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The Kyoto Protocol and Russia

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1. Introduction

Russia has an important role in climate change issue. The reasons are because it is a "big country" as 1) one of major greenhouse gas emitting countries (world's third after US and China), 2) the largest energy exporting nation (world's largest natural gas producer, and world's number 1 in oil exports including oil products), 3) major energy-inefficient country (energy consumption per GDP is about three-folds of that in US). In addition, the impacts of climate change on Russian infrastructure and ecosystems (for example, melting of permafrost, increased arid area, and sea-level rise) are likely to be significant.

Added to such situation, an international framework for global warming measures that could be extremely beneficial to Russia (i.e. may bring the additional foreign currency revenue of several hundred million dollars, at least), called Kyoto Protocol, was agreed upon in 1997. With the USA President Bush's announcement in April 2001 to withdraw from the Kyoto Protocol, Russia now has a casting vote in the entry into the force of the Kyoto Protocol. In other words, Russia suddenly jumped up to the front stage of international politics and economics concerning global warming issues.

However, the energy balance and greenhouse gas emission of Russia in the future will be significantly affected by various factors in and out of Russia. Besides the global warming mitigation measures, Russian Government has the urgent issues of building a lifeline that directly connects with citizens' lives, such as electric power and hot water supply, restructuring the energy inefficient society, which is a factor hampering its economic growth, and implementing air pollution measures

connected with power generation. Moreover, to optimally take advantage of the Kyoto Protocol, it needs to balance stakeholders' interests and to adopt strategic diplomacy for environment and energy.

In this report, we shall first outline the Russian situation concerning energy and global warming Issues. Next, we shall identify the international framework in global warming issues, with a special focus on multitudes of relationships between Kyoto Protocol, Russia, and international community, based on the agreement reached at the resumed session of the sixth Conference of Parties of the Framework Convention on Climate Change (resumed COP6) in July 2001. Lastly, we will attempt to set forth some policy proposals for Russian Government and Japanese Government in regards to the international cooperation for the Kyoto Protocol.

2. Russia and Global Warming

1) Awareness of Global Warming Issues in Russia

The Kyoto Protocol was adopted at the third Conference of Parties of the Framework Convention on Climate Change (COP3) held in Kyoto in 1997. It stipulates the years 2008 to 2012 as the first Commitment Period, and identifies the quantifiable target (emission quota) of greenhouse gas emissions, like carbon dioxide, for developed countries as a whole as 5.2% reduction from the emissions of year 1990, and requests Russia to control emissions at the level equivalent to 1990 emissions (i.e., minus 0%).

According to the survey conducted in Moscow by Prof. Yuzo Tanaka of Ryukoku University of Japan in March 2000, which obtained responses from 301 people of "Russian intelligentsia with the best knowledge of social problems," including social science researchers, high-educated people, company executives, and the students at the Moscow University, 90% and up responded that they "knew" or "heard" about global warming issues, but only 3% answered that they "knew well" about the Kyoto Protocol that determined the reduction targets of greenhouse gas, causing global warming.¹

In general, there is no high interest about global warming issues in Russia, and several reasons are conceivable for such disinterest. First, there are uncertainties in the potential effects of global warming in Russia. Until 1990 or around, many researchers had opinions that the global warming effects to Russia would be more beneficial, especially to their agriculture sector, than adverse. Even today, there remain (although becoming minor among researchers) some theories welcoming global warming. (Actually there are more than little adverse effects such as permafrost

¹ Asahi Shimbun, April 8, 2000

melting and desertification.) Secondly, their economic structure highly depends on oil export. Thirdly, they have many short to mid term problems that demand immediate attentions, such as growing poverty and corruption, crime increases, unstable supplies of power and gas, and air pollution. The fourth is the weakening of environmental administration, which essentially have had to take leadership in this problem. For the last several years, Russia lowered the status of environmental administration section in overall administrative structure (dissolution of Ministry of Environment and Natural Resources, and the establishment of the Committee for Environmental Conservation, followed by the dissolution of the Committee for Environmental Conservation, and the incorporation of such function to the Ministry of Natural Resource Utilization as a section of that ministry), resulting in the significant reduction of environmental administration influences in the government.

2) Russian Government's Position in International Negotiation²

In reflection of domestic unawareness, Russian Government's position in the international negotiation on global warming measures at the Conference of Parties (COP) of Framework Convention on Climate Change was rather passive, and hardly put forward its presence in meetings. Especially at the COP1 in 1995 and COP2 in 1996, Russian delegates were led by a researcher who was skeptical on the global warming itself and viewed that the effects on Russia would be more positive than negative. At these meetings, Russia maintained a cooperative relationship with the member countries of Organization of Petroleum Exporting Countries (OPEC), such as Saudi Arabia, which shared same stakes as oil exporting country, and strongly resisted the building of international framework that might lead to the reduction in fossil fuel demands.

Even at the COP3 in Kyoto in 1997, Russia took the negotiation position almost synchronized with the JUSSCANZ group (Japan, USA, Canada, Australia, Norway, and New Zealand), which was consisted of countries rather passive to global warming measures. During COP3, Russia's presence was not too significant, but ended to earn, along with Ukraine, the extremely achievable quantitative target of minus 0% from 1990 for greenhouse gas emission reduction. This fact made Russian role in the international framework for global warming measures extremely significant in later dates. Moreover, from 1998, it started to actively voice the opposition

² For the history of Russian global warming measures, we referred to Arild Moe and Kristian Tangen, "The Kyoto Mechanism and Russian Climate Politics", The Royal Institute of International Affairs", 2000, and Vladimir Kotof and Elina Nikitina, "Russia: Formation and Implementation of Climate Policies", Paper presented at the IGES International CDM Workshop, Jan 26-27, 2000, Institute of Global Environmental Strategy, Hayama, Japan, etc.

against the strengthening of compliance system under the protocol (for example, more strict penalty), and instead the support for the optimum utilization of Kyoto Mechanisms, such as emission trading, as a member of the umbrella group (JUSSCANZ Group without Switzerland, and with newly joined Russia, Ukraine, and Iceland).

During the resumed COP6 in July of 2001, Russia won considerable concession for their many demands (e.g. lenient regulation on emission trading) to increase benefits by fully utilizing their "ratification card" described later as Japan and Canada did, while, immediately prior to the meeting, Russian congress already suggested the possibility of ratification without USA at the hearings held on June 18.

It is not clear why Russia could win "soft" quantitative target at COP3 in 1997. Some viewed³ that Russia, without any compromise, simply rejected to "increase reduction target," while others observed⁴ that it was due to USA's tough strategic intent to get "two birds by one stone" by providing financial aids to former Soviet regime in post Cold War era, and reducing the compliance cost of Kyoto Protocol by emission trading with Russia.

3) Hot Air

Nonetheless, Russia became able not only to easily attain quantitative targets of reduction obligation, but also to sell excess emission quota to other countries. This excess quota is named by environmental NGO as "Hot Air" from a slang for "boasting tale," and will be traded in the market along with carbon credits generated by other two Kyoto Mechanisms of the Joint Implementation (JI) and the Clean Development Mechanism (CDM). This means the start of an "economic game" for the prices and quantity of carbon credits among three sides, that are developed countries as the fund suppliers (credit buyers), developing countries and other economies in transition that can become market competitors to Russia as credit sellers, and Russia.

In the international negotiation, how to respond to Hot Air (for example, by caps on selling quantities or purchasing quantities) was one of the subjects under focus, because it has the potential to delay developed countries' adoption of domestic measures, and lacks equity. At the resumed session of COP6, however, the Umbrella Group pressed for their demands as described above, and the Conference agreed on "no caps" to the Hot Air, resulting in the broadened concerns especially among developing countries about Russian monopoly of carbon credit market, because of

³ From the authors interview with COP3 negotiation personnel of Japanese Government.

⁴ Michael Grubb, Christiaan Vrolijk, Duncan Brack, "The Kyoto Protocol: A Guide and Assessment", Royal Institute of International Affairs, London, 1999.

the decrease of demand for carbon credits among developed countries following the withdrawal of USA, and the comparative scale and price of Hot Air from Russia.⁵

4) Ratification Card

Kyoto Protocol specifies the condition of its entry into force as "ratification by countries that together cover 55% or more of emissions among developed countries (including economies in transition)." Therefore, at the present time when USA's withdrawal becomes apparent, it is no longer possible for the Protocol to enter into force unless both Russia and Japan ratify the Protocol. In other words, if Japan ratifies the protocol, whether Russia ratifies it or not determines the destiny of the Kyoto Protocol. Presently, because of their Hot Air being able to bring economic benefits, general view is that Russia will not be able to refuse the ratification. However, one cannot deny the possibility that Russia will use its own ratification as a diplomatic trump card in the future to win over their limited struggles in regards to 1) the prices and tradable quantities of the Hot Air, and 2) other "compensation" etc.

3. Current Situation of energy balance and Greenhouse Gas emissions

1) Energy Balance Situation

In Russia, 98% of anthropogenic carbon dioxide emission is from fossil fuel consumption, which shares 77% of total greenhouse gas emissions.⁶ Therefore, the trends of fossil fuels consumption and changes in energy mix (since natural gas emits less greenhouse gas per unit calorie than oils or coals do) will significantly affect the future trends of greenhouse gas emissions.

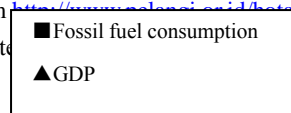
Fig. 1 shows fossil fuels consumption and gross domestic product (GDP) from 1990, which is a base year for the reduction target, till 1999. As known well, Russian economy continued to be stagnant after 1990, then experienced currency crisis in 1998, and presently maintains a strong economy. Its GDP growth for 2000 is around upper 7% level, and their government projects for the potential annual growth of around 5% from 2002 till 2010.⁷

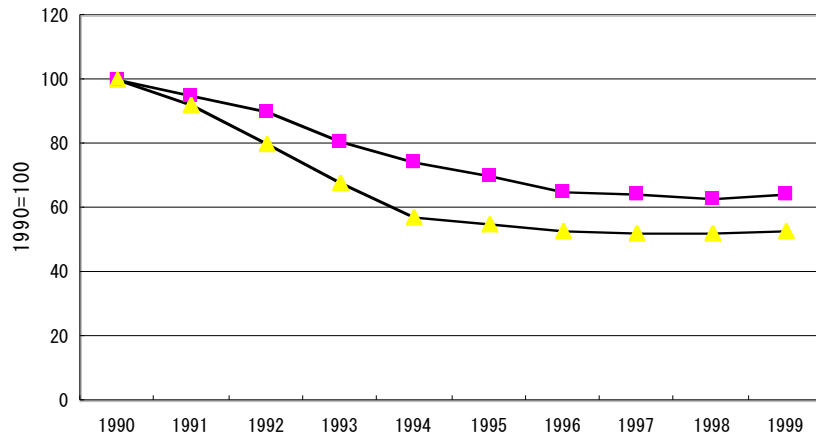
Fig.1 Relationship between Gross Domestic Products (GDP) and Fossil Fuel Consumption in Russia

⁵ Frank Jotzo and Olivia Tanujaya, "Hot Air vs. CDM: Limiting supply to make Kyoto work without the United States", July 2001, Pelangi Indonesia. (download possible from <http://www.pelangi.or.id/hotair-1.html>)

⁶ Ministry of Fuel and Energy of the Russian Federation Institute of Energy", 2nd edition, 1999, Moscow, p.3.

⁷ About the current situation of Russian economy, we referred to "Current situation of Russian economy and the





Reference: Alied Moe and Kristien Tangen, “The Kyoto Mechanism and Russian Climate Politics”, The Royal Institute of International Affairs, London, 2000, p.29.

However, their strong economy relies largely on the price hike of fossil fuels, so that it may reverse the direction toward lower growth, depending on the government's handling of financial, monetary, and industrial policies. In regards to energy mix, as well, the domestic supply quantity of natural gas is unclear as stated later. Therefore, it is extremely difficult to forecast Russian energy supply/demand for the next 10 years.

2) Situation of Greenhouse Gas Emission

Because of the difficulty in forecasting energy balance, it is also difficult to project the emissions of the most important greenhouse gas, carbon dioxide, from fossil fuels consumption. Fig.-2 shows the projections of greenhouse gas emissions published in 1998 by the Russian Federation Institute of Energy Strategy under the Ministry of Fuel and Energy (renamed to the Ministry of Energy from 2001), illustrating three projection scenarios.

economic strategy of Putin administration", by Koji Tsukide, "Russian Study" Vol. 32, April 2001, p. 25-26.

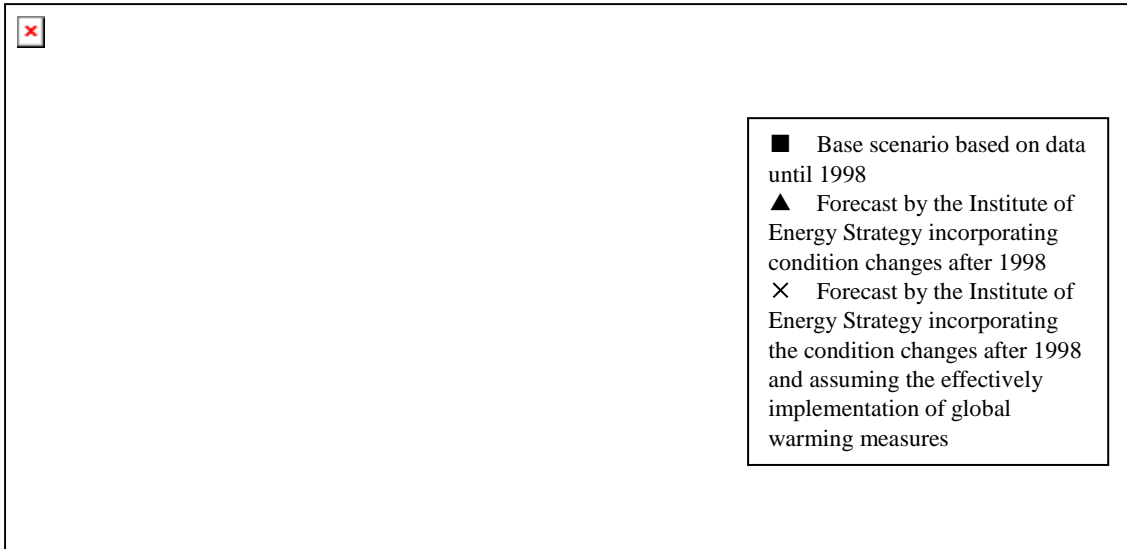


Fig.2 Forecasts on Greenhouse Gas Emissions in Russia

Ref.: Ministry of Fuel and Energy of the Russian Federation Institute of Energy Strategy, “Kyoto Protocol and Russian Energy”, October 1998, Moscow, Fig. 2 of p.10 with some alterations by the authors

The first scenario, which is the base scenario from the second national report (submitted to the Secretariat of Framework Convention on Climate Change in 1998) based on the data until 1998, indicates the emission quantity of 2010 almost equivalent to that of 1990. However, the second scenario newly revised by the Russian Federation Institute of Energy Strategy itself, incorporating situation changes of 1998, indicates emissions of about 12% lower than the base scenario, and the third scenario assuming the addition of concrete global warming measures forecasts the emissions of about 21% less. These scenarios, on the other hand, did not incorporate today's strong economy. As far as the authors know, there have been various numbers presented as forecasts and actual emission quantities, and the range of variation is extensive such as the actual emission quantity of 2000 ranging from minus 10% to plus 30% while the projected emission quantity of 2010 from minus 30% to plus 5%.⁸

These numbers largely depend on actual economic growth, energy policies, environmental policies, and changes in industrial structure. Moreover, in case of the Russian Government, they have targets to achieve for the economic growth, which may discourage the use of numbers greatly dissociated from the number of such targets. In fact, governmental institutions

⁸ Refer to Anna Korppoo, Christiaan Vrolijk, Jonathan Stern, “Energy and Climate: Russian-European Partnership”, Report on the Workshop held on May 14-15 at Moscow, p.4, (download available at <http://www.riia.org/Research/eep/russia.html>)

often seem to underestimate Hot Air than private researchers in and out of Russia. Furthermore, Russia has an incentive to proclaim for the larger number of emission quantity (that means Hot Air being smaller) for the purpose of price manipulation through limiting Hot Air supply. Therefore, some points out that who make numbers will be more important than what numbers.⁹

3) Reasons of Decreased Hot Air

Although there are uncertainties in a quantitative scale, it seems to be certain that Hot Air is in decrease or has a potential to decrease. The reasons for this are 1) economic recovery, 2) delay in energy savings and other measures, 3) decline of domestic supply of natural gas, and 4) possibility of numerical manipulation to raise carbon credit prices. Especially about the decline of domestic natural gas supply, at the background are social structural problem in Russia as listed below, and the issue of international carbon leakage.

A series of problems regarding the decline of domestic natural gas supply began when Gazprom (natural gas monopoly entity, owning about 25% of world's natural gas reserve, with more than 90% share of natural gas production in whole Russia. Former Russian Prime Minister Chernomyrdin was the president and its export amount about 10% of Russian exports in monetary basis, bringing about 25% of Russian tax revenue.) proposed in August 1999 to reduce the share of natural gas in Russian energy mix as a whole from 51% to 40%. In December 1999, Gazprom unilaterally notified to the Unified Energy System (Electric power monopoly entity that operates about 350 thermal power plants and own every inter-regional high voltage power cable, and shares about 70% of power generation in Russia as a whole. Current president is former vice premier of Russia, Chubais. Hereinafter referred to as UES) that they were to reduce natural gas supply for power generation use from 134 billion cubic meter per year of 1999 to 95 billion cubic meter per year for 2001. (After 2002, reduction of 30 billion cubic meter every year.)¹⁰

The fact is that Gazprom has uncollected revenue of about 52.3 billion rouble for fuel costs, which UES and other power sector entities are to pay (accumulation up to January 1999). (For UES side, there are about 129.9 billion rouble of electricity fee unpaid by customers.)¹¹ In other words, UES continue to fail paying Gazprom for natural gas. Moreover, the natural gas demand increase derived from the progress of global warming measures and air pollution measures

⁹ Moe and Tangen, "The Kyoto Mechanism and Russian Climate Politics", p.60-61., as indicated above

¹⁰ Description of conflict between UES and Gazprom is based on EKO, 2000, No.6. p.39-40, Energetik, 2000, No.6. p.8., and others.

¹¹ Elektricheskiy stantsii, 1999, No.5, p.3.

has brought the hike of international fuel prices, while the domestic prices are held down, resulting in the international prices around six times higher than domestic prices. On top of this, the production volume of natural gas hits the ceiling or tends to decline.¹²

Therefore, Gazprom claimed that "they will pay to power companies 500 million dollars as the compensation for retrofitting power facilities from gas fueled to coal fueled, and, in return, they will reduce natural gas supply to power companies. By this, Russia can earn additional revenues of 1.6 billion dollars per year in the increase of gas exports." UES, on the other hand, strongly opposed Gazprom's proposal by saying that "if such a thing happens, Russia will lose about 800 million dollars revenues expected for the sales of Hot Air. Moreover, Russia may need to become emission permits buyer country. The compensation of 500 million dollars is less than one third of required costs. Also the emissions of air polluting sulfur dioxide will be increased by 37%." (Table-1)

¹² To project on natural gas production is difficult also. Elina Nikitina of Russian Science Academy predicts, however, that 1) at least the share of natural gas in national primary energy supply mix will decline, due to the rising international prices and exploitation costs; 2) production volume of Gazprom will decline (while those of other gas companies will increase), and 3) there will be a shift of major gas mining sites from Siberia to Far East and Central Asian countries. (In her letter of April 10, 2001). Regarding the natural gas demand and supply balance in Russia, referred to Isumi Sakaguchi, "Russian power sector at the crossroads: their demands and urgent issues", "Russia-Eastern Europe Economic News", No.1162~1164, by Russia-Eastern Europe Economic Research Institute, 2000.

Table-1 Confrontation between Gazprom and UES

Gazprom	UES
August, 1999 Proposed reduction of natural gas ratio in the energy mix of the whole Russia from 51% to 40%.	Opposed the Gazprom's proposal as not feasible for the power sector, in which the natural gas ratio reached 62% among power generation fuels.
End of 1999 1) Proposed to reduce gas supply for the power sector by 12 billion cubic meters from the year 2000. 2) Proposed the annual reduction of 30 billion cubic meters after the year 2000. 3) Proposed to the power sector that they are prepared to offer about 500 million dollars for the measures associated with fuel switching. 4) Claimed that by transferring the supply reduced for the power sector to export, it would be possible to add 1.6 billion dollars revenue per year.	1) Opposed to Gazprom's proposal that 500 million dollars offer would merely cover a third of investment amount required for fuel switching. 2) Argued that carbon dioxide emission increase caused by coal usage would lead to 800 million dollars loss in Hot Air revenue, and increase the emissions of air pollutants such as sulfur dioxide.

Reference: Prepared by authors in reference to EKO, 2000, No.6. p.39-40. And Energetik, 2000, No.6. p.8.

4) Response of Russian Government

According to Tass of December 13, 2000, Russian Government was to finalize the decision on gas supply reduction issue by the end of 2000, and already some changes in energy mix had started. (Power generation by natural gas and oil fueled power plants had declined in the period from January to September, 2000, and the that by coal-fueled power plants had increased by 9%.) Moreover, on March 29, 2001, Tass reported that the natural gas supply quantity for UES for the second quarter of 2001 was tentatively determined as 25 billion cubic meters. At the government level, it is expected that the review process is ongoing on measures to 1) avoid drastic supply cut (although certain degree of gradual reduction is inevitable), 2) implement natural gas import from Turkmenistan as the substitute for natural gas reduction by Gazprom, 3) increase the output of nuclear power plants, and 4) increase oil-fueled power generation, and others.¹³

Nonetheless, there has been few among Russian Hot Air estimates, as far as the authors

¹³ Aforementioned paper by Sakaguchi, "Russian power sector at the crossroads: their demands and urgent issues", No. 1164, p.10-11

know, that consider such situation (scenario of reduced natural gas dependency), or that address the conflict between UES and Gazprom in terms of global warming measures and Hot Air.

4. Tasks of Energy Policies

In this section, we shall describe energy policies that have especially high significance and affect global warming policies.

1) Determining the Best Energy Mix

In the first hand, Russia promotes gasification as their national policy since the era of Soviet Union, and has proceeded with the gasification of power plants in the power sector. In other words, they have promoted the strengthening of natural gas production and the increase in gas consumption at power plants, in view of both aspects of economy and environment, for almost 30 years under former Soviet and current Russian Governments. Furthermore, as many prices of goods were liberated in Russia since its shift toward market economy, prices of electricity and gas have been under national control and inevitably stayed at much lower level. Both sectors have been mandated to take a role of contributors for a society and an economy as a whole. Current conflict between Gazprom and UES has started when the gas sector that have had a possible "solution" to increase foreign currency revenues by transferring domestic supply to exports has taken the action first. Therefore, Russian energy policies need to realize the best mix in their energy mix for national benefits, and for this purpose Russian Government must review alternatives and determine strategies for energy policies, as well as to take a strong leadership in implementing such policies.

2) Promotion of Energy Savings

The most important measure in energy policies, and the one benefiting to the global warming measures is energy savings, and, in Russia also, energy savings measures have been implemented from 1980's as a pillar of its energy policies. However, due to higher priorities on energy supply expansion and stable supplies in Russian energy policies, and the lack of financial support, the actual effects of energy saving measures were not significant. In reality, the ratio of energy consumption reduction became less than the rate of lowering of economic growth rate in 1990's. In other words, energy efficiency for the society as a whole was deteriorating. (It means that there are larger energy savings potential.)

Based on such experiences, Russian Government newly enacted in 1998 the energy

savings program for 1998 till 2005.¹⁴ Target (potential) energy savings quantity under this program is 460 to 540 million tons (coal equivalent), with the lower limit in case of using domestic technologies, and upper limit in case of using the technologies of developed countries. Concrete measures under the program include the strengthening of management and control system, research and development in energy savings appliances, capital investment, introduction of regulation / market mechanism, reviews of subsidies / taxes, and the introduction of electric power trading market.

However, the program's budget total is not sufficient (780 million dollars for capital investment, and 100 million dollars for research and development investment), and the federal fund for this program is only 3% of the total with the rest "self-procured" by local governments and in the market. In addition, the program involves only those projects with 1.5-2 years of investment payback (for example, the projects for 1998 to 2000 involve mainly the improvement in electric and gas meters), and not the projects that may incur any economic burden.

3) Expansion of Capital Investment

During summertime in Russia, many roads are dug up to repair severely aging hot water pipes, so that no hot water comes out from faucets. Such aging problems are commonly found in Russia, and especially pose a big problem in electricity and gas sectors that directly associate with citizens' daily lives. For example, about half of power facilities are said to be in advanced stage of aging and require retrofiting.¹⁵ By 2010, power facilities that exceed their lifetimes will reach the equivalent of 90 million kilo watt, and to renew such facilities require the introduction of 5 to 6 million kilo watt (until 2005) and 7 to 8 million kilo watt (after 2005) new facilities per year. Current capital investment on new power facilities introduced is, however, only a fifth of the required amount.¹⁶

If such situation continues in the future, Russian power supply will become critical situation by the mid-21st Century, with no "room" for the concern of environmental issues. Even if power supply itself can be secured, as the ratio of aging facilities increase the adverse effects (emission increase of air pollutant materials, such as sulfur dioxide and nitrogen oxides) on environment from power generation will grow.

¹⁴ Ministry of Fuel and Energy of the Russian Federation Institute of Energy Strategy, "Kyoto Protocol and Russian Energy", October 1998, Moscow, p.11.

¹⁵ Energeticheskaya bezopasnost, Rossii, 1998, p. 41.

¹⁶ *Ibid.*, p.47.

4) Solution for the Structural Problems such as Failure of Fee Payments

As described above, the most serious problem in the management of power companies and gas companies is the non-payment of fees. The amount of non-payment by consumers to power companies, for example, reaches 129.9 billion rouble (as of January 1, 1999).¹⁷ Needless to say, unless such a problem resolves, there will not be any expansion of capital investment. However, in case of power companies, the generation and consumption of their products, electric power, occurs simultaneously, so it is difficult to take a defensive measure of delivering products in exchange of cash. Moreover, because of power companies' role in the society, To immediately shut down power supply to non-payment customers is difficult to implement. On the other hand, the problem remains in the unbelievable situation that one of reasons for the non-payment by general consumers is because of inability to confirm the consumption volume (because there is no meter!).¹⁸

Furthermore, even if the power companies are able to collect fees, the fees are not based on the justifiable cost of power generation, because of the policies to protect domestic industries, and of social consideration for economically struggling citizens. (Today, electricity fee in Russia is about 1 cent/kWh for industrial use, and about 0.5 cent/kWh for residential use, which are about one-fifth and one-16th of fees in US, respectively.¹⁹ Another big problem is the low ratio of cash payment. In 1998, only 21% of payment were in cash or bill, and the settlement by offsets or barter shared about 52% of the payment.²⁰

Not only for the purpose of stabilizing company management, but also for the progress in energy savings, it is necessary and essential to collect justifiable fees and to raise the ratio of cash payment. Therefore, it will eventually become necessary for Russia to thoroughly and determinedly implement fundamental reforms, including the measures to complete fee collection, revise (raise) prices, and stop services of bankrupt companies.

5. Tasks of Global Warming Policies

In this section, we shall describe policy tasks that are considered to have higher importance for today's Russia among various global warming policies.

1) Expansion of Organization Responsible for Climate Change Issue and the Establishment of

¹⁷ Elektricheskiy stantsii, 1999, No.5, p. 6.

¹⁸ Above paper, Moe and Tangen, "The Kyoto Mechanism and Russian Climate Politics", p.32.

¹⁹ Energetik, 2001, No.2, p.6.

²⁰ Elektricheskiy stantsii, 1999, No.5, p. 6.

Decision-making Mechanism

As the governmental organization responsible for climate change issue, there was Interagency Commission on Climate Change, established in 1994. Commission members are gathered from various ministries and agencies, under the leadership of The Federal Service on Hydrometeorology and Environmental Monitoring (Hydromet), which has long being responsible for a hydrologic and climate observatory monitoring hydrologic environment. Since Hydromet is an agency mainly to monitor domestic climate and weather forecasting, they are not able to implement actual measures and responses and have relatively small influential power in and out of the country. By the adoption of "Program to prevent adverse effects of climate change" in 1996, climate change policies grew out (at least on surface) being ancillary policy target, but the program budget is small-scale, focuses mainly on energy savings and lacks any new measures.²¹

However, there is a sign of change in Russian Government's treatment of global warming measures. For example governmental negotiation delegates started to include relevant personnel of ministries related to energy²², and in 2000 First Vice Minister of the Ministry of Economic Development and Trade, Tskanov, became the Co-Chair of Interagency Commission on Climate Change. (The series of such actions mean that a political game of a struggle for leadership and for securing own vested interests has started among The Federal Service on Hydrometeorology and Environmental Monitoring, Ministry of Energy, Ministry of Economic Growth and Trade, Ministry of Foreign Affairs, Ministry of Nuclear Indorse, Environmental Committee of Russian Congress, Ministry of Natural Resource Use, and Interagency Commission on Climate Change.) In addition, the discussion at the public hearing on Global Warming Issues held in Russian Congress in June 2001 indicated the presence and expansion of recognition of the Kyoto Protocol as a favorable one to bring economic benefits to Russia.²³

Nonetheless, the lack of leadership and decision-making mechanism in Russian delegates, and the "non-transparency" are big problems today. During the resumed COP6 meeting in July of 2001, for example, Russian delegates at one time agreed to the proposed number of forest sinks, and rejected it on the final day. (Some said that the delegates simply miscalculated "carbon dioxide" with "carbon," and one cannot predict how they will settle the matter at the coming COP7.) Also at the side event (voluntary workshop apart from the negotiation) related to Russia during the resumed COP6 meetings, relevant people close to Russian Government started to read the "official position

²¹ Aforementioned paper, Moe and Tangen, "The Kyoto Mechanism and Russian Climate Politics", p.19.

²² *Ibid.*, p.61

²³ Private letter by Elina Nikitina, a researcher of Russian Academy of Sciences (June 24, 2001)

paper" of the Russian Government, which stated that Russian Government does not insist on the approval of nuclear usage for JI/CDM, and a personnel of the Russian ministry of Nuclear Industry, seated on the floor, asked for a permission to speak and commented that such was not the official position of Russian Government. Such incidents clearly expose the non-establishment of decision-making mechanism, in other words, insufficient communication between Russian delegates and Moscow, and within delegates themselves, illustrating the enormity of stakes on Russia.

2) Capacity Building and System Design

To implement global warming measures require various capacity building, like emission quantity monitoring. One focal point of forest sinks, which was the focus of attention at the resumed COP6 meeting, is the uncertainties in calculating forest sinks. The imperfect information monitoring system of many countries (including developed countries) led to such uncertainties and Russia is no exception. As an example, to calculate forest sinks accurately is said to require highly precise observation data by satellites and airplanes and human resources (in quality and numbers) to conduct actual field survey. Yet, Russia has neither.²⁴ The International Institute of Applied System Analysis (IIASA), an international think-tank in Austria, pointed out that the range of error in Russian calculation of forest sinks is like 129%, and any quantitative target of Kyoto Protocol itself will fall within such error range.²⁵ However, to build information monitoring system, for example, is said to call for 10 million dollars investment per year for Russian Far East region only²⁶, and today Russia hardly has any hope in procuring necessary funds.

First of all, in order to conduct the actual international trade of carbon credits, the management of carbon credits within a country is required above all. For this, greenhouse gas emission inventories in company, local, and national level should be determined, and then such inventories, in turn, must be allocated to each industry, entity, and local area. (Initial allocation) Moreover, it requires a system to confirm legitimacy of carbon credits, to permit and approve trades, and to manage the movement of carbon credits through automatic registration of every trading

²⁴ From Nov. 27, 2000, interview of Alexey Kokolin in charge of climate change issue in WWF (World Wildlife Fund) Russia

²⁵ Sten Nilsson et al, "Full Carbon Account for Russia", Interim Report IR-00-021, International Institute for Applied Systems Analysis, 2000. (Unload possible from <http://www.iiasa.ac.at/Admin/INF/PR/PR-00.08.25.html>)

²⁶ Alexander S. Sheingauz, "The Kyoto protocol and the Russian Far East: Possibilities of Cooperative Policies for Sustainable Development", Economic Research Institute Khabarovsk, Paper prepared for "Sustainable Development and Energy Security for Northeast Asia: Prospects for the International Cooperation", June 26-28, 2001, the Economic Research Institute for Northeast Asia, Niigata, Japan.

activity (Registry).

6. Russia's Strategies for the Future Use of the Kyoto Protocol

1) Russian Government's Priorities in COP6 Negotiation²⁷

At the COP6 of November 2000 and at the resumed session of COP6 in July 2001, Russian Government delegates put forth mainly the following demands.

First, that Russia opposes any attachment of limitation toward Hot Air usage that may damage Russian economic interests. Second, Russia requested the increase of calculated sinks in forest and others. Third is smooth transition from Activities Implemented Jointly (AIJ)²⁸ to Joint Implementation (JI), as well as the early start of JI.

Consequently, the resumed session of COP6 saw the progress in the discussion of early start of JI, and Japan, Canada and other countries earned the practical lowering of quantitative targets through significant incorporation of forest and other sinks. (In case of Russia, it is necessary to renegotiate as mentioned above.) Also the resumed session determined that CDM for forest management projects in developing countries is not acceptable. On the other hand, the use of nuclear power generation for JI/CDM became difficult despite strong demand by Russian Ministry of Nuclear Industries.

2) Hot Air Strategy

Russian Government needs to make judgement on the following issues in regards to the strategic selling method of Hot Air to maximize own interests. (Table-2)

First about the balance between JI and selling of emission quota. Selling emission quota may bring easy cash revenues but such revenues may not be used effectively. (In the worst case, it may become unaccounted for.) In case of JI, on the other hand, it may cost for transaction but accompany actual technology transfer of greenhouse gas emission reduction technologies.

Second issue to address is the timing to sell the quota. According to the international

²⁷ Referred to "Make-or-Break for the Kyoto Protocol: the Role of Russia", *WWF Russia Media update*, distributed at the COP6, Hague, 2000, and others.

²⁸ Activities Implemented Jointly (AIJ) is the voluntary implementation of greenhouse gas emission reduction projects by international cooperation with no carbon credits, adopted at the COP1 in 1995. However, it had many unclear points about the actual contracts with host side and investment side, and some of the contracts were said to be agreed on the condition of carbon credits acquisition. For note, to be recognized as AIJ requires the approval of both governments.

rules based on the Kyoto Protocol, Russia is allowed an option of not to sell quota at presently and to maintain emission quota in case Russia has given more strict reduction targets in the second commitment period or later. (Banking)

Third is the balance between the quantity and prices of Hot Air. That is whether to raise prices by reducing the selling quantity of quota or to sell in large quantities at lower prices. More positive option will be to form a cartel in carbon credits among economies in transition or in combination with developing countries.

Fourth is the relationship between local governments and companies. To be specific, the issue is how much rights and decision powers, involving the initial allocation of emission quantities to be designated to each company and local government.

Fifth is how to declare Hot Air. That is whether to reduce incentives for developing countries to enter into CDM projects by reporting the quantity of Hot Air in excess (signaling to the markets for lower prices ahead) or not. (By limiting supply quantity after the entry into the Commitment Period, it becomes possible to completely monopolize market and manipulate prices.)

Sixth is the balance between the sales of natural gas in international market and the sales of Hot Air. For these issues, Russia needs to consider not only the scale comparison of cash revenues but also the tax problems especially for companies. (In case of Russia, it is generally easier to evade taxes for barter exchanges etc.²⁹)

Seventh issue is the linkage between Hot Air and other issues. It is possible to consider about the exchange between debts and carbon credits as stated later, for example. (Every possibility is there like linkage with other outstanding diplomatic issues.)

Eighth is the degree of enhancement in domestic regulations. In other words, whether to sell carbon credits more or not, even by adopting measures such as carbon tax that may bring some pain to general public.

²⁹ Aforementioned paper of Moe and Tangen, "The Kyoto Mechanism and Russian Climate Politics", p.103.

Table-2 Items Requiring Decisions in regards to the Policy-making of Hot Air Strategies

	Items requiring decisions	Explanation
1	Ratio of emission quota sales and the JI (How much should be done when)	Cash revenues earned (easily) by emission quota sales may not be utilized effectively.
2	Timing of emission quota sales (when to sell)	Possible to use quota for the second Commitment Period when more strict reduction obligation is expected for Russia (banking)
3	Prices and quantity of credits to sell (how many credits to sell at what price)	Ideally to realize prices and quantity that maximize benefits. Possible to form price cartel with other countries.
4	Relationship between national government, local government, and companies (revenues of the national government, local governments, or companies)	Certainly each party hopes that funds or technologies will be transferred to own. Allocation of domestic emission quota (initial allocation) will affect greatly.
5	Declaration on the amount of Hot Air (How to announce what kind of numbers?)	By providing a signal to the market now about the prospect of lower carbon credit prices, prevent the market entry of developing countries and others, while limit supply quantity once nearing the start of the first commitment Period, thereby realize the optimization of benefits and monopoly of market.
6	Ratio of Hot Air sales and natural gas sales (which is more beneficial for Russia as a whole)	Ideally to realize the combination for benefit maximization. (Need to review tax measures for companies.)
7	Linkage between Hot Air and other issues. (Whether to exchange Hot Air for cast or demand other forms of re-compensation?)	Various issue linkages are possible. (Ex. Redemption of foreign debt by Hot Air)
8	Degree of enforcement for national measures (what policy measures to introduce?)	It is possible to further increase carbon credits sales quantity through appropriate policy measures.

Among them, the third issue of how to manipulate Hot Air prices and quantity to maximize own benefits is extremely difficult to get the "proper" answer the issue involves many elements. However, at least the economic analysis of demand-supply curve and elasticity of carbon credits will be necessary, first of all. Also, it is fully possible for supply side to pursue the optimum benefits by forming a cartel (of supply control) similar to OPEC's oil cartel. In fact, a

think-tank in Indonesia has identified through quantitative analysis using the economic model developed by itself that 1) it is possible for Russia to monopolize the market because of reduced demand caused by USA's withdrawal, and 2) cartel formation by developing countries, Russia, and central and eastern European countries will provide economic merits to all of them. (Table 3, and 4)

Table-3 Effects of USA's Withdrawal and Russian Hot Air to Carbon Credit Demands

Model Name (Name of model developer)	PET	EPPA	Zhang	GTEM
Remained carbon credits demands after USA's withdrawal and Russia selling out their Hot Air (million tons Carbon/year)	0	417	95	123

Note: Above indicated the results of four economic models: PET is an economic model developed by Jotzo and Tanujaya. According to this table, PET model shows zero demand remained, and in cases of Zhang and GTEM models, remnant demand is not too large and likely to be realized by the domestic measures of developed countries. Therefore, it is at least certain that these events will provide significant effects on Hot Air market, although some uncertainties remain.

Reference: Frank Jotzo and Olivia Tanujaya, "Hot Air vs. CDM: Limiting supply to make Kyoto work without the United States", July 2001, Pelangi Indonesia, p.3., (download possible at <http://www.pelangi.or.id/hotair-1.html>)

Table-4 Volume and Revenues of Carbon Credits when Russia, Eastern European Countries and Developing Countries Form a Cartel

Sales volume and revenues of Russia and Eastern European countries		Sales volume and revenues of developing countries		Prices of carbon credits (\$/ton-C)
Sales volume (million tons C/Yr.)	Revenues (million dollars)	Sales volume (million tons C/Yr.)	Revenues (million dollars)	
150	455	112	339	3.03
100	1286	100	1286	12.86
75	1829	75	1829	24.39
50	2223	50	2223	44.46
25	1896	25	1896	75.84

Note* According to above model simulations, revenues of Russia, East European countries and developing countries will get the maximum for each when they form a cartel to control their sales quantities less than 50 million tons C.

Reference: Above paper of Jotzo and Tanujaya "Hot Air vs. CDM: Limiting supply to make Kyoto work without the United States", p.7.

At present no international mechanism to counter such price cartel exists under the trade rules of WTO (World Trade Organization), etc. Therefore, each country must respond by "ex-regional application of own laws on commercial competition (anti-trust law). Only practical countermeasures adaptable will be to increase duties or to impose penalties, which will bring considerable damages to domestic consumers. Therefore, it is very difficult in practicality to prevent the formation of a cartel by supply side countries in carbon credits, as was difficult to stop the supply control by OPEC countries.³⁰ However, it is possible to consider negotiation with supply side by suggesting a system to set a price cap or to introduce option trading for carbon credits as countermeasures.³¹

3) Recent Moves for the Ratification of the Kyoto Protocol

In the Russian congress, ordinal legislation undergoes 1 to 2 year review while holding public hearings for several times. For Global Warming issue, public hearing have been held for several times already, and at the one held on June 18 immediately following the USA's withdrawal declaration, the person responsible for UES's energy - Carbon Fund, described later, lectured. At the public hearing, almost everyone, except Betridsky who is one of co-chair for Interagency Commission on Climate Change, maintained the positions supporting the ratification of the Kyoto Protocol³², and the following hearing document has been published.³³

- (1) Hearing members of this public hearing meeting do not support USA's withdrawal
- (2) If EU and Japan ratify the Protocol, Russia may ratify also without USA. However, there should not be any change to the Protocol itself, and the ratification must not invite any new financial burden.

³⁰ In case of oil exports, many countries are enabled to determine independently and flexibly own import duties as a measure to counter a price cartel. (In case of many other products, import duties are fixed.) However, due to effects upon domestic consumers, there has not been any situation that the import duties to synchronize with supply quantity and prices.

³¹ Regarding the price cap setting, USA's think tank, Resource for the Future, and others actually made some proposals. (Michael Toman, 2000, Moving ahead with climate policy, Climate Change Issues Brief 26, Oct.2000, Resource for the Future, unloading available at http://www.rff.org/issue_brief/PDF_files-ccbrf26_toman.pdf.)

³² According to the private letter of Elina Nikitina, researcher at Russian Academy of Sciences, who participated to the hearing. She suggested that a kind of political game between ministries and agencies may be behind the passive comments of Hydromet's Betridsky.

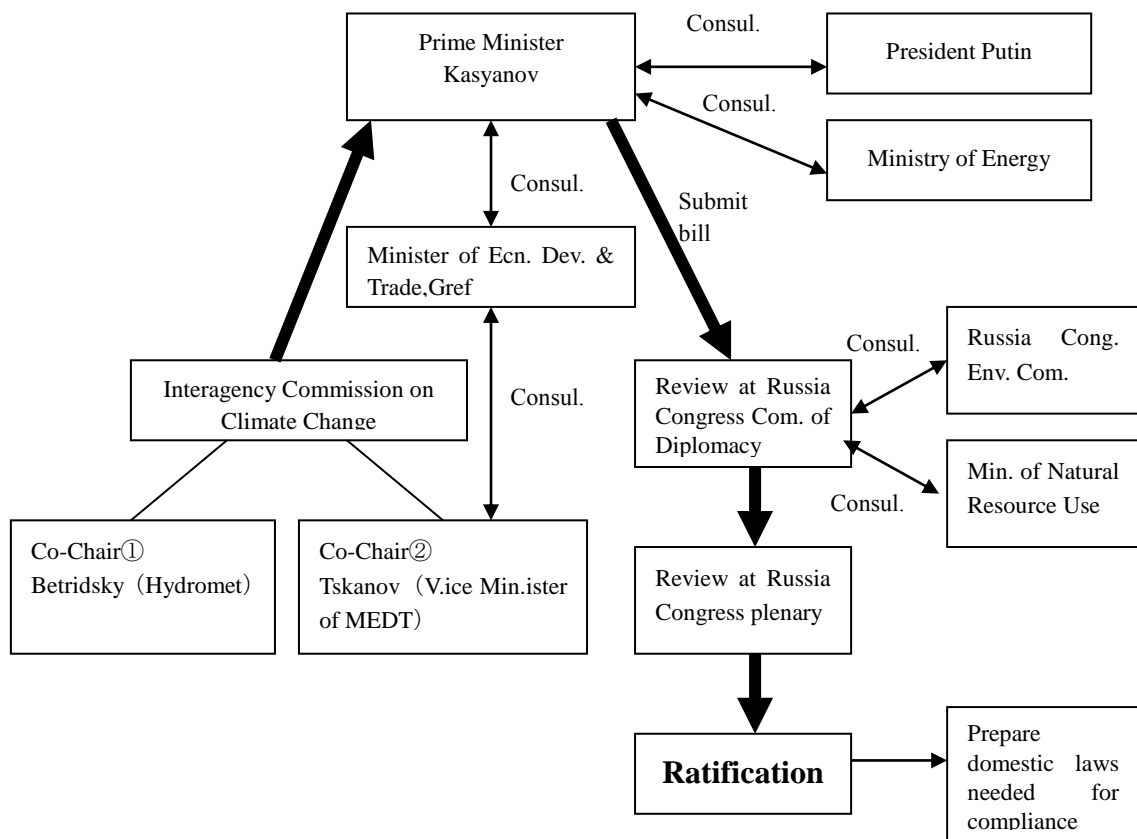
³³ Congress hearing documents "Legislation on Framework Convention on Climate Change and Kyoto Protocol, June 18, 2001. Translated from the one obtained through congress personnel.

- (3) Propose the President to proclaim the "President's ordinance to prepare for the implementation of international cooperation mechanism based on Framework Convention on Climate Change"
- (4) Propose that the federal government of Russia to fix the policy in regards to the timing and method of Kyoto Protocol ratification, and submit a concrete bill by the end of 2001
- (5) Send the representative of Russian Congress to Interagency Commission on Climate Change and raise the position of the representative
- (6) Send the personnel at the level of Vice chair of government as the leader Russian delegates dispatched to the resumed session of COP6
- (7) Include congress persons and experts to the Russian delegates sent to the resumed session of COP6
- (8) Prepare and review the proposal for congress statement supporting the Kyoto Protocol
- (9) Consign to the enlarged Environmental Committee of the Russian Congress including the members of other relevant committees to draw by September 15, 2001, the draft of bills to enable Russian participation in the Kyoto Protocol, involving the realization of Kyoto mechanisms and the fund input to greenhouse gas emission reduction projects.
- (10) The Congress shall start to draw relevant legislation led by "the law related to economic foundation for realizing international cooperation based on Kyoto Protocol.

Above is to outline the major points of discussion at the public hearing of Russian Congress and is not legally binding. Yet, it seems certain that the interests among congresspersons at least are deepened and the powers constructive toward the ratification are gaining more power. In addition, some considers that, if the government moves positively toward the ratification, it may be possible to earn the consent of congress by government's prepared simple ratification legislation, prior to the review and adoption of various detailed domestic laws required to comply with the protocol upon its ratification.³⁴

Nevertheless, the ratification of the protocol is largely dependent on how and when the Russian Government, especially the Ministry of Economic Development and Trade recognize the enormity of economic benefits Russia is to earn from the ratification, and how the congress members of Russian Congress fully appreciate them. (Fig. 3)

³⁴ From the interview of Mr. Kosarikov, Vice Chair of environmental Committee of Russian Congress. (Sep. 4, 2001) According to him, some of conservatives such as those in the Communist Party which considers utmost the interests of Russia may oppose ratification, if they are not satisfied in the scale of economic benefits from the ratification. However, he views that the Communist Party is unlikely to make the issue binding to party decision.



Consul.= Consultation

Fig. 3 Flow Leading to Ratification and Major Relevant Parties in Russia

Note: Prepared from authors' interviews of relevant parties. Please note that whether ratification first or the preparation of concrete domestic laws for compliance first depends on the scale of economic benefits Russia is to earn and the judgement of government and congress concerning international situation.

4) Moves by Major Actors (UES and Gazprom)

In October of 2000, UES established a Company named Energy Carbon Fund, aiming to sell carbon credits generated by greenhouse gas emission projects related to UES.³⁵ Since UES's emission quantity shares about 25% of total carbon dioxide emission in Russia, they have the largest quantitative potential of sellable carbon credits. (Fig. 4)

³⁵ UES, "Energy Carbon Fund", Information paper distributed at the COP6, Hague, 2000. As of September, 2001, changed the name to Energy Carbon Facility.

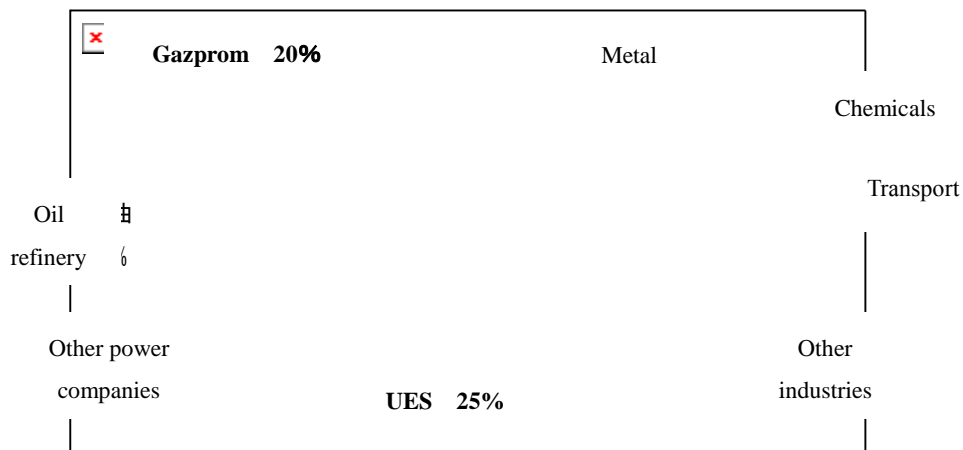


Fig. 4 Carbon Dioxide Emission per Industry in Russia

Reference: UES Energy Carbon Fund documents

Already, there is a "half-public and half-private" institution called Center for Preparation and Implementation of International Projects on Technical Assistance (CPPI), related to the Russian Ministry of Energy, that provides policy proposals related to Kyoto Mechanisms, and JI investment consulting and other services to foreign companies as an window of Russian Government. By the way, the person in charge of practical businesses in Energy Carbon Fund is the former member of CPPI. As a part of monopoly dissolution government is about to promote today, UES considers to cut down inefficient and unprofitable power plants, and may conduct the sales of such plants "with carbon credits" to foreign investment in the future.

Gazprom, which shares about 20% of carbon dioxide emissions of whole Russia, currently implements AIJ project (repairs of natural gas pipeline) with German gas company of Ruhrgas³⁶. From what the authors heard from CPPI personnel in charge, UES's Energy Carbon Fund was originally to cover the whole Russia including Gazprom, but as Gazprom hesitated to participate, it ended up with UES only. In the near future, however, Gazprom is highly likely to enter into carbon credits trade market in some forms such as to team up with UES.

Moreover, some works are underway diligently to determine the actual emission quantity (inventories) from each emission source, for power plants under UES, at present, and the movement to raise awareness in local plants that will directly involve in actual projects is ongoing. Therefore, the building of a system for carbon credit sales is certainly started, although still insufficiently,

³⁶ Ruhrgas and Gazprom are deepening mutual relationship in management as the president of Ruhrgas becomes a member of Gazprom's Management Council. (Aforementioned paper, Moe and Tangen, "The Kyoto Mechanism and Russian Climate Politics", p. 88.

among Russian Government and companies.

7. AIJ Projects in Russia

1) AIJ Projects between Russia and European Countries and USA

According to a think-tank collecting AIJ information, there are 11 AIJ project either ongoing or planning in Russia as of July 2001.³⁷ Projects involve methane gas recovery from landfill, repair of natural gas pipeline, improvement in regional centralized heating facilities, forestry and agriculture projects, and in numbers the largest is the improvement of local district heating system. (The improvement of regional centralized heating system is especially cost-effective in Russia and central and east European countries for the stabilization of people's livelihood as well.) As investors, USA has six projects, Netherlands three and Germany two, etc. with overall investment amount exceeding 16 million dollars.³⁸ However, these numbers are mainly based on the declaration by both parties, and not too few may be only a plan. In reality, some indicated that about a half of AIJ projects in Russia have not been executed with any projection for execution.³⁹

One of most promising JI project candidates for the future in Russia is the repair of natural gas pipeline. Reality is that the aging of pipeline is extremely serious, and for methane leakage at the Gazprom only reaches about 200 million tons (in carbon dioxide equivalent). (This is about 16% of Japan's annual emission quantity.)⁴⁰ So, the Gazprom, together with a university, a think-tank, and a company of USA, has already registered to the Secretariat of Framework Convention on Climate Change a project to prevent methane gas leakage from pipelines (Use sealant to stop leakage at 190 valves in total installed in the compressors of two relay stations) as an AIJ project.⁴¹

This AIJ project provides the cost of greenhouse gas emission reduction significantly lower than other AIJ projects (Presently, carbon credits offered by the World Bank is about 5\$/tCO₂, while the cost of greenhouse gas emission reduction in this project is 0.01\$/tCO₂, because 1) methane gas has 21 times as much of greenhouse effect as carbon dioxide, 2) repair cost is relatively lower (about 16 million dollars), and 3) longer project terms of 25 years. However, the fact that Gazprom do not make any management decision to prevent methane leakage for 25 years long, or

³⁷ Joint Implementation Network, *Joint Implementation Quarterly*, Vol.7-No.2, July 2001.

³⁸ Cartinus Jepma and Maarten Eisma, "General Discussion of the AIJ Reporting System", p.15.

³⁹ From authors' interview with Russian researchers and officials, Nov. 27, 2000

⁴⁰ Aforementioned paper, Moe and Tangen, "The Kyoto Mechanism and Russian Climate Politics", p. 84.

⁴¹ Regarding the problem of this project, detailed analysis is given in the aforementioned paper of Jepma and Eisma,

there exists the management environment that allows such inaction is, in itself, irrational internationally, and the project environment is expected to change drastically depending on gas price hike, dissolving of Gazprom, revision of laws, etc.

Less cost of emission reduction (cheap carbon credits) is not bad in itself, but, if the cost is improperly down, it will give the same effect as the case of unlawful dumping, and may drive out other types of projects. Therefore, it is necessary for the low cost pipeline repair projects to fully examine the qualification of projects, a way to set baseline scenario, cost calculation and additionality test.

Moreover, one of candidate project under the governmental carbon credits purchase tender started by Netherlands in 1999 (Emission Reduction Unit Purchase Tender: ERUPT) is a project in Russia, and the negotiation for the transfer of credits is ongoing between Russian Government and Dutch government.⁴²

2) Feasibility Study of Greenhouse Gas Emission Reduction Projects by Japan

Currently in Japan, the Ministry of Economies, Trade and Industries (METI), the Ministry of Environment, Japan Export Trade Organization (JETRO), Japan International Cooperation Agency (JICA) , and other ministries and agencies have a scheme to bear the cost to support Feasibility Study of CDM candidate projects with budget under various nomenclature. The first of such a scheme was "the basic survey to promote Joint Implementation" started in 1998 at then the Ministry of International Trade and Industries, and for the first year about 40 projects proposed (more than 100 projects applied) from Japanese companies (mainly from power sector, iron and steel, metals, engineering, trading houses, etc.).

The breakdown by countries shows Russia had the largest number of projects at 20 projects (the rests are 11 projects for China, 8 projects for Central and Eastern European countries and Central Asian countries, one project for Thailand, and one for Myanmar), and the types of projects included energy savings by facility improvement at power plants, iron foundry, oil refinery, etc., fuel switching (from coals and oil to natural gas), improvement in regional centralized heating facility, facility improvement of power cables and pipelines. (Table-5)

At the back of Russian projects to share more than half was the atmosphere of elevated

“General Discussion of the AIJ Reporting System”, p.15

⁴² From the presentation by Maurice Blanson Henkenmans of the Ministry of Economies in Netherlands at the aforementioned (in footnote 8) workshop in Moscow. (Also available at <http://www.riia.org/Research/eep/russia.html>)

mutual friendship between Japan and Russia following then Prime Minister Hashimoto's visit to Russia. (In 1999, number of Russian projects declined to nine projects). Japanese government actually treated Russian projects with higher priority and companies expected some support from the government. Thereafter, however, there was no concrete governmental support, and no project has been executed as AIJ with a prospect for fund procurement.⁴³ In other words, there is almost no project between Japan and Russia that has greenhouse gas emission reduction as its main goal.⁴⁴

⁴³ Many of companies involved in these projects expected some kind of low interest rate loan like Yen loan or fund gratis.

⁴⁴ However, international cooperation for pipeline construction is about to be implemented. For example, both government of Japan and Russia agreed on April 25, 2001, to have Japanese Government provide fund gratis of 100 million yen as the cost of feasibility study for gas pipeline construction in three states of Khavarovsk region, Sakha Republic, and Camtxakka in the far east region of Russia. (April 25, 2001, by NHK) In addition, Sakhalin I project to connect Russia and Japan by pipeline is moving forward.

Table-5 Summary of Russian Projects selected under MITI's Basic Survey to Promote Joint Implementation for 1998

(US dollars/ton CO₂).

	Location	Contents	Japan-side entities	Russian side entities	emission reduction cost
1	Unknown	Pipeline	New Japan Steel, Japan Steel Pipe, Sumitomo Metals, Sumitomo Co., C. Itoh & Co., and Mitsui & Co.	Gazprom	16.8
2	Khabarovsk	Oil refinery	Chiyoda Engineering	Khabarovsk Oil Refinery	11.9
3	Sakhalin	Coal-fueled power plant	Mitsui & Co., Japan Steel Pipe, Kawasaki Heavy Ind., Unico International	Sakhalinskaya Power Plant	34.1
4	Konakova	Coal-fueled power plant	KEPCO, Mitsubishi Shoji	UES	
5	Siberia	Coal-fueled power plant	Power Sources Development	UES	
6	Khabarovsk	Coal-fueled power plant	Sumitomo Shoji, Chubu Electric Power Co.	Khabarovsk Oil Refinery	23.1
7	Khamchatzka	Regional centralized heating	Japan Heavy Chemical Ind.	City of Khamchatzka	15.7
8	Irkutsk	Coal-fueled power plant	Nikki	Irkutsk Electric Power Co.	27.2
9	Sverdorovsk	Steel plant	Pateco	Sverdorovsk Electric Power Co.	4.8
10	Magnidogorsk	Steel Plant	New Japan Steel	Magnidogorsk Steel Co.	N/a
11	Nijegordo	Coal-fueled power plant	Unico International, Toden Design, Mitsui & Co.	Nijego Electric Power Co.	n/a
12	Leningrad, Puskov, Olenburg	natural gas power plant	Unico International, Toden Design, Mitsui & Co.	Leningrad Power Co., Olenburg Power Co.	36.2
13	Krasnoyarsk	Oil refinery	Chiyoda Engineering Co.	Asunchik Oil Refinery	11.2
14	Khabarovsk	Coal-fueled power plant	Mitsubishi Shoji	UES	16.8
15	Kemerobo	Steel Plant	Mitsubishi Shoji	Gznetz Steel Plant	11.0
16	Vladiostock	Coal-fueled power plant	Sumitomo & Co., IHI, Toshiba	Dali Electric Power Co.	23.4
17	Thula	Coal-fueled power plant	Sumitomo & Co., TEPCO	UES	16.0
18	Liuzan	Coal-fueled power plant	Sumitomo & Co., Power Resource Development	Leiuzanskaya Power Plant	11.5
19	Nijegordo	Regional centralized heating	Mitsui & Co., Unico International	State of Nijegordo	N/a
20	Samala	Oil refinery	Mitsubishi Shoji	Guyvishev Oil Refinery, etc.	14.4

Note: Emission reduction costs are, in many cases, calculated by dividing capital investment by the volume of greenhouse gas emission reduction. (Unit is Dollars/ton Carbon Dioxide). However the calculation of emission volume and costs differ significantly from a company to another, so the cost comparison between projects needs cautious approach.

Reference: Prepared by authors from New Energy Industrial Technology Development Institute, Mitsubishi Research Institute, "Analysis of the result of basic study to promote Joint Implementation for the year 1998", 1999 Survey Report NEDO-GET-9901.

8. Future Tasks

In this section, we shall list up concrete examples of Kyoto Protocol system designing for which both Japan and Russia can contribute.

1) Earlier Start of Trading

For Russia, although there may be a limit in tradable quantity, it is favorable to earn cash revenues by the earlier start of JI and emission permit trading (early trading), thereby become able to invest on actual greenhouse gas emission reduction projects. Presently, within developed countries (or their companies, for example between Japanese company and Australian company) or between developed countries and countries in central or eastern Europe or South America, some carbon credits trade contracts have been already made. However, in case of Russia, reality is that their risks are too large to find a purchaser in Japanese trading market.⁴⁵

The Russian Federation Institute of Energy Strategy of Ministry of Fuel and Energy suggested concrete proposals on early trading, from a view that overselling risk is small when the trading quantity is less than 1% of emission quantity.⁴⁶ Such small trading certainly present merits to both investor side and host side. For this, however, it is necessary for Russian side to establish actual emission quantity (inventories) at major emission sources such as power plants. Next, it is essential to have organizational responses that can reduce various risks surrounding carbon credit trading. Moreover, it will be necessary to fully persuade international society, which fears the diversion of cash revenues earned through early trading to application other than environmental conservation (in the worst case, transformation to unaccounted-for expenditure, overselling of Hot Air, and Russia's market monopoly, by clarifying the merits of early trading and the use of funds, to be specific, by declaring the mandate for reinvestment of cash revenues to greenhouse gas emission

⁴⁵ From authors' interview of carbon credit traders in Japan (July 19, 2001).

⁴⁶ Aforementioned Ministry of Fuel and Energy of the Russian Federation Institute of Energy Strategy, "Kyoto Protocol and Russian Energy", p.15

reduction projects (Green Investment Scheme⁴⁷).

2) Debt-Carbon Swap

A scheme to conduct a swap (exchange) between foreign debt and carbon credits, which authors and others have proposed as an effective use of public funds⁴⁸ such as ODA of Japan.⁴⁹

At present, Russia is not Japan's ODA subjected country, so that the loans provided by former Export-Import Bank of Japan, or debts in the private sector can be the subject of a swap. Actually, USA's think tank also proposed similar debt-carbon swap, and it was reviewed under the Clinton administration as one of really effective options.⁵⁰

Nonetheless, there are different moves ongoing in regards to the repayment of Russian foreign debt today. Finland Government, for example, proposed to Russian side "debt-transformation project" to exempt accumulated debt, on the conditions that Russia agrees to jointly build environmental cleaning (waste water treatment) plant near Sankt Petersburg.⁵¹ German Government and Russian Government are also about to reach an agreement on the exchange of Russian debt to Germany and the stocks of Russian power company.⁵² Furthermore, when President Putin visited Korea at the end of February, 2001, Korean Government and Russian Government agreed to exchange Russian debt to Korean Government with Russian armament.⁵³ In addition, recent (September 14, 2001) interview authors conducted in Moscow, the Vice Chairman of Environmental Committee at the Russian Congress, Mr. Kosarikov stated that "Russia hopes to redeem about 60 billion dollars of its 165 billion dollars foreign debt by debt-environment (including carbon) swap."

Japanese Government is undertaking the steps for practical debt cancellation for heavy debt country in Africa, etc. (provision of fund gratis for debt repayment). Therefore, although some problems such as financial additionality remain, barriers for the practical swap of debt and carbon seem to be less than expected. Nonetheless, in regards to carbon credits, both host country and

⁴⁷ The idea to use revenues from emissions trading for development and implementation of energy efficiency improvement projects in Russia has been developed over several years.

⁴⁸ Under the rules of the Kyoto Protocol, public funds used to earn carbon credits should not be those diverted from existing ODA funds.

⁴⁹ Refer to Ishii, Atsushi, Asuka-Zhang Shouchuan(Jusen), and Tomoyuki Tanabe, " Debt-carbon Swap : ODA's options of global warming measures ", 2000 (Available at <http://www2s.biglobe.ne.jp/~stars/>)

⁵⁰ Aforementioned paper of Moe and Tangen, "The Kyoto Mechanism and Russian Climate Politics", p. 66.

⁵¹ Yomiuri Shimbun, May 12, 2001

⁵² Inter-fax Telecommunication, December 10, 2000

⁵³ Asahi Newspaper, February 28, 2001

investor country need to adopt flexible and strategic thinking.

3) Jointly Building Information Monitoring System

Russia does not have full and required infrastructure in sciences, such as monitoring system. Therefore, in consideration of international cooperation on warming measures between Japan and Russia especially the Russian Far East region, which has strong tie with Japan, it is feasible to consider the joint construction of monitoring system such as for the information on forest fire, which becomes significant problem in Russian Far East region. The greenhouse gas emission from forest fire is a problem found in various parts of the world, and Russia is no exception.⁵⁴ For example, in Khabarovsk region, forest fires from 1990 till 2000 are 617 cases in annual average, with the damaged area extended to 230,000 ha, releasing 64 million tons of carbon dioxide into the atmosphere. For the whole region of Russian Far East, some data showed the release of about 50 million tons/year of carbon dioxide from forest fire, which is equivalent to about one half of energy-related emission quantity in the region (about 4% of yearly emission quantity in Japan). (Table-6)

Table-6 Carbon Dioxide Emission Quantities from Fossil Fuel Consumption and Forest Fires in Russian Far East Region(million tons)

Emission sources of carbon dioxide	1999	2010 (forecasted)
Fossil fuel consumption	102.6	94.9
Forest fires	50.4	50.4

Reference: Alexander S. Sheingauz, “The Kyoto protocol and the Russian Far East: Possibilities of Cooperative Policies for Sustainable Development”, Economic Research Institute Khabarovsk, Paper prepared for “Sustainable Development and Energy Security for Northeast Asia: Prospects for the International Cooperation”, June 26-28, 2001, the Economic Research Institute for Northeast Asia, Niigata, Japan.

Monitoring of forest fires using high-resolution satellite images is fully available, and presents considerable academic significance. Although still in a smaller scale, National Environmental Research Institute of Japan and several universities are already conducting image processing of Russian regions using satellite data. Moreover, Japan's Ministry of Environment and the Ministry of Economy, Trade, and Industries are about to actively promote the building of an environmental monitoring system in Asia, presently. Therefore, it may be possible to integrate such

⁵⁴ Regarding forest fire problem in Russia, refer to the aforementioned paper, Sheingauz, “The Kyoto protocol and the Russian Far East: Possibilities of Cooperative Policies for Sustainable Development”

research works and system buildings, and incorporate database for monitoring forest fires in Russia using satellite images.

9. Conclusion

In the international community (Japan, Russia, EU, and developing countries) concerning Kyoto Protocol, the "wishes" of each national government can be summarized as follows:

Japan:

Wants to enact the Protocol. Wants to purchase Hot Air at lower cost. Wants to strengthen energy security system (for example: building gas pipelines). It wants to have a friendly relationship with Russia, but to solve diplomatic concerns such as Northern Territory issue.

Russia:

Wants to enact the Protocol. Wants to sell a large mass of Hot air at higher prices. Wants to get technologies. Wants to win other different demands (if possible) by the ratification card and Hot Air.

EU:

Wants to enact the Protocol. Do not want Russia sell too much of Hot Air. Yet wants to purchase certain amount of Hot Air from Russia.

Developing countries:

Wants to enact the Protocol. Do not want to let Russia sell off too much Hot air.

On top of such intertwined relationships, there exists one uncertain element of "USA's return to the Kyoto Protocol." Therefore, policy-makers of each country need to adopt strategic thinking based on economic knowledge and accurate information. In addition, one of major issues in the future international negotiation is the carbon credit price negotiation. Moreover, it is likely that bilateral and multilateral "deal" with various issue linkage will be conducted openly and at the background of diplomacy and businesses, in association with price negotiation or as the one accompanying carbon credits.

However, energy issues and global warming issues are primarily the issues to be addressed in international society as a whole with long-term perspective, must not be abused by some countries or by the talks of compliance costs of a private firm 10 years from now. The enlargement of non-transparency not only is against the trend of pursuing accountability

(responsibility to explain) of policy-making, but also may invite the international regime hollowed. Furthermore, it is necessary for the world to start the discussion of reduction obligation for the second commitment period including developing countries, and, for this, developed countries must set a clear example.

For the international cooperation with Russia, EU is a way ahead of Japan and USA probably because of geographic, and historic factors. About 20% of natural gas and about 16% of oil consumed in EU are imports from Russia, and EU is the largest export destination for Russia. As shown in the agreement of "Energy Partnership Initiative by Europe and Russia" made by President Putin and Proddi EU Committee Chairman in October of 2000, their cooperative relationship is developing with active exchanges among researchers and companies.

However, the subject regions of EU cooperation tends to concentrate in the Northwestern part of Russia closer to Europe. Needless to say, the strengthening of relationship between Japan and Russia in the fields related to global warming and energy will contribute to the aspects of energy security and Kyoto Protocol enactment, but moreover provide significant importance in terms of cost reduction for Japan's compliance with the Kyoto Protocol, under the current situation of hardly any progress in designing Asian system (although a problem remains on whether to select Asia or Russia).

Nevertheless, in regards to the Kyoto Protocol, it is necessary, especially for Russia and Japan to reinforce domestic measures such as energy savings, and to address urgently the risks related to carbon credits and the reduction of transaction costs. The most urgent matter is for both public and private sectors to formulate a concrete system for each nation and for international community. We only have 7 more years until 2008, when the first commitment period begins.