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Article

Russia and Japan: Combining Energy and Climate Goals

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Japan and Russia share interests in energy and climate, but currently cooperation between these neighboring countries is small. The Russian Far East seems like a logical ground for cooperation due to its proximity to Japan; however, it is difficult to establish whether this part of Russia could have a special role in Japanese plans. The lack of Russian preparedness to implement the Kyoto mechanisms is currently the main reason why Japan has developed no Kyoto-related cooperation with the country. The lack of reliable greenhouse gas inventories and lack of institutional organization are especially problematic. Even so, Japanese domestic policies also play a role in the lack of cooperation. Japanese feasibility studies in Russia did not lead to implemented projects, and the program has been frozen since 2000. However, large infrastructure projects in the Russian energy sector have gained significant Japanese interest and financing. Existing industrial and energy-sector cooperation could facilitate projects under the Kyoto Protocol. Potential joint implementation (JI) cooperation areas include gas, power, and steel sectors; energy efficiency improvements; and non-carbon-dioxide projects. Russian JI pilot-phase experiences were discouraging, but many Russian project hosts have since become more active and better prepared. Bidding systems could contribute to the success of selecting appropriate Russian project hosts. Emissions trading between Japan and Russia seems unlikely to happen in the absence of a "greening" arrangement, which could also support Russian compliance. However, such a bilateral arrangement would require mutual trust.

Keywords: Russian-Japanese cooperation, Russian Far East, Energy, Climate, Japanese feasibility studies

1. Introduction

Both Japan and the Russian Federation are important players in the Kyoto market. Cooperation on the Kyoto mechanisms and energy issues in the Russian Far East could provide both countries with significant strategic benefits. Japan needs to find a larger supply of fossil fuels outside the Middle East and to buy Kyoto emission allowances in order to meet its commitments. Russia has plenty of fossil fuels and spare Kyoto allowances to sell, and needs significant investment to reform and develop its energy sector. Even though the interests of the two countries seem to converge, their energy cooperation to date has been surprisingly small, and they have made hardly any preparations for future Kyoto cooperation.

At the time of writing, the price of oil remains high, at some US$50 per barrel. The main reasons for this include the growth of—especially US and Chinese—demand, reduction of supply from the Middle East, and the instability of the region due to the Iraq war and terrorism. These developments seem

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favorable to Russia as an oil exporter, while Japan's dependency on imported oil paints a different picture. But reducing the consumption of oil is relevant for both countries.

Now that the Kyoto Protocol has entered into force, the implementation of the Kyoto trading mechanisms is in preparation. The first Meeting of Parties of the Kyoto Protocol at the end of 2005 is expected to further define the rules for joint implementation (JI), to be launched at the beginning of the first commitment period in 2008. So far, JI has been divided into two categories based on the compliance status of the host country. Full compliance under the Kyoto Protocol delivers independent project approval (Track 1). Failure to comply fully with the requirements leads to project approval supervised by a United Nations Framework Convention on Climate Change (UNFCCC) Committee, similarly to the clean development mechanism (CDM; Track 2). International emissions trading (IET) is only allowed under full compliance. Further, "greening" projects by voluntarily recycling revenues from IET to further projects has also been discussed outside the framework of the Kyoto Protocol but based on its commitments. Crediting of the CDM began in 2000. So far, the CDM has been characterized by high transaction costs and lack of institutional capacity.

This paper provides an overview of the potential of Japanese-Russian cooperation on energy and climate-change-mitigation sectors and discusses the problems and possible focus of future cooperation. The main aim of the paper is to explore the prospects for Japanese-Russian cooperation, and what could be done to enhance this potential. The authors supplemented their knowledge by conducting a poll of seven Japanese climate and energy experts. The findings of this survey are cited as "Japanese experts" in the text.

2. Rationale for Japanese-Russian cooperation

2.1. Russia: lack of investments and search for market

Russia's energy infrastructure is starving for investment. According to Russian Industry and Energy Minister Viktor Khristienko, Russian energy-generating units require some US$48–60 billion investment by 2015 (RosBusinessConsulting 2004). The *Russian Energy Strategy until 2020* (Government of Russia 2003) states that the whole energy sector requires some US$660–810 billion over 20 years, and US$260–300 billion between 2001 and 2010. There is a widely recognized need to improve energy efficiency in Russia, as the current level of inefficiency could impede economic growth. The need for energy saving is also emphasized in the Russian Energy Strategy, which estimates that the energy-saving potential of the whole economy is some 40–45 percent of current energy use. Two-thirds of this potential is in the energy and industrial sectors.

The Russian government wants to ensure markets for Russian oil and gas that deliver most of the revenues into the state coffers, but investment for further infrastructure building is required. Asia would be a large market for Russian oil and gas; however, so far adequate transport infrastructure is not in place. Neighboring Japan is also a logical market for the Russian Far East's oil and gas resources.

Russia was allocated surplus emissions allowances under the Kyoto Protocol, due to the economic recession of the early 1990s, and the country has great potential to host JI projects in the energy sector. However, after the withdrawal of the United States from the Kyoto process in 2001, Russia lost the most

important buyer of Russian credits and allowances. Ever since, Russia has been seeking a new partner interested in significant transactions under Kyoto.

2.2. Japan: oil dependency and a tough Kyoto target

The major pillars of Japanese energy strategy illustrate the main concerns of the Japanese government: security of supply, reasonable prices, diversification of energy sources (away from oil), geographical diversification of supply, and energy conservation (Mito 2000). These strategic issues reflect the fact that Japan lacks sufficient indigenous energy sources. Japan imports almost 80 percent of the energy it requires, most of this oil from the politically unstable Middle East (ibid.). Some 85 percent of Japan's primary energy demand is met by fossil fuels (Agency for Natural Resources and Energy 2005).

Japan's commitment under the Kyoto Protocol is a 6 percent reduction of emissions from 1990 levels. According to Japan's Third National Communication, Japan's emissions exceeded 1990 levels by 6.8 percent in 1999 (Government of Japan 2002), and by 8 percent in 2003 (Kyodo 2004). Consequently, Japan's Kyoto burden has grown to a 14 percent cut from current levels by 2008–2012. After the 1973 oil crisis, the Japanese economy largely switched from dependency on oil to a mix of coal, nuclear, and renewable energy. Energy efficiency improved dramatically; however, this trend stalled simultaneously with a period of rapid economic growth that began in the mid-1980s and continued during the economic stagnation from the early 1990s onwards (Tangen et al. 2002). Currently, oil meets some half of Japan's energy demand. Still, to date the Japanese energy sector has not provided many opportunities for reducing emissions, and the domestic potential tends to be expensive per ton of carbon dioxide reduced. According to an estimate by the Japanese government, the country needs to spend more than two trillion yen—USD19 billion—a year in order to comply with the country's Kyoto target (PointCarbon 2005). The better the deals Japan can make in the international carbon market, the less compliance under Kyoto will cost the country.

Japan has worked on covering some of its emission reductions using the Kyoto mechanisms. The cabinet approved a plan to achieve the Kyoto target in April 2005, after a public consultation process. Under the plan, Japan would apply the Kyoto mechanisms to realize a 1.6 percent reduction on the 1990 emissions levels (Government of Japan 2005), together with implementing domestic measures to reduce greenhouse gas (GHG) emissions and to enhance carbon sinks. The Government will review progress in implementation of the plan every year and revise it in 2007 to ensure that the Kyoto target is achieved.

2.3. Common benefits from the Russian Far East

Japan and Russia share interests in developing the Russian Far East, which is the closest Russian territory to Japan. The rapid economic development of the Asian countries has increased the political and economic importance of the Russian Far Eastern to Moscow. However, this region is currently suffering from severe economic depression and needs more attention in the form of investment and social and development programs. Depopulation, unemployment, and economic recession are causing hardship for those living in the region (Mito 2000).

The Far East region was the second-largest recipient of foreign direct investment (FDI) in Russia in 2002, netting some 18 percent of the total (OECD 2004). The main targets of FDI in the region are

large oil and gas extraction projects, and it has been argued that this FDI does not contribute to improving the lives of most of the region's population. It is indeed ironic that the energy-rich Russian Far East is experiencing a local energy crisis. For instance, during the winter of 2004–2005, thousands of people were left in the cold and dark due to fuel shortages (PIN 2004).

Energy resources from the Russian Far East offer Japan the opportunities to secure a supply from close by, to diversify Japan's supply away from dependence on the Middle East, and to replace some oil with gas. The planned oil pipeline from Siberia to Nakhodka, next to Japan, could also contribute to this solution.

Russia is lacking investment, and infrastructure projects to extract and transport oil and gas are very capital intensive. Japanese interest in Russian Far East energy has already generated funding for reform and development of the Russian energy sector, and could probably generate even more if relations between Russia and Japan were stable. JI projects and other Kyoto cooperation could be used as a vehicle for further energy cooperation and improving the social situation in the Russian Far East.

2.4. The burden of history

The history of Japanese-Russian relations is not encouraging. The most famous unsettled dispute is over the Kurile Islands, of which both countries claim ownership. Because of this disagreement, Japan and Russia have still not signed a peace treaty after the Second World War.[1] Some Russian sources claim that the Kurile Islands are too rich in natural resources to be handed over to Japan in their entirety (*Moscow Times* 2005). The Japanese government refuses to consider accepting only half of the islands back, as suggested by the Russian side (Takahashi 2004). So the dispute continues, and complicates any form of cooperation between the countries.

The mutual distrust between the two countries is only partly based on this ongoing territorial dispute, and also has roots in historical rivalry over the northern islands. Also cited as reasons for the modesty of efforts made to improve Japanese-Russian relations are the Japanese opposition to Russian G7/G8 membership (*AllPolitics* 1997; RIIA 2003), Russia's Euro- and Sino-centrism, and Japan's focus on the United States (Mito 2000; RIIA 2003; Tanaka 2000). In addition, some Japanese investments in Russia failed in the 1990s. Disappointment caused by unpaid debts to Japanese trading companies may have understandably contributed to suspicion among Japanese businesses towards Russian projects (Muller 2001).

In general, economic ties between the countries have been weak. While the Russians would like to see the Japanese invest large sums in the Russian economy, the Japanese government wants to ensure that Japanese companies will be allowed into business deals in return.

President Vladimir Putin has managed to improve Russia's relations with Japan, and the Japanese government is putting a lot of hope in President Putin's personality (Mito 2000). Also, recent mutually beneficial energy cooperation projects have given the two countries reasons to put past differences

1. For the Japanese perspective on this dispute, see the dedicated Japanese Ministry of Foreign Affairs web page "Japan's northern territories" at http://www.mofa.go.jp/region/europe/russia/territory/index.html#I.

behind them. Kyoto projects could provide a platform for further positive experiences between the countries.

3. Current Japanese views on cooperation with Russia

Our survey of Japanese experts was mainly conducted by e-mail. We sent out ten questionnaires and received seven responses, including one interview. Three of our respondents work in the private sector, three are academics or members of NGOs, and one works for the Japanese government. Their expertise is based on years of experience on Kyoto-related work. Responses might have contained stronger opinions if large Japanese trading companies could have been added to the list of respondents.

The widest variety of responses was to the question "Why are there no Japanese-Russian AIJ or JI projects?"[2] The main reasons given were:

- Russia only ratified the Kyoto Protocol recently (risk that the Protocol will not enter into force)
- Lack of capacity of the Russian administration (i.e. capacity to trade, manage JI, and comply with the Kyoto Protocol)
- Japan has focused on CDM so far
- Past bad experiences with Russian pilot projects

These arguments were all given by three of the seven respondents. Mentioned by two respondents each were the fact that there has been no urgency with JI, which starts only in 2008; the argument that JI projects might not be profitable; the lack of political reliability in Russian JI projects; and the fact that Japanese domestic policy has not yet included incentives for the private sector to implement emission-reduction measures. The inflexible and competitive working environment in Japan was also cited as a reason to avoid risky projects with Russia; failure of a project might influence the personal benefits or even the position of the person responsible. To conclude, the main reasons were related to Russian preparedness; however, interestingly, the Japanese domestic approach to the Kyoto mechanisms was also raised.

According to the experts, the main ways that the Russian government could enhance Kyoto cooperation with Japan include: establishing a framework to manage emissions trading and JI, and establishing clear compliance institutions. These views, both given by three respondents each, reflect the institutional problems experienced in Russia by investors. It is indeed clear that before the Russians can expect any Kyoto cooperation with Japan (or any other country), further domestic preparations are required. The following were also suggested as ways to enhance cooperation:

- Provide information on available projects
- Provide investment-protection mechanisms for foreign investors
- Provide early credits or back projects with assigned amount units (AAUs)
- Clarify the intention to sell AAUs without political intervention

2. AIJ: activities implemented jointly.

- Establish a green investment scheme

The respondents had somewhat fewer views and less consensus on the types of Russian projects that would be most interesting to Japan. Gas-sector projects gained most support; however, steel-sector and non-carbon-dioxide projects were also mentioned. It was argued by two respondents that project type is not important, and another respondent stated that the investor company's expertise would determine the project type.

The experts clearly believe that the key expertise with which Japan could provide Russia is in energy efficiency and energy-saving technologies. Alternative energy technologies, methane capture, and the power sector were also mentioned.

The main criterion for project selection was most often said to be cost-effectiveness of the project, though project size was also mentioned. Consequently, shared interest areas between Japan and Russia could easily be identified.

The respondents did not have a clear view on the importance of the location of JI projects. Half of them argued that location is irrelevant, though some also argued that Japanese public financial institutions may prefer the Russian Far East, being a neighboring region. The Japanese government has no official policy on the location issue. This might be because there are no established project plans between the Russian and Japanese governments.

Against this background, we will next explore Japanese interest in Russian projects and the context of climate cooperation with Russia.

4. Japanese interest in Russian projects to date

Apart from some large infrastructure projects, Japanese investment in Russia has been small given the geographical proximity of the two countries. FDI from Japan to Russia totaled some US$1.35 billion in 2003, which was only 5.2 percent of total FDI in Russia in that year (OECD 2004). Barriers to Japanese investment in Russia include the unfavorable investment climate, bureaucracy and complications related to the Russian administrative system and visa procedures, and country risk factors (Tanaka 2000). Lack of legal and business infrastructure in Russia, lack of experience in managing risky investments among Japanese investors, and the long stagnation of the Japanese economy might provide additional explanations for the modest level of economic cooperation between the two countries (Tangen et al. 2002).

4.1. Japanese feasibility studies and JI project plans in Russia

In 1997–2000, a lot of progress was made in expanding Japanese-Russian bilateral cooperation. In November 1997, former Japanese prime minister Ryutaro Hashimoto and former Russian president Boris Yeltsin established the so-called Hashimoto-Yeltsin Plan, which focused on various areas of cooperation between Russia and Japan, including strengthening the energy dialogue. The plan was in line with the Russian government's 1996 special federal long-term program for the Far East and the Zabaikal. The Kyoto mechanisms were also part of the new plan.

The Japanese government identified the Russian electricity industry as an area for cooperation in promoting Kyoto mechanisms and dispatched study teams and training courses during 1998 and 1999. For example, a survey team of the Japan Electric Power Information Center was dispatched from 29 September to 10 October in 1998 to Eastern Siberia and the Russian Far East in order to evaluate the efficiency of electricity generation and transmission there. The Government organized training courses for executives of the Russian government as well as electric companies in order to support smooth transition to the power sector to market economy. For example, executives from the Ministry of Fuel and Energy (MoFE) of the Russian Federation, RAO-UES, and Irkutsk Energo were invited to attend a training program on the management and operation of electric power companies in a market economy from March 8 to 12 in 1998. Subsequently, experts from MoFE, RAO-UES, and local electric power companies were invited to a training workshop on energy conservation and management of power companies between March 15 and 22, 1998. Executives from the MoFE and Energy of Russia together with personnel in charge of energy conservation from the RAO-UES and executives from private electric power companies were invited to Japan to attend seminars concerning energy conservation between 24 January and 6 February, 1999.

For JI, the Japanese government sent a survey team to explore potential projects under the energy dialogue initiative of the Hashimoto-Yeltsin Plan. On the occasion of then-prime minister of the Russian Federation Sergei Kiriyenko's visit to Japan in July 1998, survey of 20 promising JI projects was jointly announced by Russia and Japan. Japan's New Energy and Industrial Technology Development Organization (NEDO) approved feasibility studies for the year 1998. Subsequently, a combined mission composed of the Government and private sector was dispatched to Moscow in November 1999, in order to further discuss the 20 projects with the Russian government and private entities. NEDO approved an additional nine feasibility studies for 1999 (NEDO 2005). The most attractive project types to Japanese industry under the pilot scheme were industrial refurbishment projects in the electricity, steel, and oil-refining sectors, and fuel switching from coal to gas. At least six of these studies were located in the Russian Far East. A breakdown of project types among the feasibility studies is given below:

Project type	**Number**	**Project type**	**Number**
Fuel switching	6	Oil refining industry	6
Pipeline repair	1	Steel industry	5
Renewable energy	1	Electricity industry	10
Coal mine methane	1	*Total*	*30*

Source: Tangen et al. 2002.

However, the private sector took a rather conservative attitude toward investing in Russia, due to political intervention by the Russian government in companies such as Yukos Oil. The thrust of Japanese-Russian cooperation on promoting JI has weakened since 2000. There have been no more feasibility studies since 2000, except two by NEDO and Japan's Global Environment Centre Foundation (GEC) in 2003. No feasibility studies have led to implementation of JI projects to date. In addition, the specific arrangement for JI cooperation under the Hashimoto-Yeltsin Plan has not been discussed in

bilateral meetings since 2000. Only the importance of collaboration on further reduction of GHG emissions within the framework of the UNFCCC has been recognized, without further definition of such collaboration being provided. The reasons why none of the feasibility studies have led to implementation are Russia's uncertain project-approval policy and the lack of guarantees for credit issuance.

In addition, it seems that the Japanese private sector has not been serious about investing in Russia. One expert responding to our survey argued that "most of the people who conducted feasibility studies in Russia were not serious about converting them into real JI projects; they were merely interested in the subsidies." Such a remark provides evidence that the Japanese pilot JI activities in Russia were initiated by the Government, with only weak motivation on the part of the private sector. Another expert supported this argument by saying that companies also expected subsidies for implementation of projects based on the feasibility studies, but due to the lack of positive developments in Japanese-Russian relations, no funding could be allocated by the Japanese government. In addition, the proposed projects were focused rather on carbon reduction than economic considerations, and consequently were not profitable without government grants or loans.

Japanese industry has expressed some interest in JI projects with the Russian gas giant Gazprom since the intergovernmental cooperation weakened. Nippon Steel Company and the Sumitomo Commercial Investments Corporation are considering US$283 million of JI investment into repairing and modernizing some of Gazprom's pipelines in Russia. The preliminary studies indicate that GHG reductions could be as much as 5 Mt of CO_2 equivalent. This is equal to almost 1 percent of all emissions from Japanese industry (PointCarbon 2002a). Also, Toyota Tsusho has been preparing cooperation with RAO UES (PointCarbon 2002b). However, there have been no further reports on implementation of these projects.

4.2. Energy security of Northeast Asia

Being highly dependent on imports of oil from the Middle East, Japan, Korea, and China are eager to diversify their sources of imported oil and gas. Given that Russia has the seventh-largest oil reserves and the largest reserves of natural gas in the world, these countries, especially Japan and China, look at Russia as an alternative supplier. For example, there has been significant Japanese interest in Russian energy-sector projects, mainly oil and gas extraction, during the last decade. The main rationales for these projects and plans are the geographical proximity to Japan and other issues highlighted in the Japanese energy strategy and mentioned above. Sakhalin Oil and Gas Development Company, a consortium of Japanese companies (JNOC, JAPEX, Itochu, and Marubeni) operating with Exxon Mobil, hold 30 percent of the Sakhalin-1 natural gas pipeline project (Sakhalin-1 2005), and another consortium where Japanese companies Mitsubishi and Mitsui (45 percent of shares together) cooperate with Shell on the similar Sakhalin II project,[3] provide examples of cooperation and a good basis for further projects.

The Japanese government and a consortium of companies have been lobbying the Russian government very actively to ensure that that the Russian oil pipeline carrying supplies from Siberian oil fields is routed to Nakhodka on the eastern cost of Russia instead of to Daqing in China, which would

3. For information on Sakhalin II, see http://www.sakhalinenergy.com.

mean that oil did not reach Japan (*Oil & Gas Journal* 2003). The Russian government had already favored the Chinese option, but Japanese interest and a promise of US$12 billion financing for the project made it reconsider (*San Francisco Chronicle* 2004). In addition, building the pipeline to Nakhodka would enable exports not only to Japan but also to South Korea, Southeast Asia, and the Pacific coast of the United States. The Russian government prefers this selection of markets over the option of the Chinese market only, which is all that the Daqing route would serve (*Daily Yomiuri* 2004). Japan has also provided a loan to support the Russia–Turkey gas pipeline "Blue Stream", which will be using some Japanese pipes produced by Mitsui & Co. Ltd, Sumitomo Corp., and Itochu Corp. (NewsBase 2000).

China has been a net importer of oil since 1993 and has been forecast to import some 60 percent of its oil and 30 percent of its gas by 2020. The Chinese government is trying to address the energy supply security issue by engaging in transnational pipeline projects, development of overseas oil extraction, and development of its domestic gas sector. Dependence on shipped oil imports is a potential source of unwanted foreign pressure, especially from the United States but also from Japan (Strecker Downs 2000). China had the aforementioned pipeline plans with Russia, which could have made China less dependent on the United States and Japan (ibid), but currently it seems that the Japanese offer has gained the support of the Russian government.

Rivalry over energy resources in Asia between Japan and China is a fact (Brooke 2004). Consequently, Japan and Russia are not developing their projects in a vacuum but rather in an environment of interdependence with other actors in the region.

To conclude, there is some cooperation between Russia and Japan, mainly on large-scale energy projects. Failures of the feasibility studies reflect the wider political developments.

5. Context of Kyoto cooperation with Russia

This section explains what is required for Russian compliance under the Kyoto Protocol and outlines other elements of cooperation with Russia.

5.1. Status of Russian compliance[4]

Institutional compliance under the Kyoto Protocol consists of GHG inventory, registry, and national reporting to the UNFCCC Committee.[5] The GHG inventories, which are the basis of institutional compliance under Kyoto, are the main problem for Russia. Without a good-quality GHG inventory, it is impossible to comply with the rest of the requirements of institutional compliance. The federal-level data that have been used so far are too aggregated; hence, the involvement of regions and the application of the available regional data are crucial. Some additional data collection will be required as well. The Russian GHG inventory methodologies are also inconsistent with the Intergovernmental Panel on Climate Change (IPCC) guidelines. This problem could probably be solved at the same time as reform

4. This section is based on Korppoo (2004).
5. In UNFCCC Decision CMP.1 Modalities, Rules, and Guidelines for Emissions Trading under Article 17 of the Kyoto Protocol, see http://unfccc.int/files/meetings/cop_11/application/pdf/cmp1_16_modalities_rules_and guidelines_art17.pdf.

of data collection, and by providing domestic experts with the necessary resources and training to apply this methodology.

The main gaps in inventory data are as follows:

- Forestry inventories are inconsistent with IPCC requirements, and quality varies between regions
- Data for gas flaring and coalmine methane are not available or are very approximate
- Data for the waste sector are not available
- Data for agriculture are very approximate
- Some problems with industrial activity data
- Lack of data for transport, municipal, and residential fuel consumption

Russia has not established a national registry. However, this is not a serious problem from the compliance point of view. Russian experts argue that it would be quite an easy task to establish a simple national log that would enable Russia to make international transactions at the state level.

The current Russian national reporting could cause a problem for compliance. However, it could be improved fairly easily. Drafting national communications and reporting annual GHG inventories are responsibilities of the Federal Service of Russia for Hydrometeorology and Environmental Monitoring (Roshydromet) together with the Institute of Global Climate and Ecology. More coordination and reassignment of responsibilities could solve the problem. In practice, Roshydromet drafts the sectoral chapters for the national communications and then collects comments from the relevant sectoral ministries. Further involvement of the sectoral ministries in the drafting process would improve the depth of the sectoral chapters. The division of responsibilities between domestic actors is currently under the Government's consideration. Table 1 summarizes the status of the different aspects of Russian compliance.

Table 1. Status of Russian compliance

Area of compliance	Current status in Russia	Implications
Emissions	Well below target	+ +
Policies and measures	Enough to show activity	+
Registry	A simple registry would be easy, quick, and cheap to establish	–
Reporting	Easy to improve if there were better inventories and more cooperation between administrative units	–
Inventories	Data incomplete and quality is not consistent with IPCC requirements	– –

Note: Status of Russian compliance: ++ = will not cause problems; + = will not cause serious problems; – = will cause problems that are easy to solve; – – = will cause problems that are difficult to solve

Without full compliance, Russia will be excluded from IET and only able to host JI projects under the more bureaucratic Track 2. Consequently, achieving full compliance should be a priority.

5.2. Joint implementation[6]

Russia is currently lacking a focal point for JI projects. Kyoto-related legislation is under preparation in Russia and the 2004 National Action Plan lists tasks related to Kyoto implementation and responsible agencies. One of these tasks, allocated to the Ministry of Economic Development and Trade, is establishing a national JI administration.

a. Lessons

The AIJ pilot phase was established in 1995 to gain experience for future project mechanisms. Russia hosted nine official pilot projects and some 25 similar projects implemented outside the official pilot phase.[7] The failure level of pilot projects in Russia was high.

The *institutional structure* of the national administration was the most significant bottleneck in implementing projects in Russia. The fact that over two-thirds of projects fell outside the official pilot scheme in Russia is evidence of the significance of this problem. The project registration process was slow and the division of responsibilities between Russian agencies unclear. Also, legislation-related issues and investing governments' institutional requirements for cooperation on pilot projects seem to have been barriers to project implementation in some cases.

Investors reported *local-level problems* with finding a project partner, identifying a project of common interest and benefit, and securing successful implementation of the project. Lack of commitment on the host side, compounded by local physical circumstances, caused problems at the implementation level.

Transaction costs and risks are typically high in Russia, due to anomalies in the economy, infrastructure, and administrative system. It was difficult to secure funding for the pilot projects that did not provide emission-reduction credits carrying economic value. Local co-funding was not available, and most pilot projects were funded completely by foreign investors. These are all symptoms of the unfavorable investment climate. Lessons drawn from the pilot program concerning institutional problems remain relevant to future projects, and this was also recognized by the Japanese experts surveyed. Some practical problems remain, but the situation is gradually improving as eligible Russian project hosts have won international JI project bids. Competitiveness in JI project allocation will reduce the importance of economic problems; however, higher risk and transaction costs remain.

b. Additionality

The additionality rule under the Kyoto Protocol allows credits from emissions reductions generated by project activities only if they are additional to those that might have occurred otherwise. This is a difficult concept to apply in the case of a transition economy such as Russia's, because the Western economic logic would regard many Russian projects as commercially profitable in the absence of credits from JI. In this case, the expectation is that the project would have happened anyway, and therefore would not fulfill the criterion of additionality. However, in Russia many other constraints, such as

6. Parts of the section to be published in Korppoo, Karas, and Grubb (forthcoming).

7. It was difficult to track down all the similar projects because they were not registered under AIJ. However, the main investor countries—the Netherlands, the United States, Germany, Sweden, and Finland—reported some 25 projects. No Japanese projects were included. The feasibility studies discussed above were implemented separately from the official AIJ program.

institutional and financial problems, may prevent the implementation of such projects—that is, the general market logic does not always apply (Tangen et al. 2002). Even though the additionality criterion might not rule out too many Russian projects under Track 1, which allows project investor and host to decide on the additionality of a project, it could bar the same projects under Track 2, which is supervised by an external committee.

c. Project type

The greatest practical potential of Russian projects probably lies in fuel switching and energy efficiency improvements in the energy, industrial, and residential/public sectors. These types of projects dominated AIJ pilot projects and the Japanese feasibility studies conducted during the AIJ pilot phase (see the summary in section 4 above). According to Mielke et al. (2004), the majority of JI projects would take the form of investments in new power-generation equipment, reductions in gas losses during transmission, reduction of gas flaring/venting in the oil sector, and energy efficiency investments. Indeed, the gas giant Gazprom lists a range of energy-saving measures at its website (www.gazprom.ru), including gas flow optimization in gas transmission systems, replacement of gas compressor units, implementation of automated control systems, and replacement of boilers (Gazprom 2003). Russia also has significant renewable energy potential, which would be especially appropriate for JI projects. The International Energy Agency (IEA) especially emphasizes the potential of fuel switching from coal to renewables, solar water-heating systems to replace or supplement conventional district heating boilers, and wind power to replace or supplement diesel generators in isolated settlements (IEA 2004). But Mielke et al. (2004) doubt that renewable energy projects could compete with cheap fossil fuel projects in Russia. This may be true for many forms of renewable energy, but biomass might be an exception. There is great potential to switch to local biomass in many northern regions of Russia. In the future, other forms of renewable energy such as wind power and geothermal energy could also play a significant role, as indicated by the project pipeline of RAO UES (Energy Carbon Fund website).

d. Potential hosts

Russian business appears to have recognized the potential for JI and is hoping to explore the opportunities it may provide. For instance, the Dutch ERUPT carbon-credit procurement program has received plenty of expressions of interest from the Russian Federation.[8] This is a good sign, since in the past it has been difficult to find reliable project hosts. Indeed, the supply of well-managed projects can be a factor in the Russian JI market. Individual Russian companies, notably RAO UES, which provides 70 percent of electricity and 32 percent of heat in Russia and contributes 30 percent of total Russian GHG emissions (Zelinsky 2004), have spent a great deal of time and resources in preparing projects that could be the subject of JI (Energy Carbon Fund website). The company has identified more than 300 projects that are aimed at improving the energy efficiency of its holdings (Zelinsky 2003). The latest list of RAO UES projects in the pipeline has some energy-sector efficiency projects; however, the main focus of the Energy Carbon Fund seems to be on renewable energy, especially on geothermal energy. RAO UES has implemented a GHG inventory and developed professional JI project-supply services.

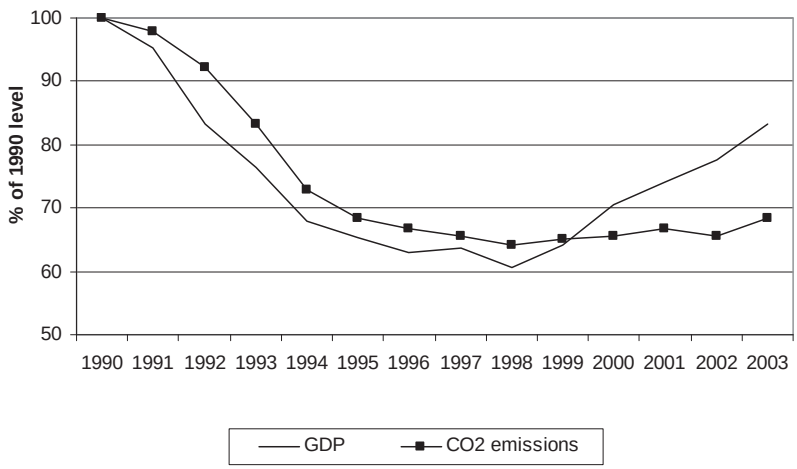
8. For further information on ERUPT carbon credit program, see http://www.senternovem.nl/carboncredits/index.asp.

Gazprom's emissions accounted for some 12.5 percent of Russia's total in 2000 (Mielke et al. 2000). The company has implemented some pilot projects with the German gas company Ruhrgas, and one project is under consideration with a consortium of Japanese companies. Since Gazprom is the main actor in the Russian gas industry, it is the potential host of most gas-sector projects. The company is planning to attract JI investments to upgrade its infrastructure (Walters 2004) and it has implemented a GHG inventory. However, until now there has been no sign of creating a high-profile JI facility to attract investments, and Gazprom has been cooperating with existing partners instead of looking for new investors (Mielke et al. 2004).

There is a selection of other *smaller actors* involved in carbon finance. Some industrial actors, such as OJSC Kotlas Pulp and Paper Mill, have submitted project proposals to tenders. In northwest Russia, the local energy-saving companies (ESCOs) have portfolios of projects that were typical of the pilot phase, for example, switching small boiler houses from coal to local biomass and improving the efficiency of buildings. The Moscow-based has submitted proposals to some tenders (National Carbon Sequestration Foundation website). Consequently, it seems that there are some Russian actors able to host JI projects. However, selecting the wrong host is still a significant risk to investment in Russia. Indeed, the tender systems are useful to eliminate incapable hosts.

5.3. International emissions trading

Russia was allocated a significant amount of surplus emission allowances under the Kyoto Protocol, and therefore has allowances to sell in the IET market. These surplus allowances were the legacy of the collapse of the Russian economy and emissions after the dismantling of the Soviet Union in the early 1990s. Contrary to the claims of some observers (*Novosti* 2004), Russian GHG emissions are not growing as fast as GDP and therefore will not reach the base-year 1990 level by the end of the commitment period. As illustrated in figure 1, Russian GDP was 83.2 percent of the 1990 level in 2003,



Source: Institute of Energy Investigation of the Russian Academy of Sciences (n.d.)

Figure 1. Trends of Russian GDP and CO_2 emissions in 1990–2003

while the corresponding CO_2 emission figure was only 68.3 percent of the 1990 level.

Consequently, in theory there should be a lot of allowances to sell without limiting the growth of the Russian economy. But in order to sell this surplus, Russia will need to fully comply with the Kyoto inventory, registry, and reporting requirements. As discussed above, there are still gaps, and if Russia fails to improve its performance, it will be excluded from trading under Kyoto. Indeed, as of June 2005, the Russian government has not performed any Kyoto transactions. Also, the lack of clarity concerning the roles of domestic actors prevails. At the time of writing, no division of responsibilities between domestic actors has been declared and it remains unclear whether the Government is planning to keep the monopoly of trading with allowances or distribute the emitting rights to industrial actors and/or regions in order to let them manage their emissions. These problems also concerned the Japanese experts surveyed. Consequently, institutional problems experienced by pilot project investors in Russia currently apply to purchasing Russian allowances as well.

There has been a long discussion concerning the environmental integrity of replacing real domestic emission-reduction projects with the Russian windfall allowances (see, for instance, Grubb with Vrolijk and Brack 1999). The Russians have indeed argued that the surplus allowances were created by real emissions reductions during the post-Soviet collapse of the economy and are therefore legitimate. However, the Russian government tried to settle the disagreement over this "hot air" trading by suggesting recycling revenues from emissions trading to further emissions-reduction or environmental projects.[9] The idea became known as the Green Investment Scheme (GIS) or "greening" (Tangen et al. 2002). However, the idea has not been developed toward practical applications in the case of Russia.[10] A theoretical study (ibid.) showed that the opinions of the potential large funders—the EU, Canada, and Japan—differed from each other, so bilateral arrangements would be easier to negotiate than a multilateral scheme. From the Russian side, the most significant problem was once again the lack of institutional setup. The potential investors were expecting the Russian government to suggest how it would manage the GIS funds, while the Russians were waiting for suggestions from the investors. Of course, the lack of clarity concerning the fate of the Kyoto Protocol at the time of the study (2001–2002) might also have held back the practical organization.

The Japanese approach to GIS explored the so-called soft greening options—that is, using revenues for capacity building and even environmental projects without a clear linkage to GHG emissions reductions. This approach may interest the Russian government more than creating an extra bureaucracy for GIS. However, the Japanese government did call for guarantees that these investments would really happen without a cumbersome bureaucracy similar to that for Track 2 JI (Tangen et al. 2002). Indeed, direct emissions trading with Russia is regarded as free transfer of wealth in Japan, and therefore would damage the images of the companies involved.

9. Russian actors used to be offended by the use of the term hot air. Some of them went as far as suggesting another term, fair air, to replace the troublesome wording (see, for example, International Institute for Sustainable Development).

10. Some other countries, notably Bulgaria, have taken GIS preparations further (World Bank 2004).

GIS is an interesting idea and could indeed be used as a tool to support Russian compliance through forward trading. However, this will require mutual trust between the partners and confidence on the investors' side that Russia will eventually achieve compliance. Should Russia achieve full compliance, GIS could make the rules of JI more flexible; however, transparency of revenues recycling could cause problems.

6. Discussion: Dynamics of Kyoto cooperation in the energy sector

While Japan's concern is to diversify its suppliers of oil and natural gas, Russia's interest lies in diversifying its export destinations into countries such as China, Japan, and Korea (APREC 2003). In this context, the Russian government has been increasingly interested in developing natural resources in the Russian Far East and in eastern Siberia. Various regional pipeline projects that connect such places as Sakhalin, Irkutsk, Yakutsk, and western Siberia with China, Korea, Mongolia, and Japan have been under consideration. This shows that Northeast Asian countries and Russia share a common interest in developing natural resources in the eastern part of Russia. In fact, according to the Asia Pacific Energy Research Centre (APREC), Siberian and Sakhalin resources could supply at least 10 percent of the import demand in North Asia in the next decade (ibid.)

In this context, developing natural resources and enhancing their transportation to Northeast Asian countries seem like potential areas of Japanese-Russian economic cooperation. In this regard, the role of governments is significant due to their dominance over business. The Russian government dominates discussions on energy deals, and indeed needs to act if full compliance under Kyoto is to be achieved. The Japanese government traditionally works closely with the private sector in foreign trade and investment, and could therefore facilitate further climate cooperation by strengthening domestic policies to support Kyoto-related activities by Japanese companies. The current policies were regarded as inadequate by the Japanese experts. Government involvement in deals with Russia could also give confidence to cautious Japanese companies.

The lack of clarity in the Russian institutional setup was regarded as the most significant barrier to Japanese-Russian Kyoto cooperation by the Japanese experts. Clarification by the Russian government of its intention to sell allowances without political intervention was also regarded as a way to support Japanese-Russian Kyoto cooperation. It seems, therefore, that the governments hold the keys to success in Kyoto cooperation.

Finding committed project partners has been difficult in Russia. Japanese companies will probably seek partners in their own field of expertise; for example, steel companies would like to refurbish steel plants. There may be existing relations that can be exploited, or JI projects could contribute to generating new useful relations between Russian and Japanese companies. Also, the same model of ESCOs that has been established in northwestern Russia by European investors could perhaps be established by Japanese investors in the Russian Far East. These ESCOs have received some initial funding from the Norwegian government and further applied project-specific funding from various Nordic financial institutions. ESCOs do business by implementing profitable energy-saving projects. The Japanese government could deal with some of the potential problems with Russian projects by

choosing projects through bidding systems. Choosing partners without a bidding system carries a larger risk of choosing a host that will not deliver on its promises.

Japanese companies have special expertise on pipeline technology that could be used in refurbishing the existing Russian pipeline network, and on the latest—and most efficient—technologies in various industrial sectors, which could legitimately be applied to JI projects. For instance, about 35 percent of feasibility studies looked at introducing combined gas-cycle turbines to replace obsolete technology. In addition, steel-sector and renewable-energy technology transfer provides some opportunities. Track 2 JI would be unlikely to attract Japanese investors, due to frustrating past experiences with the bureaucratic CDM procedure.

There are some projects planned between Russian and Japanese companies. Energy interests dominate project selection, and no Kyoto-related projects have been launched yet in practice. Existing industrial cooperation could facilitate Kyoto projects. Also, existing large-scale energy projects could provide a platform for Kyoto cooperation, as side projects under the existing relations and government agreements. Examples of the forms such cooperation could take are refurbishment of existing pipelines and energy-transfer networks of local communities. These projects could also improve local support for large mining projects such as Sakhalin-1 and Sakhalin II.

It would seem logical that the Russian Far East, as a neighboring region, should have raised the interest of Japanese project investors, but it could not be established based on this study whether this is the case. The feasibility studies show that location is not the main decisive issue: the portfolio of feasibility studies included projects everywhere in Russia, even in the geographically most distant part of Russia, St. Petersburg. Some of the surveyed Japanese experts argued that geographical location was not important to private-sector actors, but public financing institutions such as the Japan Bank for International Cooperation and the Japan Carbon Fund may prefer JI projects in the Russian Far East.

A range of projects is available in the Russian Far East. The region is rich in both fossil fuels and renewable energy, especially wind, hydro, and geothermal energy (Kamchatka; IEA 2003). A portfolio of projects by RAO UES in the Far East is available at the Energy Carbon Fund website. Most of them are in geothermal energy, but wind energy projects and updating of existing power plants are also listed (Energy Carbon Fund website).

The Japanese government has expressed interest in the idea of “greened” trading with Russian “hot air”. But is there potential to use GIS between Russia and Japan in practice? From the Japanese point of view, greened energy projects in the Russian Far East may support Japanese energy supply by improving transport infrastructure, replacing domestic Russian oil and gas consumption with other local sources of energy, or even facilitating energy infrastructure projects that could provide opportunities for fuel switching from coal to gas in Japan. But environmental arguments should be taken into account, since the main point of GIS is to justify trading with the Russian surplus. Renewable-energy projects in the Russian Far East would be attractive from an environmental point of view; however, they might not contribute to achievement of Japanese energy policy goals. Of course, should Russia not achieve compliance, capacity building would be a priority under the GIS arrangement.

7. Conclusion and recommendations

Kyoto-related projects could benefit both Japan and Russia. They could facilitate improved energy security and more affordable Kyoto compliance for Japan, and for Russia, they could facilitate investment in the Russian energy sector, provide assistance to the troubled Russian Far East, and provide a market for Russia's surplus Kyoto allowances. Some diplomatic disputes may hinder such cooperation; however, positive experiences of the Russian Far East oil and gas extraction projects may pave the way for Kyoto-related projects.

The main criteria for Japanese Kyoto investors include cost-effectiveness of the project and investors' own expertise. Japanese investors have special expertise in energy efficiency, industrial processes, and fuel transport networks. The importance of geographic location varies between Japanese investors, and it was not possible to establish whether the Russian Far East could be regarded as a priority region. Japanese actors are in principle interested in the Russian surplus AAUs; however, a special greening arrangement is required to facilitate trading. Currently the lack of institutional organization disqualifies Russia as a partner.

The following policy recommendations to enhance chances of cooperation are made based on this study:

Japan could support Russian efforts to achieve compliance under Kyoto by funding local data collection activities and providing expertise on registry and inventories. However, some internal obstacles remain that can only be addressed by the Russian government.

The Japanese government could initiate a dialogue on greening arrangements with the Russian government in order to demonstrate its interest in cooperation under Kyoto. Suggesting a clear institutional setup for transactions and offering an initial bulk buy at set prices would increase the chances of success.

JI projects require a national institutional setup that currently is not complete in Russia. Consequently, it is worthwhile for Japanese investors to wait and see if the Russian institutional setup becomes functional before putting much energy in preparing JI projects with Russia. In any case, it is extremely important to check with the Russian leading agency, the Ministry of Economic Development and Trade, whether a potential Russian project partner can be expected to transfer emission-reduction credits in the future.

The Japanese government should create incentives for Japanese companies to implement Kyoto-related projects if there is political will to facilitate cooperation with Russia.

Larger-scale energy-infrastructure and mining projects may provide Kyoto-related projects with a platform for cooperation that has been difficult to establish between Japan and Russia. The main synergies would include existing relations and government agreements.

The Russian government could try to develop a project portfolio for the Russian Far East and offer it to Japanese investors. RAO UES has already taken some steps toward creating such a project portfolio.

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