition to sustainable economic development and regional prosperity, energy supply security could be achieved more effectively through collective, cooperative regional efforts.

Updates and Comments

On December 31, 2004, the government issued the ten-point Directive No 1737-p concerning the Pacific pipeline.⁸ Before that, the Pacific pipeline project was revised and its routing altered, with the target capacity being raised by 30 Mt to 80 Mt a year. The total cost also increased to \$11 billion.⁹ On April 21-22, 2005, the 7th meeting of the Intergovernmental Commission took place in Tokyo.¹⁰ The parties discussed trends in bilateral economic relations and future prospects for these, as well as the agenda for the planned visit to Japan by President Vladimir Putin, and reviewed specific areas of cooperation, including trade and investment, Russia's membership of the WTO, the Russian investment climate,¹¹ cooperation in high-tech sectors (information and communications technologies, civilian space programs and the nuclear power industry), fisheries, transport and tourism, professional training and collaboration at the regional level. The deliberations on individual sectors also covered energy issues, as well as talks centered on the Pacific pipeline project. This discussion reportedly lasted for about five hours in total, covering both technical and financial matters. Viktor Khristenko, co-chair of the Commission and Russia's Minister of Industry and Energy said that, despite the

extraordinary significance of this project for Eastern Russia, neither his visit to Japan, nor the intergovernmental economic agenda were solely defined by the pipeline issue.

On April 26, upon returning to Moscow, Khristenko signed a document that launched the works on the pipeline, as decided by the government in December 2004. The Phase One of the project to be completed by 2009 focuses on the transportation of oil to Perevoznaya Bay. The construction schedules for the pipeline itself (following the route Taishet – Ust-Kut – Kazachinskoe – Tynda – Skovorodino) and for the sea oil terminal should be synchronized. According to the plan, the annual capacity of both facilities will be 30 Mt. Oil for this part of the project will be delivered from Western Siberia (the Surgut area) and then transported from Taishet to Skovorodino by pipe and then to Perevoznaya by rail. The funding for this phase (the 2,000 km-long pipeline and the terminal) will be the responsibility of Transneft, as the company itself proposed.¹²

The implementation of the second part of the project would depend on overall progress in developing the oil fields already licensed to companies, as well as progress in implementing the special program of licensing new lots for exploration. The time limits for exploration works contained in the licenses granted should help to speed up the development process.

Feed pipelines were also planned, in order to deliver oil from the new fields to Taishet and Kazachinskoe, but these pipelines will be constructed by oil companies and their consortiums. Obviously, the economics of the Pacific pipeline, high investment risks related to the exploration in the surrounding areas, the investment recovery time, as well as the capacity of the government to support this and other

⁸ The directive incorporated the following instructions and measures that define the project logistics and implementation concept:

- The Transneft Company to serve as chief contractor
- The Ministry of Natural Resources develop a program for the geological exploration and licensing
- The Ministry of Industry and Energy and Transneft jointly define the construction schedule and the phases of the pipeline by May 1, 2005
- The Ministry of Transport and Ministry of Defense define the shipping routes and schedules in Perevoznaya Bay, near oil terminal facilities.
- The Ministry of Transport and the Russian Railways Company (RZD) to design the railway logistics for (a) shipping construction materials and equipment, and (b) crude oil by rail
- The regional authorities to provide support for the project
- The Federal Tariff Service to ensure that oil transportation tariffs support the project
- The Ministry of Industry and Energy to propose measures that enhance the economic feasibility of pipeline construction by May 1, 2005.

⁹ The length of the Taishet-Kazachinskoe-Skovorodino-Perevoznaya Bay pipeline is about 4,200 km, including several overland sections with a total length of 583 km; pipes with a diameter of 1,220 mm will be used. The route will cross seven administrative entities: Irkutskaya, Chitinskaya and Amurskaya oblasts, the Republic of Buriatiya, the Evreiskaya Autonomous Oblast, and Khabarovskiy and Primorskiy kraises.

¹⁰ The previous session of this bilateral framework, which was established in 1994, took place in October 2002, in Moscow.

¹¹ For Russia, Japan is the 10th largest source of foreign investment (cumulatively totaling \$2 billion by 2004). Foreign direct investment from Japan amounts to \$1.353 billion, the largest recipient being the Sakhalin I project.

¹² Transneft maintains that it can raise as much as \$7-8 billion for a period of 15-18 years under an attractive refinancing rate. During the last 48 months, the company has invested about \$3 billion by borrowing money. Currently, its outstanding debt is about \$500 million.

¹³ In recent forecasts, western energy analysts basically agree that the \$35-40 per barrel (bbl) could constitute the new plateau in prices, which will be driven by strong demand on the part of China, India, the United States and Europe, as well as low spare capacity. Some of them suggest that a likely scenario would see oil prices rising to \$80/bbl by 2008, dropping to \$60/bbl by 2012, reflecting the influence of high cost on demand. Fereidun Fesharaki, FACTS Inc., cited in the *Oil & Gas Journal*, May 2005, p. 5.

projects will depend on the international oil prices.¹³

The Phase Two will include the second pipeline stretch of 50 Mt capacity from Skovorodino to Perevoznaya and the expansion of the Taishet – Skovorodino section to 80 Mt. The capacity of the terminal will increase correspondingly. The second phase of the project may also aim to export 30 Mt of oil from Skovorodino to China, or to create the fourth export-oriented oil refinery center in Eastern Russia, in addition to Angarsk, Khabarovsk and Komsomolsk-on-Amur. Khristenko, in one of his interviews, indicated that Russia plans to maintain and increase oil-by-rail exports to China and may also consider a pipeline connection from Skovorodino to Daqing. This mentioning of China appears to be a deviation from both the latest proposal made by Transneft (80 Mt of oil delivered to the Pacific coast) and the December 2004 plan adopted by the government. On the other hand, this approach mirrors the one proposed by the *2020 Energy Strategy*: a pipeline to the Pacific (50 Mt) plus a branch pipeline to Daqing (30 Mt). It is worth noting, however, that according to the government, Transneft and independent sources, no decision has yet been taken on a branch pipeline.

The Pacific pipeline is going to be the largest infrastructure project in post-soviet Russia. Japan and other major economies of Northeast Asia have a long-term interest in diversifying the sources of oil supplies, while Russia is interested in cultivating new markets in the region, in order to reduce its current dependence on Europe as a principle destination for its energy exports.¹⁴ According to Transneft, Russia's high export dependence on European countries is behind the phenomenon that can be called a "European discount" for Russia's oil exports. Similar to the "Asian premium", which oil importers in Northeast Asia pay because they lack the supply source alternatives, the "European discount" reflects the lack of options for exports.¹⁵

In this context, diverting some oil from Western Siberia to the Pacific markets means higher revenues.¹⁶ Russian government envisages oil output reaching 530 Mt by 2015, including 65 Mt from new sources in eastern areas. Oil exports could reach 310 Mt by 2020, with about one-third of these volumes directed to eastern markets. In this respect, the Pacific pipeline is strategically important. The project will require an array of efforts, including additional exploration of known fields and the modernization of existing pipeline infrastructure between Western Siberia and Taishet, in order to make the new system partially reliant on the oil from Western Siberia. The project envisages the application of advanced technologies that will improve the safety of infrastructure and minimize its environmental impacts. Furthermore, the project would

require a new licensing system and production agreements with developers.

On the other hand, Transneft proposes to manage oil exports via the Pacific pipeline in a similar manner to the way in which it manages shipments to Europe. It is not the government, nor Transneft, but the oil companies that decide to whom to sell oil. The choice could be either China via Skovorodino, or international customers served via terminal at Perevoznaya. To ensure that this approach works, Transneft suggests the application of a unified tariff of \$49.9 per ton of oil transported from the Surgut area to both destinations. Presumably, this should help oil companies to maneuver their shipments, moving oil according to demand and prices. However, in Perevoznaya's case, the tariff would consist of both pipeline and railway charges. To follow this scheme, Transneft should work out a deal with RZD (Russian Railways Company) to split revenues and share possible losses on the route to Perevoznaya.

The Intergovernmental Commission meeting confirmed that there were some difficulties in the dialogue focused on the oil pipeline. It seems that, the parties perceived the project differently. Russia emphasized the commercial characteristics of the project, while Japan perhaps saw the project being funded under the intergovernmental agreement. In addition, the issue of China became critical from the standpoint of Japan. The position was that funding for this project could be offered only under the condition that oil will be first transported to Perevoznaya. Evidently, this made Russia's position *vis-à-vis* China difficult. Moreover, Transneft did not want sacrifice the freedom of choice both in planning and operating the project. Paradoxically, at the end, Khristenko even went public, saying that there is no conflict between the "Japanese" and the "Chinese" routes of the pipeline, because the government has already decided to build a pipeline from Taishet to Perevoznaya. In addition, the Transneft confirmed the goal of the first phase of the project by comparing the capacity of the Taishet-Skovorodino pipeline and the capacity of the oil terminal in Perevoznaya.

In the essence, it seems that frequent mentioning of China in the context of excluding it as a possible destination for a branch pipeline made the counterparts more willing to refer to this option. These communication problems were possibly aggravated by the lack of political guidance, but certainly by insufficient familiarity with regard to the respective decision-making practices and long-term goals of the parties. Worse, the lack of transparency exposed the public to the biased coverage by the mass media, which treated the planned pipeline almost exclusively in the

¹⁴ In 2003, 58% of Russian oil exports were to the EU and 22% of total net EU oil imports in 2002 came from Russia. This represented 16% of total EU oil consumption. In addition, 88% of its total natural gas exports were delivered to European countries. Approximately 65% of the natural gas exported to Europe in 2003 was delivered to the EU, representing 32% of EU gas imports and 19% of total EU gas consumption.

¹⁵ This means a loss of about \$1 on each barrel (\$7 per ton) of exported oil.

¹⁶ Transneft also plans to build the 0.48 Mbd Northern Pipeline, which will run from Kharyaga in the Timan Pechora oil province to Indiga on the Pechora Sea, at the same time with the Pacific pipeline. Earlier, Transneft had planned to launch the former only once the initial stage of the latter is complete. The northern pipe is to carry crude from the Timan Pechora region, an area being developed by LUKoil.

context of competitive relationships. However, oil delivered to Perevoznaya will be on demand not only in Japan, but also in China, Korea and, perhaps, the US. The Pacific pipeline, indeed, is very important for Russia's trade and policy ties with Northeast Asia. It could play significant

role in the oil supply to the region, including both Japan and China. The best option is to consider this pipeline in a broader integrative context, using this mega-project for promoting trilateral and multilateral partnerships in the energy sector.¹⁷

¹⁷ See Daojiong Zha, Vladimir I. Ivanov and Shoichi Itoh, "China, Japan and Russia: Towards a New Energy Security Nexus", *ERINA Report*, March 2005, vol. 62, pp. 8-9, 15.
