Japan-Russia Cooperation in Oil and Gas Sectors*

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Abstract

Fuel and energy are crucial for the economy of every country, and they form the basis for national security. Japan lacks substantial energy resources and is highly dependent on imports from abroad. In contrast, Russia is rich in energy resources and extremely reliant upon their exports. Given their complementary energy and economic needs and geographical proximity, Japan—one of the world's top energy consumers, and Russia—one of the world's top energy producers, both stand to gain from closer cooperation in the field of energy. This paper provides an analysis of the Russian-Japanese energy relations, depicting their current state and future trends and emphasizing benefits that currently are and potentially can be delivered by means of this collaboration.

Japan's energy resource base is extremely scanty: coal is the only energy source that is found to be in sufficient quantity; however, due to low-cost foreign coal supplies, its demand is satisfied by imports as well. New energy sources may not involve imports, but are not completely reliable. In contrast, Russia is rich in energy resources, especially in natural gas. The country possesses the world's largest natural gas reserves, the second largest coal reserves and the seventh largest oil reserves. Production of fuels exceeds domestic consumption, thus the surplus is exported.

The situation of international fuel markets is crucial for Russia because the state of these markets influences export conditions of Russian energy resources. At present, the main flow of Russian oil and gas exports is concentrated on the Western direction. At the same time, Northeast Asian (NEA) countries, in particular Japan, are among the top consumers of energy resources. Russia, two-thirds of whose territory lies in Asia, is an inalienable part of Northeast Asia and the Asia-Pacific Region.

〔Keywords〕

energy policy and cooperation, gas, Japan, joint energy projects, Russia, oil.

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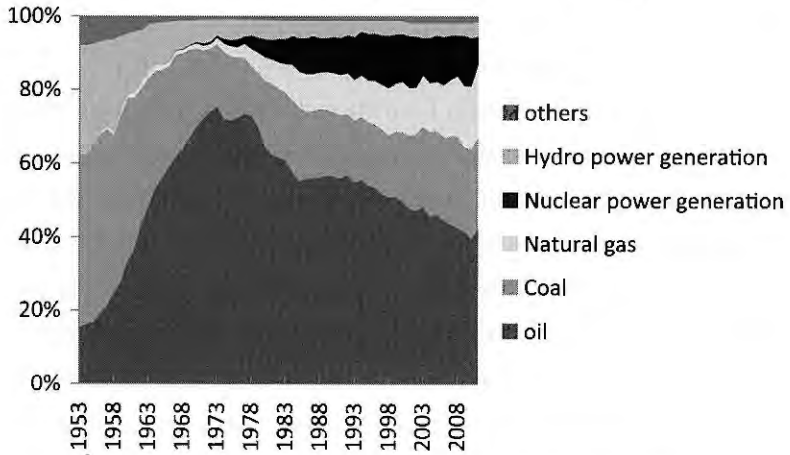
Russia's penetration into the NEA countries' markets and participation in the ongoing integration processes in the region facilitate the creation of favorable conditions for the economic development of the Russian Far East and for enhancing the geopolitical role of Russia. Development of economic interrelations with the NEA countries is one of the main goals of the state foreign policy of Russia today.

Despite all its efforts, Japan still depends on oil, which at present accounts for approximately 50% of the country's total energy needs (Figure 1). This rate is relatively high, compared to other states. Japan has very limited domestic oil reserves concentrated mainly along the western coast. Domestic oil production fulfils less than one percent of Japan's requirements and more than 99% of its crude oil demand is satisfied by imports (Figure 2).

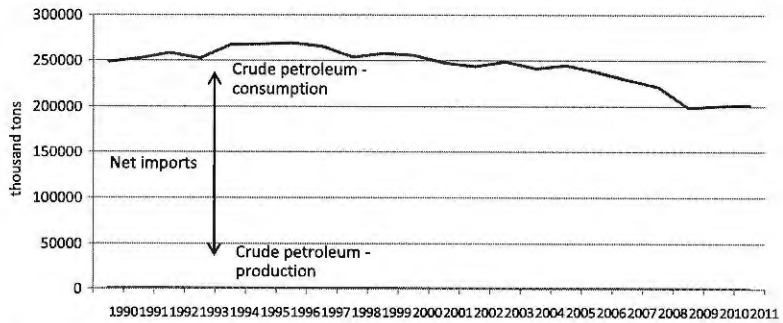
Today Japan is the third largest oil importer in the world, after the USA and China. Japan is active-

Figure 1. Trends in Japan's primary energy supply



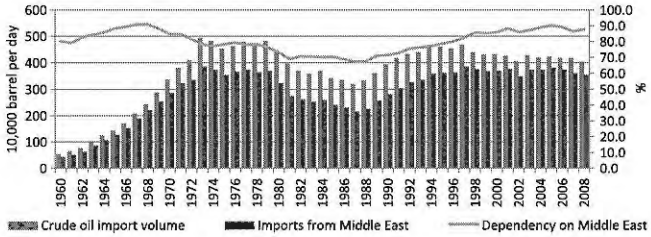
Source: Japan's Agency for Natural Resources and Energy, Energy in Japan 2010

Figure 2. Japan's oil production and consumption



Source: Country Analysis Briefs: Japan//U.S. Energy Information Administration

Figure 3. Crude Oil Import Trends and Dependence on OPEC and Middle East



Source: Ministry of Economy, Trade and Industry, Japan (METI)

ly trying to diversify its oil supplies and to reduce its dependence on OPEC countries after the oil crises. For example, the country launched exploration in the area around Japan's continental shelf since the 1970s, and several oil and gas fields were found and developed, such as the Iwaki Offshore Gas Well (production was terminated in mid-2007) and the Iwafune Offshore Oil/Gas Well. It is also worth mentioning that after switching some of its imports to countries outside the Middle East, such as Indonesia, Mexico and China, Japan saw its dependence on Middle Eastern oil decline to 67.9% in 1987 from more than 80% in 1972.

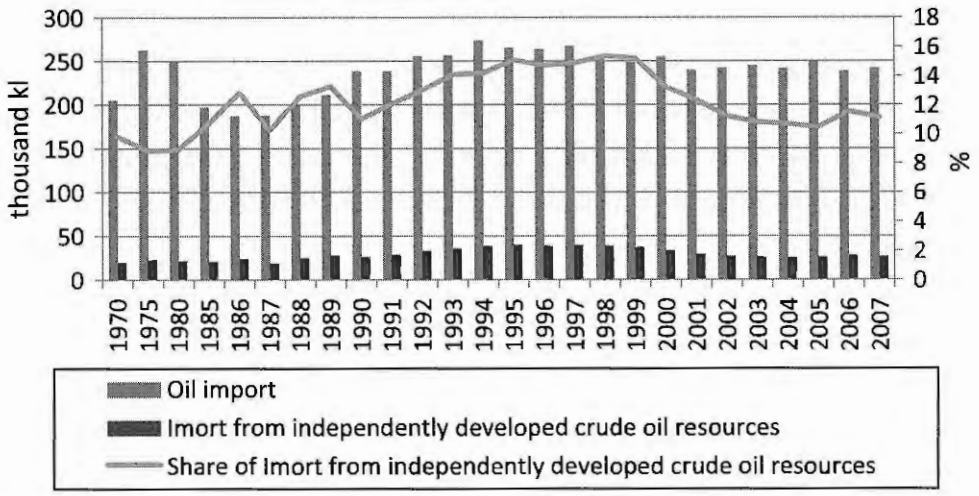
However, the dependency has risen again since the mid-1990s, because non-Middle Eastern oil producing countries such as China and Mexico have gradually reduced their exports of crude oil in accordance with economic growth and concurrent rising energy demand in their own countries. As a result, Japan's dependence on the Middle East has been growing since the 1990s. Today more than 85% of its oil is imported from the Middle East (Figure 3). As far as crude oil is concerned, four countries, namely Saudi Arabia (33% of total import volume), the United Arab Emirates (23%), Qatar (10%) and Iran (9%), account for about three-quarters of Japan's total import volume. Recently, however, Japan's imports from other regions, especially Russia and Africa, have begun to increase.

Establishing and strengthening mutual relationships between Japan and oil producing countries contributes to ensuring long-term supply stability of energy resources. Fostering business links with their national oil companies and oil majors has great significance for Japan's energy security. Today, Japanese firms are involved in more than 130 oil and gas development projects around the world in areas such as the Middle East, South-East Asia, Africa, South and North America, and the former republics of the Soviet Union. The ratio of crude oil resources independently developed[1] by Japan is about 12% (Figure 4).

At present, Japan is trying to diversify its energy sources not only by maintaining its coal demand

1) Via "independent development" Japanese companies acquire "interests" and participate in an overseas oil development project to have the right to purchase a pro-rata volume of crude oil. Its advantage is securing a stable supply based on acquisition of "interests" in the development project.

Figure 4. Trends in the ratio of independently developed crude oil resources



Source: Agency for Natural resources and Energy, Energy in Japan 2010

but also by enhancing liquefied natural gas (LNG) consumption. However, gas resources in Japan are also very limited and the country must rely on imports to meet its demand. Japan began importing LNG from Alaska in 1969, making it a pioneer in global LNG trade. Today Japan is the largest importer of LNG in the world, accounting for about 32% of global trade. Japanese companies participate in many LNG projects around the world: in Qatar (Qatar Gas I LNG), Malaysia (III LNG), Indonesia (Bontang LNG, Tangguh LNG), Papua New Guinea (PNG LNG), Canada (British Columbia Shale Gas), Australia (NWS LNG, Darwin LNG) and Russia (Sakhalin II).

Thus, Japan lacks sufficient indigenous energy sources. The country's energy import dependency is about 96% (with nuclear energy excluded). This figure is much higher than the OECD average[2]. Moreover, the Japanese economy is highly dependent on oil, and most oil imports continue to come from one politically unstable region—the Middle East. Given these problems, the Japanese energy strategy must address a number of challenges: the security of supplies; supplies at reasonable prices; the diversification of energy sources in terms of resource types and source countries; and environmental issues.

In recent years, global energy conditions have undergone rapid and substantial changes, such as the steep rise in crude oil prices, inflows of speculative capital to commodity markets, rapid grows of energy demand in Asian countries, and uncertainties in the Middle East. In Japan, damage from the Great East Japan Earthquake, including the Fukushima nuclear power plant accident and other

2) IEA, *Energy Balances of OECD Countries*, 2010.

effects, has forced Japan to restructure its national energy strategy. The Innovative Energy and Environment Strategy (2012) upholds the following three pillars, based on broad and diverse discussions held throughout Japan. The first pillar is the "realization of a society not dependent on nuclear power in the earliest possible future." The second pillar is the "realization of a green energy revolution." The third pillar is the "stable supply of energy." To achieve these goals, Japan will have to ensure sufficient electricity supplies from fossil fuels, and aim at their more efficient use, including the use of heat.

These issues can be resolved by means of cooperation with Russia, which is highly beneficial for both countries. Russia is also interested in modernization of its energy sector. It is essential for Russia to upgrade the technological base for its fuel and energy complex, to attract foreign investment, to diversify export destinations, to develop new energy sources, and to promote energy conservation. All these issues can be tackled by means of partnership with Japan.

The main geographical link between Japan and Russia is the Russian Far East. With the collapse of the Soviet Union, the geopolitical significance of this region has increased. The Far Eastern region occupies one third of Russian territory. Historically, the Russian Far East was functioning as a supplier of raw materials and a military base. By the middle of the 1990s, the region was suffering from many economic problems: depopulation, decreased investments, negative growth, and unemployment. Although the situation has improved recently, massive capital input and technological transfer are still essential for increasing the competitiveness of the Russian Far East economy. From this standpoint, cooperation with Japan is crucial for Russia.

The most important tasks and goals of Russia's energy policy were formulated in the Energy Strategy of Russia. The Strategy saliently prioritizes geographical diversification of production and export destinations, with a more active role played by Russia's eastern regions, in particular by Eastern Siberia and the Far East. This prioritized direction of Russia's energy sector development is unofficially referred to as the "Eastern vector of Russia's energy policies", and is vitally important for Russia since it helps to resolve both general (social, political, geopolitical, economic) and energy problems of Russia. Firstly, creating new energy centers in Eastern Siberia and the Far East will contribute to strengthening the energy security of Russia, as well as the reestablishment and intensification of broken fuel and energy ties between the regions of Eastern Siberia and the Far East. Secondly, rapid and large-scale development of the energy sector in eastern Russia and participation in energy markets of Japan, China, Korea are considered an important means to secure Russia's role in this strategically important region of the world. Thirdly, construction of a well-developed infrastructure in eastern Russia and NEA, such as inter-state gas and oil pipelines, will contribute to reducing the cost of energy carriers, and to improving the reliability of energy and fuel supplies to

end-users in different countries. Fourthly, closer cooperation with NEA countries, especially with technology-leading Japan, will help Russia to promote energy efficiency, to ease ecological problems, to develop export capacities—modernize existing pipelines and construct new ones, to upgrade exploration and production technologies and thus to increase gas and oil production levels.

Potential directions of energy cooperation between Russia and Japan include: export expansion of traditional energy sources, joint development of oil and gas fields, construction of pipelines, oil refining factories and natural gas liquefaction factories, promotion of energy conservation, and development of new energy sources. Here we consider only collaboration in oil and gas sectors.

Before presenting the initiatives undertaken in these domains, it is worth mentioning the historical context of energy relations between Russia and Japan. In spite of various political and economic disputes between the former Soviet Union and Japan, especially during the Cold War, the two countries were involved in a number of energy projects focusing on the Far East and Western Siberia.

Table 1. Japan-USSR joint initiatives in the energy field

Project	Yakutia Natural Gas Project	Tyumen Oil Development Project	Sakhalin Continental Self Oil and Gas Exploration Project
Initiation date	Agreement was signed in 1974; expected start date 1982	Initial discussions in February 1972; start date 1981	Agreement signed in January 1975
Primary signatories	USSR: Ministry of Foreign Trade Japan: Tokyo Gas, Natural gas Kondankai USA: EI Paso Natural Gas and Occidential Petroleum	USSR: Ministry of Foreign Trade Japan: Petroleum Committee USA: declined to participate	USSR: Ministry of Foreign Trade Japan: Sodeco USA: US Gulf Oil as a minor shareholder
Project Description	25-year term; joint development of Yakutia gas reserves and related infrastructure; construction of gas pipeline to port Olga on the Sea of Japan and LNG Plant; primary target customers—Japan and US West Coast	Japan was expected to snpply all necessary equipment for oil exploration, drilling, and delivery of crude oil and to construct a seaport facility for crnde shipments from Russia; in exchange Japan is being compensated with 25 million tonnes of crude oil annually for 25 years.	One of the first compensation-based projects; initial term was set at 10 years; Japan was expected to provide capital investment and commercial credits to finance Soviet drilling and exploration activities in Sakhalin; as compensation the Soviet side would provide Japan with 50% of the obtained oil during the loan term and for 10 years after its expiration.
Outcome	Due to various (mostly political) reasons the joint venture was terminated in 1980.	Excessive costs, especially for infrastructure development and great distances made this project prohibitive; political and strategic reasons (USA and China protested the construction of BAM railroads for delivery of crude oil to the Pacific coast) prevented the project from materialization and led to its abandonment by the middle of 1970s.	Althongh the project stalled by the late 1970s due to technical, political, and economic reasons (lack of necessary drilling equipment and prohibitive oil extraction costs, especially after the Soviet invasion of Afghanistan and US trade embargo policies), it was not completely abandoned and was reinvigorated by the mid-1990s as the Sakhalin-1 project.

The source: The Institute of Energy Economics, Japan (IEEJ), Japanese-Russian Energy Cooperation, October 9–13, 2008, p. 1–2

The past Japan-USSR joint initiatives in the energy field are presented in Table 1.

Basically, there are two documents that form the basis for energy sector cooperation between Japan and Russia. One is the "Japan-Russia Action Plan" adopted in 2003. This document covers six fields: the strengthening of political dialogue, peace treaty negotiations, cooperation in the international arena, trade and economic cooperation, the strengthening of relations in the defense and public security sectors, and the promotion of international cultural exchanges. Energy issues are incorporated into the development of bilateral relations in line with the plan. Another document is the "Initiative for the Strengthening Japan-Russia cooperation in the Far East Russia and Eastern Siberia", proposed by then Japanese Prime Minister Abe to V. Putin during the Heiligendamm Summit in June 2007. This document stresses the constructive role of Russia in the Asia-Pacific region, and expects the country to support mutually beneficial inter-/non-governmental cooperation mainly in eight sectors: energy, transportation, information communications, the environment, security, health and medical treatment, trade and investment and inter-regional exchange.

Japan-Russia relations in the energy sector have advanced substantially during the past decade, with the energy field becoming the basis for cooperation between the countries. However, despite the considerable potential of energy cooperation, presently there are only a few large-scale feasible projects that address the energy needs of both countries. These major projects include the Sakhalin-1 and Sakhalin-2 projects and the ESPO (Eastern Siberia Pacific Ocean) oil pipeline. The following sections discuss these and other joint energy initiatives in detail.

The Sakhalin-1 project was organized by Russian, Japanese, Indian and American participants. It is one of the largest international direct investment projects in Russia. The participants of the project are: Exxon Neftegas Limited, a subsidiary of U.S.-based ExxonMobil (holding 30% of interest); Russian oil company Rosneft acting via its affiliates RN-Astra (8.5%) and Sakhalinmorneftegas-Shelf (11.5%); Japanese consortium SODECO (30%); and Indian state-owned oil company ONGC Videsh Ltd. (20%). Target markets of the project include such Asian countries as Japan, China and Korea, as well as the domestic market of the Khabarovsk region[3].

The Sakhalin-1 project includes three oil and gas fields—Chayvo, Odoptu, and Arkutun Dagi—located off the northeast coast of Sakhalin Island in the Russian Far East. The project is divided into several phases. This approach helps Exxon Neftegas Limited, operator of the Sakhalin-1 Project, to take advantage of gained experience, learned lessons, and new technologies, thus maximizing the effectiveness of future phases[4].

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3) Exxon Neftegas, Sakhalin-1 Project, the official website, URL: http://www.sakhalin1.com/Sakhalin/Russia-English/Upstream/about_consortium.aspx

4) IBS Centre for Management Research, Sakhalin-1 Project: Delivering Excellence in Project ↗

The project oil export system was put into operation in August 2006. The 226-kilometer pipeline transports oil from the Chayvo Onshore Processing Facility, across Sakhalin Island and the Tatar Strait, to the De-Kastri export terminal in Khabarovsk region. The De-Kastri terminal has two oil storage tanks and a single point mooring facility. The Sakhalin-1 was the first in the arctic environment of the Russian Far East to start year-round oil transportation. Approximately 40% of its total production goes to Japan.

Sakhalin-1 is highly beneficial for Russia, both for the government and society. Firstly, the Russian government is expected to collect over US$89 billion of revenues in taxes, royalty payments, and the state's share of oil and gas. Secondly, Sakhalin-1 provided gas supplies to Khabarovsky region and this became a significant step towards the Russian Far East Gasification Program. Many businesses and public utility companies have started to use more environmentally friendly fuel. Thirdly, Sakhalin-1 involves many local companies and provides many employment opportunities for Russian nationals. Project operator Exxon Neftegas Limited alone directly employs more than 550 Russian nationals. During the peak of project construction activities at Chayvo (in the summer of 2005), the project employed approximately 8,000 people. Finally, Sakhalin-1 provides community investments that help to develop and improve the public infrastructure of the region: to build new hospitals and to modernize existing ones (the consortium acquired surgical equipment for the Nogliki Central District Hospital in Sakhalin region and medical equipment for the hospital in De-Kastri in Khabarovsk region, and restarted the construction of the Yuzhno-Sakhalinsk Women's Clinic), and to build new roads, bridges and an airport.

For Japan, the major benefit of Sakhalin-1 is the diversification of its oil and natural gas supplies and thus the enhancement of its energy security.

Sakhalin-2 is one of the world's biggest integrated oil and gas production projects focused on the export of LNG, crude oil and condensate from Sakhalin Island. It is operated by Sakhalin Energy Investment Company Ltd. (Sakhalin Energy). Its shareholders are OAO Gazprom (50% plus one share), Shell Sakhalin Holdings B. V. (parent company Royal-Dutch Shell plc, Netherlands, 27.5% minus one share), Mitsui Sakhalin Holdings B. V. (parent company Mitsui and Co. Ltd., Japan, 12.5%) and Diamond Gas Sakhalin B. V. (parent company Mitsubishi Corporation, Japan, 10%).

The project was divided into 2 phases. The first phase (launched in 1996) involved development of the Astokh area of the Piltun-Astokhskoe field. The second phase (launched in 2003) included the installation of two further platforms, 300 km-long offshore pipelines that connect all three platforms to shore, more than 800 km of onshore oil and gas pipelines, an onshore processing facility, an oil

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↘Execution, URL: http://www.icmrindia.org/casestudies/catalogue/Operations/OPER093.htm

export terminal, and the construction of Russia's first liquefied natural gas plant.

The LNG plant, built as part of Sakhalin-2 infrastructure, was opened on 18 February 2009. On 29 March 2009, the first Russian LNG was delivered to two of the company's customers—Tokyo Gas and Tokyo Electric. Annual export volumes of Sakhalin Energy reached 10.6 million tonnes of liquefied natural gas by 2011. During the first three years of its operations, the LNG plant has produced over 30 million tonnes of LNG (equivalent to 40 bcm of natural gas). The majority of its output has been shipped to Japan, which in 2011 received over 7 million tonnes (70% of Sakhalin-produced LNG). Due to Sakhalin-2, Russia's share in Japan's LNG imports has increased to more than 8.5%.

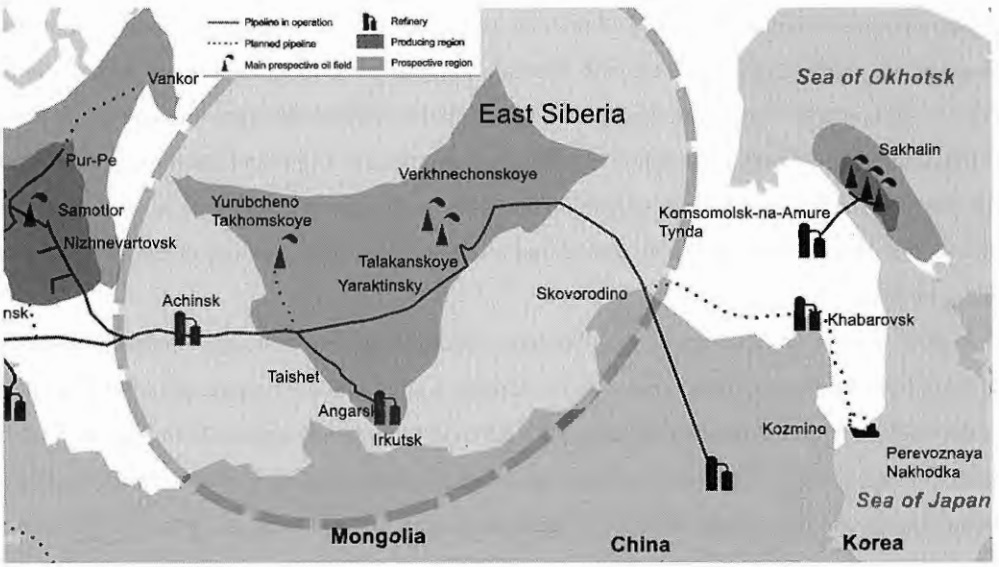
The Sakhalin-2 project delivers benefits both to Russia in general and to Sakhalin Island in particular. Similar to the Sakhalin-1 initiative, Sakhalin-2 provides funds to Russia from taxes paid by Sakhalin Energy and its contractors at the federal level, and, locally, to the regional government. It also creates new jobs—the project helped to drive down the unemployment rate of the Sakhalin region to 1.02% in 2010, which is a record low for the Russian Federation. During the second-phase peak construction, Sakhalin-2 employed approximately 25,000 people. The island also benefited from infrastructure upgrades, including roads, ports, railways, hospitals, airports and waste management.

The benefits of the Sakhalin-2 project for Japan are quite obvious as well. They include: diversification of energy supplies, the closest ever source of LNG to the country, and shipping flexibility due to geographical proximity.

Another major energy project that focuses on the development of energy resources in East Siberia and the Russian Far East is the construction of the Eastern Siberia-Pacific Ocean (ESPO) oil pipeline and the development of related regional infrastructure. Russia is keen to develop more outlets for its reserves of crude oil, for which the ESPO pipeline can serve as a gateway to the east. The ESPO pipeline will be 4,700km long and will export crude oil from Russia to the Asian Pacific markets of Japan, China, Korea and others. The pipeline is the first one for transporting Russian hydrocarbon resources in the direction of the Asia-Pacific Region. It will run along the route of Taishet- Skovorodino-Kozmino (Figure 5).

The construction of the pipeline was divided into two phases. The first one runs from Taishet in the Irkutsk region to Skovorodino in the Amur region (along with the branch from Skovorodino to Daqing in China), with an overall capacity of 30 million tons per year and an overall length of 2,694 km. As part of this first stage of the project, the specialized sea oil loading port "Kozmino" was constructed in the area of Nakhodka. The first phase was completed in 2009. The transportation of oil from Skovorodino to Kozmino was conducted by means of railways till the end of 2012, when the second stage of the project was put into operation (though its initial completion date was set at 2013–2014). It runs from the Skovorodino oil pumping station to the Kozmino specialized oil-loading

Figure 5. Eastern Siberia-Pacific Ocean oil pipeline map



seaport (2,100 km long).

The ESPO pipeline transports oil that is produced in the new fields in Eastern Siberia. There are two large oil and gas production areas in Eastern Siberia, Verkhnechonskoye and Yurubcheno-Tokhomskoe. At least for the first several years, however, the ESPO will have to take oil from very remote fields in Western Siberia, because the Eastern Siberian fields are now in the initial stage of development.

Japan Oil, Gas and Metals National Corporation (JOGMEC), as part of efforts to diversify its sources of oil, obtained access to Russian Eastern Siberia oil by acquiring the rights to develop several oil and gas blocks in the Irkutsk region. Under the agreement the Japanese side is to provide advanced technologies, in particular for seismic studies, exploration and development of the blocks. If commercial production goes ahead, JOGMEC's share of the oil will be sent to Japan via the Eastern Siberia Pacific Ocean pipeline.

ESPO crude blend, which is being exported to Asian markets via the new East Siberia-Pacific Ocean pipeline, is of higher quality than Russia's key export blend, "Urals". Japan imported about 30% of the oil exported from Kozmino in 2012, being the second largest buyer among Asia-Pacific countries.

The ESPO oil pipeline is a strategic project for Russia. Firstly, the project will initiate the development of oilfields in Eastern Siberia, which is expected to become a major oil production center in the future with decreasing production rates in Western Siberia. Secondly, therefore, the ESPO project is

expected to serve as an accelerator of the development of the Far East in general. Thirdly, the ESPO project and the related development of the new fields may cause a substantial increase in investments in the region and create new jobs. Fourthly, the pipeline is likely to increase Russia's presence in Asian markets and consequently to secure and diversify its oil export markets. Only about 5–6% of the total exports are supplied to Asian countries (mainly China and Japan) presently. When the new pipeline is launched, Asia's share in total Russian oil exports is expected to rise by approximately 20%. Thus, ESPO oil pipeline project is a key element of the strategy of the Far East economic development.

ESPO is extremely important for Japan's energy security. In recent years, oil supplies from Russia to Japan have surged due to the exports from Sakhalin-1 and 2 and the completion of the first phase of the ESPO pipeline. Russia's share of Japan's oil imports increased from 0.7% in 2005 to 7.1% in 2010. Oil supplies from Russia have several advantages for Japan. Transportation through the Sea of Japan is very safe in comparison with the Strait of Hormuz and the Strait of Malacca. Moreover, it requires shorter delivery times (3–5 days, in contrast to up to 20 days for delivery from Middle East). These advantages help Japan to adjust to short-term fluctuations in the supply of crude oil.

Other joint energy projects of Japan and Russia mainly concern natural gas utilization. The realization of the state-run Development Program for integrated gas production, transportation and supply systems in Eastern Siberia and the Far East (Eastern Gas Program) will help to increase gas supplies from Russia to NEA in general, and to Japan in particular. The programme envisages the creation of four new gas production centers in Krasnoyarsk, Irkutsk, Yakutsk and Sakhalin regions, the development of gas transmission infrastructure and the construction of gas processing and petrochemicals facilities. The creation of new gas production centers assumes several possible export routes from Russia to NEA countries. Currently, the Sakhalin shelf is best prepared for starting up natural gas production and supplying it to Russia's Far East.

Another potential joint energy project of Japan and Russia concerns natural gas utilization near Vladivostok. Initially, the gas is supposed to come from Sakhalin, and later from Irkutsk and Yakutsk gas fields. The Sakhalin—Khabarovsk—Vladivostok gas pipeline, with a nominal throughput capacity of 30 billion cubic meters, was already commissioned in 2012. It is an energy and infrastructure project that is able to give a multiplying effect to the economic development of the Russian Far East, and to foster bilateral cooperation in general.

Gazprom and the Agency for Natural Resources and Energy under the Japanese Ministry of Economy, Trade and Industry signed the five-year Framework Agreement of Cooperation on November 21, 2005. In January 2011 the Agreement was extended for another five-year period to develop the Memorandum of Understanding of 12 May 2009. The Agreement sets forth the key areas of bilateral

cooperation in the gas sector. A Joint Coordinating Committee (JCC) was established to implement the Agreement, and a Joint Working Group was set up within the Committee.

This agreement makes a provision for a joint feasibility study on the options for natural gas utilization near Vladivostok, as well as for natural gas and gas chemicals transportation from the Vladivostok region to Japan and other Asian countries. The document envisages the construction of a LNG plant near Vladivostok. The parties will also study the possibility of the pilot project on natural gas compression in Vladivostok for subsequent offshore transportation and organization of gas chemicals production. The memorandum in its turn was signed to jointly undertake a scope study on LNG/CNG facilities construction near Vladivostok. According to the agreements signed by the Japanese Agency for Natural Resources and Energy (ANRE) and the Japanese consortium JAPAN FAR EAST GAS Co. (comprised of ITOCHU, JAPEX, MARUBENI, INPEX, CIECO), Gazprom and the Japanese partners performed the joint feasibility study on the LNG plant construction near Vladivostok in 2011.

The parties are also interested in joint development of the Sakhalin-3 project. The gas resources of Sakhalin-3 are estimated at some 1.4 trillion cubic meters. Japanese companies are willing to invest in the construction of a 1,400 km gas pipeline running directly from Sakhalin, to Ibaraki Prefecture, not far from Tokyo. Interested parties, such as Tokyo Gas, Japan Petroleum Exploration (JAPEX), Nippon Steel, and Sumikin Engineering, are currently working out the project details. According to preliminary estimates, construction and implementation could take between five and seven years. Gas from the Sakhalin-3 project and surrounding fields could serve as the resource base for the pipeline.

Additionally, Japanese companies are seeking to participate in Russia's LNG projects in the European part of the country. One of such projects is Shtokman, currently led by Gazprom. The project includes the development of a large gas field in the Barents Sea and the construction of an LNG plant. For mainly geographical and economic reasons, it is unlikely that Japan will import LNG from this project, but Japanese companies could participate by supplying up-to-date technologies for the construction of the plant in exchange for a stake in this project. The Japan Bank for International Cooperation expresses its willingness to participate in project financing for Shtokman if Japanese firms are invited to take part in the project.

In addition to the above-mentioned upstream projects, Russia and Japan are considering some joint initiatives for Eastern Siberian downstream sector development. METI and Rosneft are looking into the construction of the oil refinery near the Far Eastern port of Nakhodka. Furthermore, Gazprom is considering building several gas chemical facilities in Eastern Siberia. The Japanese side has already demonstrated its interest in a project for constructing a gas chemical plant in the republic of

Sakha (Yakutiya). Japanese partners will provide investment and technology, while the Russian side will grant access to the downstream sector and other possible benefits of the joint energy development of East Siberian gas resources.

In spite of all the benefits that bilateral energy cooperation may bring to both Russia and Japan, there are some challenges that hinder this partnership. The major problem concerns Japanese foreign direct investments in Russia. Many Japanese private companies are not eager to invest in Russian energy projects in comparison with other investment opportunities. Corruption, the weak banking sector, and the investment tax regime prevent Japanese entities from bringing in capital. Their appetite for investment is also hindered by Russia's other business risks, such as political risk, long-term credit risk, market-price risk and long-term funding risk.

Another obstacle is that Japanese companies do not have sufficient risk management know-how in Russia, with regard to balancing risks and benefits. Moreover, Japanese firms still do not fully recognize Russia as a market of strategic importance. It is widely agreed that the Russian Far East is important, with its large and underdeveloped lands offering huge potential. However, many Japanese companies cannot locate Russia in general or the Russian Far East in particular as a market in their global strategies.

Moreover, skepticism about Russia's intention to export energy to Northeast Asia is still quite strong. This skepticism represents another obstacle in Russia-Japan collaboration. Such doubts emerge from lack of a specific development plan in eastern Russia, insufficient exploration investments in eastern part of the country, reluctance to utilize foreign expertise and occasional incompatibility among policies of different government organizations and levels. Japanese companies that have invested in Russia have also complained about delays in construction of physical distribution infrastructure such as ports and railroads. Needless to say, these problems are compounded by the territorial dispute between the Japanese and Russian governments.

There are several momentous challenges for Russia's energy sector. Production of oil and gas is handicapped by limited reserves, insufficient investment in exploration and production and heavy tax burdens. State ownership presents an additional hurdle. The export of the fuels is also difficult because of insufficient capacities, aging pipelines and a lack of modernization. Lastly, due to its low energy efficiency, the country is among the ten largest energy-consuming nations in the world, and is characterized by the highest energy intensity of GDP.

In order to reinforce the chances for the realization of the above-mentioned bilateral energy projects, the following issues have to be tackled as effectively as possible: declining crude oil output in Russia, adverse investment climate, prohibitive tax regime, lack of transparency of the Russian system for market entry of foreign companies into the fuel energy and other sectors, ineffective regula-

tory regime, shortage of large scale capital investment and other project financing problems, shortage of necessary technology and equipment, Japan-Russia diplomatic relationship, and Japan's cautious business tactics in Russia.

Despite the problems and concerns, Japanese-Russian energy collaboration has a lot of potential thanks to a number of ongoing and prospective projects. Russia and Japan are among the key powers in the world's energy markets, especially in the Asia-Pacific region. The two countries' successful energy collaboration would not only serve their energy needs, but would also improve their bilateral ties as a whole. Finally, it would contribute greatly to the strengthening of energy security and cooperation in the Asia-Pacific region.

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