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OVERVIEW

- **Current Inventory Activities**
- **Uses of Inventories**
- **Ongoing Activities & Next Steps**

Current Inventory Activities

- **Under the 1992 Framework Convention on Climate Change (FCCC), the U.S. must:**
  - **Submit annual inventories**
  - **Submit comprehensive "National Communications" at intervals (2-3 years)**
- **Developing Countries have similar requirements, but more time to prepare**

Annual Inventories include:

- Emission estimates for all sources and sinks of greenhouse gases
  (CO2, CH4, N2O, HFCs, PFCs, SF6)

- IPCC has developed guidelines for methods
  (1996 Guidelines)

- Countries can use IPCC Guidelines, or develop customized methods based on their circumstances

- Currently, cover the period 1990 - 1996

National Communications provide additional information:

- **Baseline Emission Projections to 2010 by GHG source**
- **Estimates of the effects of policy actions to reduce emissions**
- **Information on an array of other activities**

What Happens to National Communications & Inventories

- Countries prepare them and submit them to the FCCC Secretariat

- National Communications are reviewed by international teams of experts

- Secretariat compiles and synthesizes the submissions from all countries

Kyoto Protocol Provisions:

- **Similarities to the FCCC:**
  - **Annual inventories submitted**
  - **Following IPCC 1996 Guidelines**

- **Additionally, Parties will have to put in place a "national system" for developing inventories**
  - **Established by 2007**
  - **Parties will determine its requirements**

Uses of Inventories

- **Scientific Analysis**
  - **Identify missing emission sources**
  - **Confirm atmospheric trends**

- **Policy Analysis**
  - **Tool for economic analysis**
  - **Identify key areas for R&D**
  - **Identify mitigation opportunities**

Compliance Assessments: Absolute measure of progress toward goals and commitments

Ongoing Activities & Next Steps: International Efforts

- **Led by the IPCC**

- **Improve inventory quality**
  - **Int'l workshops on key emission sources**
  - **Additional guidance on good practice in inventory preparation**

- **Improve assessment and communication of uncertainty in inventories**

U.S. Efforts

- **Improve transparency of US Inventory (methods & data)**

- **Continue refining estimates, in conjunction with industry**

- **Bilateral efforts with Russia & Ukraine to improve their inventory quality**

Conclusions

- **Inventories are crucial underpinning of U.S. and international climate activities**
- **Domestic and international efforts are underway to improve inventory quality**
- **High quality inventories are key to credible programs and policies**

Registries

What can we learn about a useful role for registries by looking at securities markets?

We can look to securities markets for examples and lessons to inform our positions on the following four issues that arise in the trade of emissions permits:

(1) How would a clearing and settlement system work?
(2) Should permits be numbered?
(3) What role might the National Registry play?
(4) How much disclosure should be required for each trade?

A. Clearing and Settling Transactions

The most important feature of a trading system is that the clearing and settlement mechanisms have a high degree of integrity. Those trading need to have some certainty about what is being traded. A trading system thus needs a mechanism that will settle trades and verify ownership of traded permits.

How might a clearing and settlement system work?

Consider a trade between two domestic entities in which the buyer buys a permit to emit 100 tons from the seller. To clear the trade, funds must be transferred from the buyer to the seller, and the ownership of 100 permits, each allowing the owner to emit a ton, must be transferred from the seller to the buyer.

Funds transfer: The transfer of funds can take place through standard payment versus delivery structures.

Permit transfer: The buyer will want to verify that the seller has legal ownership of the permits sold. In addition, ownership has to be transferred to the buyer and made verifiable, so that the buyer may resell the permit or use it to cover emissions.

B. National Registries

A Party's national registry will maintain its aggregate account of tradable permits. At the end of the compliance period, the registry will demonstrate that the Party's permit holdings are sufficient of cover its emissions during the period. If the Party chooses to devolve ownership of permits to its legal entities, the national registry must contain, at the minimum, a record of the aggregate number of permits held by those legal entities at the end of the commitment period. Thus, international transfers of permits must be reported to the national registry at regular intervals (probably annually) although voluntary reporting may well take place more frequently.

In addition, the national registry can maintain "accounts" (really just a record of ownership of permits) for private entities. These entities may be broker-dealers, other intermediaries acting as

custodians, or private entities owning permits. These entities could use their national registry account as part of the clearing/settlement process, but do not need to do so. For example, the transfer of ownership of permits could be effected by changing ownership records at the national registry. Or private institutions (say a clearing house associated with an exchange) could clear transactions and keep track of ownership without using the national registry.

Each Party's national regulatory authorities need to verify emissions and receive "payment" (in the form of permits) from emitting firms in the amount of their emissions, but they do not need to administer the national registry itself. The national regulators could hold an account at the registry to facilitate such transfers of permits.

C. Should Permits Be Numbered?

In securities markets each share of stock and each corporate bond has its own "certificate" number. One can uniquely identify any share or any corporate bond with two numbers: (1) its CUSIP number, which identifies the issue; and (2) the security's certificate number, which identifies the individual share or bond. (It turns out that talking about "serial numbers" in this context is confusing because serialization is associated with certain bundled security sets, so this paper will refer only to certificate numbers.)

United States Treasury Securities were also individually numbered until recently. Individual numbers are no longer deemed necessary because physical securities are no longer issued; electronic book entries in a cascading chain of records are used instead. For example, an individual's holding of a Treasury bond might be recorded as follows. A registry at the Treasury's Bureau of Public Debt records that a given quantity of securities is held by a primary dealer. The dealer's books record that a bank owns some smaller quantity of the securities. And the bank's books would record the individual's holdings.

Practices in private securities markets are roughly similar despite the fact that the securities are individually numbered. Securities are held "in street name," which means that a given block of securities are recorded (by a custodial institution) as being owned by a securities firm rather than by an individual. That securities firm would then maintain records of individual ownership. Even though each security is numbered, that numbering is essentially ignored in current practices.

Thus, practices in domestic securities markets would suggest that numbering individual permits in not necessary.

How would trades across national borders differ from purely domestic trades?

Ultimately, account balances must be transferred from one national registry to another. This clearing can be handled in much the same way as a purely domestic trade except that the two entities involved would need to notify their respective national registries. The national registries will, in turn, add to or subtract from their total assigned amount. Additionally, corresponding changes will be made at the international registry level, thereby recording the transfer of ownership.

In principle the notification of the national and international registries need only occur at intervals determined by the Parties. In practice, if there is some question about the quality of what is being bought from sellers in some countries, the buyers may seek immediate notification for added legal safety.

Numbering of permits may also provide those purchasing permits from a foreign entity the added security that a valid permit is being obtained and provide a means for verification of ownership. Although domestic institutions have evolved to the point where numbering of securities is no longer thought to be essential to the integrity of the trading system, a similar degree of confidence in existing institutions may not exist for all prospective participating Parties.

What are the costs of certificate numbers?
The costs are clear: an extra field is necessary in a computer file recording ownership. In addition, once clear title to permits originating abroad is established (say by recording the change in ownership with the national and international registries) domestic trades will likely be done "in street name" so that numbering permits will probably add almost nothing to transactions costs.

D. Disclosure of trading information to the public and regulatory authorities

Establishing the trading system involves decisions about what trading information is made available publicly and to regulatory authorities, both domestically (for Parties that devolve their trading system to legal entities) and internationally. The basic information involved in a trade includes the identities of the buyer and seller (both the specific legal entities and the Parties with which they are affiliated), the quantity traded, the price paid for each permit, and the time of the transaction. While some information may be valuable for the efficient operation of the market, too much public disclosure may discourage trades and raise transactions costs. If traders were concerned that information on their activities might be used for setting regulatory policy, trading could be discouraged.

The case for more information:
Greater transparency, i e., more public disclosure of trading information, is attractive to regulatory authorities and those generally suspicious of emissions trading. They believe that if the identities of all trading entities are known, along with the nature of their transactions, then they made be held more publicly accountable for their emissions and trading behavior. Implicit in their position may be that they believe that purchasing permits could carry a stigma that will encourage firms to undertake emissions abatements, even at a cost greater than the prevailing permit price. Such firm behavior would be inefficient, but would be consistent with what many environmental groups advocate.

The case for less information:
While a market mechanism that reveals market prices to participants is import to the efficient functioning of the market, making other information public provides no clear economic benefit while incurring the costs of dissemination. Public disclosure of trades would treat permits differently than other assets, and may reveal private information about firms' production

decisions. Firms would have to employ intermediaries to avoid such disclosures, potentially increasing transaction costs.

How could the low-information model work?
Those studying markets view an electronic limit order book as the most efficient mechanism available, given current technology. Such a system allows traders to post bids and offers and to hit the bids and offers of others, all in real time. If the volume of trading is low, then a periodic batch auction can be held, say once a week.

F. Recommended Positions

Numbering Permitss:

1. We recommend that certificates be numbered because the potential benefits (anti-fraud and international acceptance) of numbering certificates exceed the costs.

Role of the national registry:

2. We ought to allow the registry to act as a custodian or as a clearing agent, but not require that all transactions either go through the registry or get reported to the registry.

Public disclosure of trading information:

3. We advocate consideration of trading mechanisms that reveal price information publicly, but we oppose "transparency measures" that reveal additional information such as the traders' identities and the quantities bought and sold. Further, in order to maintain the confidence of market participants in the informational integrity of the system, the additional information should not be available to regulatory authorities.

GHG Emissions Trading with Russia: Preliminary Ideas

Meeting with United States Council
for International Business
May 12, 1999

U.S. and the Umbrella Group

- U.S. is working with 9 other "pro-trading" countries in climate change negotiations:
  - Australia, Canada, Iceland, Japan, New Zealand, Norway, Russia, Ukraine (Kazakhstan)
- Common views on development of the flexible mechanisms and other issues
- Decisions on rules expected at COP-6

Russia's Role

- Signed the Kyoto Protocol
- "Assigned Amount" based on 1990 levels
- Key ministries very interested in trading surplus emissions allowances, and in JI
  - State Committee on Environment
  - Hydromet
  - Ministry of Fuels and Industry
  - Foreign Ministry

Russia's Views on Trading

- Ministries see trading as a way to raise capital for investment in energy efficiency of energy system, industrial plants, and building stock
  - additional potential in other gases, sequestration
- Ministries have proposed dedicating funds from trading to such investments
  - "revolving fund" creating more surplus allowances

Potential Pilot Program

- U.S. and Russian agencies have been developing a potential pilot program to promote emissions trading
- Was to be considered by Gore-Primakov Commission in March
  - meeting cancelled for other reasons
  - reviewing future opportunities

Elements of Potential Pilot Program

- Key elements:
  - Begin early trading in Russian emissions allowances with forward sales, sales of options to buy at discounted price, or other means.
  - U.S. participation by private sector on a strictly voluntary basis.
  - No U.S. government money to buy allowances, but U.S. agencies to continue technical assistance and capacity building.

Elements of Potential Pilot Program

- Key elements (cont.):
  - Russian commitment that the revenue received under pilot program will be dedicated to:
    - strengthening Russia's capabilities to monitor greenhouse gas emissions, and
    - supporting specific, competitively-selected projects in energy-efficiency, GHG reduction, and sink enhancement

Elements of Potential Pilot Program

- Key elements (cont.)
  - Open participation: Participation in this pilot program would be open to all Parties and their private sectors
  - Other buyers, including private sector entities (or governments) from other Parties
  - Other sellers (e.g., Ukraine)

Open Issues

- When, how to take next steps
- Need to explore:
  - trading mechanisms (what agency to buy from, options and other potential forms, contract terms, etc.)
  - how to increase certainty of transfers
  - improving Russian capacity to monitor and report national emissions

Open Issues

- Need to explore (cont.)
  - means of dedicating revenue, selecting projects, auditing results
  - other private sector interest and concerns

U.S. - Russian Greenhouse Gas Inventory Development: Pilot Project in Novgorod Oblast

Presented by

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Novgorod Oblast Inventory Project

- **Strong national inventory systems, along with monitoring and reporting systems, are critical to the success of emissions trading.**

- **Russia:**
  - **wants to improve its inventory capacity**
  - **attract investments**
  - **allay concerns about compliance**

- **U.S.:**
  - **can provide technical assistance**
  - **gain from understanding**

Novgorod Oblast Inventory Project

- **Stage 1: Russian inventory team will develop Novgorod regional inventory in 1999**
  - **Use 1996 IPCC guidelines**
  - **Develop guidelines for other oblasts**
  - **Conduct workshop (with other oblasts and NIS inventory specialists)**
- **Stage 2: (2000-2003)**
  - **Expand to other oblasts**
  - **Assist other NIS countries**
- **First pilot**

For More Information

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Draft
Approved by Resolution № _____
of the Government of the Russian Federation

The Procedure for Participation of the Ministries, Agencies, and Organizations of the Russian Federation
In International Commerce or Greenhouse Gas Emissions Trading System

1. The ministries, agencies, and governmental bodies of executive power of the constituent members of the Russian Federation participate in the greenhouse gas emissions trading system on contractual basis within the limits of the total tons-allowed established by the Government of the Russian Federation.

2. In order to prepare contracts, the ministries, agencies, and governmental bodies of executive power of the constituent members of the Russian Federation submit to the Interagency Commission on Climate Change of the Russian Federation, hereinafter referred to as IAC, requests for reservation of tons-allowed. The amount of the requested tons-allowed shall be justified by proposals for implementation (financed with the money received from trade in emissions) of specific investment projects, aimed at the reduction of their emissions or increase in absorption of greenhouse gases, as well as at financing the work within the framework of federal purpose-oriented programs, which ensure realization of the objectives stated in the UN Framework Convention on Climate Change.

3. Governed by the requirements of the UN Framework Convention on Climate Change for emissions trading and additional standards, the Interagency Commission on Climate Change of the Russian Federation considers the proposals of ministries, agencies and governmental bodies of executive power of the constituent members of the Russian Federation.

4. The decisions of IAC on the reservation of tons-allowed are communicated to appropriate ministries, agencies and governmental bodies of executive power of the constituent members of the Russian Federation, which will monitor preparation of contracts for greenhouse gas emissions with the purchasers authorized to sign such contracts in compliance with the legislation of the countries which accept tons-allowed.

5. The ministries, agencies and governmental bodies of executive power of the constituent members of the Russian Federation can delegate their authority to monitor preparation of contracts, conduct negotiations, sign contracts, and refer projects to authorized organizations.

6. Authorized organizations take care of the preparation work with foreign investors, prepare contracts, and monitor their implementation.

7. The State Committee for Environmental Monitoring and Hydrometeorology of the Russian Federation keeps the record of tons-allowed allocated on the basis of IAC decision and registers contracts for emissions trading.

8. The State Committee for Environmental Monitoring and Hydrometeorology of the Russian Federation summarizes the tons-allowed trading data and provides information about the volume of contracts to IAC and the Secretariat of the UN Framework Convention on Climate Change.

9. The proceeds received from the implementation of contracts, with the deduction of agreed expenses for the preparation of contracts and their monitoring are registered as budget revenue of the Russian Federation, placed in a special account of the Federal Treasury and used for reinvestment in absorption of greenhouse gases.

10. The expenses of ministries, agencies, and governmental bodies of executive power of the constituent members of the Russian Federation and/or their authorized organizations for the preparation of contracts related to emissions reduction or increase in absorption of greenhouse gases can be covered from contract funds. Expenses for monitoring projects are compensated from contract funds.

EXPLANATORY NOTE

on participation of the Russian Federation in the greenhouse gas emissions trading system and employing other mechanisms of flexibility in implementing the commitments under the Framework UN Convention on Climate Change Kyoto Protocol

The Kyoto Protocol adopted on December 10, 1997 at the third session of the Conference of the Parties of the Framework Convention on Climate Change in Kyoto, Japan, provides the Parties with an opportunity to use "mechanisms of flexibility" in order to implement their commitments for reduction of the anthropogenic greenhouse gas emissions. Realization of such mechanisms will allow to attract large-scale foreign investments and modern technologies in the Russian economy and at the same time ensure the implementation of the commitments of our country under the Kyoto Protocol.

Specifically, in order to attract foreign investments the following mechanisms provided for by the Kyoto Protocol could be used:

- ***joint implementation of commitments under Article 3 of the Kyoto Protocol***

The Kyoto Protocol allows any Parties included in Attachment I to the Framework Convention on Climate Change, which have agreed to jointly implement their commitments under Article 3 of the Kyoto Protocol, to consider their commitments implemented, if their aggregate anthropogenic greenhouse gas emissions do not exceed the total tons-allowed established by the Kyoto Protocol.

The "umbrella" group of countries established on the initiative of Russia, which includes, besides the Russian Federation, the United States, Canada, Japan, Australia, New Zealand, Iceland, Norway, and Ukraine has started a discussion of perspectives of applying Article 4 of the Kyoto Protocol to the "umbrella" countries. The economies of the "umbrella" countries are not integrated as deeply as those of the European Union countries. However, if a mechanism making up for the absence of deep economic integration is agreed upon, the application of Article 4 of the Kyoto Protocol can create favorable conditions for large-scale investments in the economy of our country on the part of the industrially developed "umbrella" countries.

- ***implementation of joint projects (joint implementation of projects)***

Article 6 of the Kyoto Protocol makes it possible for any country listed in Attachment I to the Framework Convention on Climate Change to transfer or buy the greenhouse gas tons-allowed obtained as a result of projects directed at the reduction of anthropogenic emissions or increase in absorption of greenhouse gases in any sector of economy.

Application of Article 6 of the Kyoto Protocol can also encourage purpose-oriented investments and introduction in the Russian economy of the resource-saving technologies. Japan and the Netherlands have already shown interest toward implementation of joint projects.

- ***greenhouse gas tons-allowed trading (emission trading) system***

Article 17 of the Kyoto Protocol allows any country listed in Attachment I to the Framework Convention on Climate Change to transfer its rights for greenhouse gas emissions for the purpose of implementing its commitments.

The final version of the leading principles and rules of the international greenhouse gas emissions trading system is expected to be devised by the fourth session of the Conference of the Parties of the Framework Convention on Climate Change (Buenos Aires, Argentina, November 2-13, 1998). Considering the fact that in the probable and optimistic scenario of development of the Russian economy the Russian Federation can become a big potential seller of tons-allowed, emissions trading can attract large-scale investments and promote introduction of modern technologies in the economy of the Russian Federation (fuel and energy complex, industry, transport, forestry, etc.). Currently, the "umbrella" countries are actively conducting negotiations on the leading principles and rules of international greenhouse gas emissions trading, and the Russian representatives are taking measures to make them comply with the interests of our country.

- ***"the mechanism of clean development"***

Article 12 of the Kyoto Protocol makes it possible for any country listed in Attachment I to the Framework Convention on Climate Change to implement projects on the territories of the countries, which are not included in Attachment I, and the greenhouse gas emissions reductions achieved as a result of these projects are counted towards implementation of their commitments.

The use of opportunities offered by "the mechanism of clean development" while implementing Russian projects in CIS countries (except Ukraine and Byelorussia which are listed in Attachment I) as well as in the developing foreign countries will allow the Russian Federation to make up for the lack of tons-allowed, which can be transferred by our country to the industrially developed countries within the framework of the greenhouse gas emissions trading system and implementation of joint projects.

- ***accumulation of emissions by the Parties***

Article 3 of the Kyoto Protocol (Paragraph 13) envisages that in the event the emissions of a country included in Attachment I for a certain period, during which its commitments are effective, will be less than the tons-allowed allocated to this country, it can accumulate these emissions to use them as an offset against future commitments.

In this way, the balanced use of all flexibility elements provided for under the Kyoto Protocol will allow the Russian Federation to attract large-scale foreign investments and modern technologies in the Russian economy and at the same time maintain the necessary tons-allowed reserve in order to ensure the performance of its commitments under the Kyoto Protocol and the stable economic development of the country.

The Kyoto Protocol provides our country with an opportunity to simultaneously use international greenhouse gas emissions trading system and implement joint projects (Articles 17 and 6 of the Kyoto Protocol), as well as to replenish its tons-allowed using "the clean development mechanism" (Article 12 of the Kyoto Protocol) and accumulate emissions for use in future budget periods. Under the circumstances, of most interest is an opportunity to implement "the early stages" of emissions trading and joint projects in 2000-2007, prior to the beginning of the first budget period established by the Kyoto Protocol (2008-2012), considering the fact that the Kyoto Protocol authorizes the use of "the mechanism of clean development " beginning from 2001 (Paragraph 10, Article 12).

The ability of the Russian Federation to attract additional financial resources, which appears in connection with the adoption of the Kyoto Protocol, depends on the following factors:

1) the balance between the commitments of the Russian Federation for greenhouse gas emissions during the first budget period (2008-2012) and its actual emissions during these years;

2) the demand of the industrially developed countries for tons-allowed (the difference between their commitments and actual emissions).

Additional expenses for the implementation of the commitments under the Kyoto Protocol, related to the creation and functioning of the domestic greenhouse gas emissions assessments system should also be taken into consideration.

The Second National Report of the Russian Federation on its activities within the framework of the FCCC prepared in 1998 included assessments of greenhouse gas emissions change for a period of up to 2012. Additional work was done in the spring of 1998 by the Bureau of Economic Analysis and other Russian organizations. On the whole, the received scenario assessments do not come into conflict with each other .

These assessments show that if the currently adopted power-saving programs (possible scenario) are fulfilled, in 2010 greenhouse gas emissions will amount to 96% compared to 1990. Under favorable economic conditions and in case of substantial investments aimed at saving power (optimistic scenario), in 2010 emissions can be reduced, with guarantee, to 92% compared to the level of 1990. It should be noted that only in the worst economic scenario, slow economic growth during the following decade and refusal from economic reforms, greenhouse gas emissions can go up to 104% of the 1990 level.

The commitments assessment shows that the "free" tons-allowed - tons-allowed unused by Russia in the first budget period under the Kyoto Protocol (2008-2012) will amount to 1,000-2,000 million tons of CO_2 equivalent emissions allowed.

Assessment of the commitments of the developed countries for a period of 2008-2012 shows that the United States, Japan, Australia, Switzerland as well as a number of European Union states (specifically, the Netherlands, Sweden, Finland, and Great Britain) will find

themselves in most difficult situation due to the fact that, in spite of all the measures taken by these countries at the domestic level, they have not been able to keep within limits the continuing growth of greenhouse gas emissions.

Assessment the tons-allowed demand of said countries was made in the spring of 1998 by the Bureau of Economic Analysis within the framework of a research initiated by the World Bank. According to this assessment the total international demand for tons-allowed can reach approximately 2.5-3.5 billion tons of CO_2 equivalent emissions allowed. The main portion of this amount is accounted for by the United States (50%) and Japan which gives preference to joint projects as a mechanism of cooperation. The demand for tons-allowed of the European Union states is comparatively scanty; however, for some of these countries (e.g., the Netherlands) participation in the emissions trading system or implementation of joint projects may be of crucial importance.

The activities within the framework of the FCCC have already resulted in development of two federal purpose-oriented programs: "Prevention of the Dangerous Climate Changes and Their Negative Consequences" for a period of 1998-2000 (Resolution № 1242 of the Government of the Russian Federation, dated October 19, 1996) and "The Power-Saving System of the Russian Federation" for a period of 1998-2005 (Resolution № 80 the Government of the Russian Federation, dated January 24, 1998). However, these programs do not yet apply new financial mechanisms provided for under the Kyoto Protocol, primarily, attraction of investments in the process of greenhouse gas emissions trading.

Similar work can be done under other federal programs which are potentially connected to the implementation of the FCCC commitments of the Russian Federation, specifically, under Program "Waste" (central responsibility - the Russian Goscomekologiya) and "The Forests of Russia" (central responsibility - the Russian Rosleskhoz".

"Portfolios" with thoroughly developed projects must be prepared for all programs and ready to be forwarded to foreign investors interested in buying tons-allowed within the framework of both international emissions trading system pursuant to Article 17 of the Kyoto Protocol and realization of joint projects in compliance with Article 6 of the Kyoto Protocol. Said projects must meet the requirements of such organizations as the World Bank and the Global Ecological Foundation.

As concerns the implementation of commitments, the Kyoto Protocol will include, in parallel with emissions, discharges - absorption of atmospheric CO_2 by forests. Emissions here are all anthropogenic greenhouse gas emissions, and discharges - their portion specified in the Protocol: CO_2 discharges in forests, directly caused by the "afforestation", "forest restoration" and "deforesting" measures which have been taken beginning from January 1, 1990 and later.

This limits the opportunities of using forest planning/restoration measures for greenhouse gas emissions trading purposes. Yet, the overall potential of forest planning/restoration measures which could be used in addressing the problem of discharges in the Russian Federation is so big that even its small portion is significant and important

(the tentative evaluation of the total potential of the Russian Federation puts it at about 500 million tons of CO_2 per year, or around one third of the current CO_2 emissions in the country). Besides, in some cases forest planning/restoration measures can be much less expensive that measures directed at the reduction of CO_2 emissions in power engineering and industry. All this makes it necessary for the Russian Rosleskhoz to implement a complex of preparatory measures, including an inventory report on the measures taken beginning from January 1, 1990, which meet the accountability requirement under the Kyoto Protocol, monitoring and certification of this portion of discharges, preparation of a pilot set of projects aimed at encouraging investments and making first emissions trading contracts.

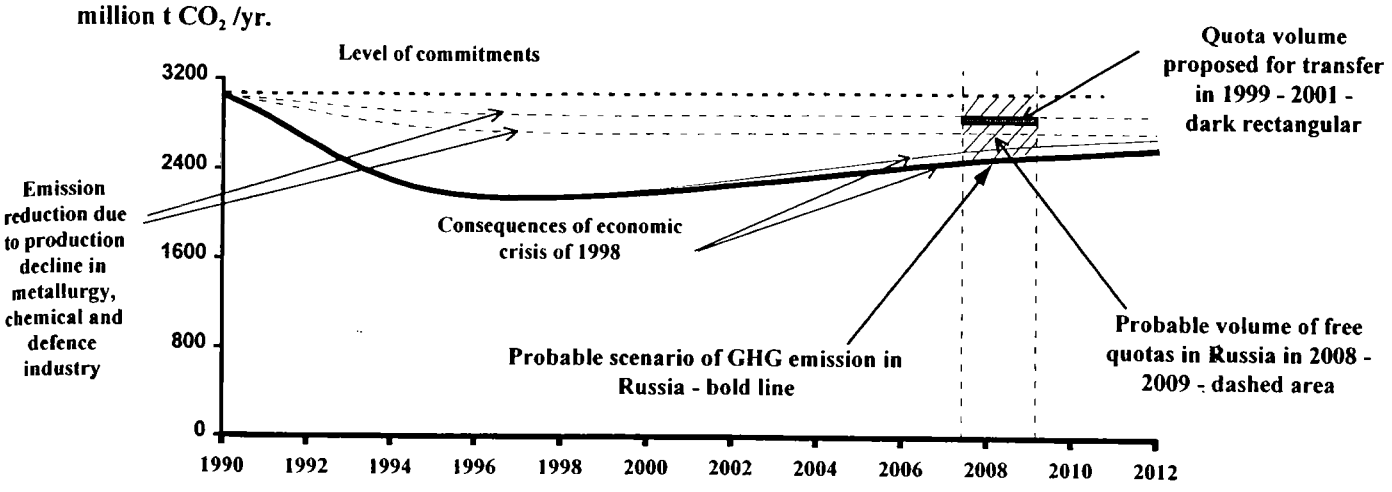
Special attention should be paid to projects involving the CIS countries, which have ratified the Framework Convention on Climate Change but which are not listed in Attachment I (Azerbaijan, Armenia, Georgia, Kazakstan, Turkmenistan, and Uzbekistan), and the developing countries of far abroad. In this case the Kyoto Protocol allows the Russian Federation to employ an additional compensation mechanism to replenish tons-allowed - "the mechanism of clean development". Within the framework of the aforementioned projects the Russian Federation will be able to obtain tons-allowed from these countries and use them to meet its commitments. It is important to emphasize that the Kyoto Protocol allows to start such deals within the framework of "the mechanism of clean development" beginning from year 2000.

When determining tons-allowed used at the early stages of trading beginning from 2000-2001 (the Russian Federation, the United States, and other "umbrella" countries press for it), the following assumptions could be used:

1) neither the Russian Federation nor potential emissions buyers should have any doubt that the Russian Federation has these tons-allowed;
2) in order to maintain their market price, tons-allowed must be considerably less than might be potentially required by the developed countries to match their actual emissions.

According to the current scenarios for two years (2008 and 2009) the Russian Federation will hold "free" tons-allowed in the amount of 1,000-1,800 million tons of CO_2 equivalent emissions allowed. It is suggested that in 2000 and 2001 less than 10% of the said amount, or 100 million tons of CO_2 equivalent emissions allowed should be used during these two years (this is approximately 1.5% of the total tons-allowed of the Russian Federation for 2008 and 2009). Said tons-allowed (100 million tons of CO_2 equivalent emissions allowed) account for approximately 3-4% of the potential requirements of the developed countries in 2008-2012. This quantity provides for minimal risks. Such results can be attained in any real scenario of GNP growth in our country (Drawing 1).

Figure 1 Scheme of estimation of possible quota proposed for early stage of quota transfer (50 million t CO_2-eqv. for transactions in 1999 - 2001 with quota delivering in 2008 - 2009)



On the other hand, quota proposed for transfer is already rather significant for the first step. We are speaking about rather large investments for implementation of wide-scale projects, therefore there is no reasons for increasing of proposed volume. Taking in to account uncertainty of early trading, identification of the next quota portion could be made only after first positive results, in the end of 2000 or in 2001. Notice once more that early transactions mean any forward or long-term option contracts and that should be no doubts that Russia has such quotas and its volume significantly less then potential demand.

4. Possible mechanisms of trade and organisation of large scale joint implementation projects

General approach to possible institutional scheme

As it was highlighted in the above, in the beginning of the first section of the report, boundary between two flexibility mechanisms: emission trading and joint implementation is not very clear and sharp. The reason is necessity of specified (targeted) use of any benefits. However there are principal differences which cause need in the both mechanisms, see Section 1. On the other hand, at present time, in developing of the first - simplest scheme of practical work it is reasonable to have one scheme and/or one order of steps. Certainly, that specific features of two mechanisms should be taken into account and that on the final step, in registration and reporting to the UN FCCC Secretariat one mechanism will be sharply identified.

Developing of institutional schemes for flexibility mechanisms in Russia was undertaken already in several studies. In particular, in "Study on Russian National Strategy of GHG Emission Reduction" of the Bureau of Economic Analysis, supported by the World Bank (1997 - 1998), in reports "Problems of organisation of GHG emission quota transfer" of the

Drawing 1

Diagram of Possible Tons-Allowed Assessments Suggested for Early stages in Emissions Trading

Reduction of emissions through cutback in production in heavy and chemical industry, defense branches of industry	Levels of commitments	The amount of tons-allowed offered for trading in 2000-2001 - black rectangle
	Possible scenario of greenhouse gas emissions in Russia - thick curve	The possible amount of tons-allowed unused by Russia in 2008-2009 - shaded area

On the other hand, the tons-allowed offered for trade are quite big for the initial stage - rather considerable investments are needed to implement large-scale and pretty expensive projects, which is confirmed by the experience of the United States during the early stages in SO_2 emissions trading. Considering the uncertainty of the early stages of emissions trading, it appears expedient to allocate further tons-allowed to be used during the next period upon receipt of the first positive results in late 2000 and 2001.

Different greenhouse gas emissions trading systems have been discussed in the developed countries for several of years now; this work has been significantly intensified after signature of the Kyoto Protocol. In July, 1998 in Moscow the Russian State Committee for Ecology in cooperation with USAID and with the participation of a number of American organizations held a U.S.-Russian seminar on these questions. Following are its main conclusions:

- A new segment of the world market is being formed now. It is impossible to immediately launch a full-scale trade.
- Postponement of the commencement of trade entails big losses. The early stages of trade are needed.
- Reinvestment of the means acquired from emissions trading is required, as well as further more substantial efforts to reduce greenhouse gas emissions in the territory of the Russian Federation.
- At the early stages of trade individual enterprises and organizations of the Russian Federation will not be in a position to enter the international emissions market.
- A trading system is needed which will involve few authorized organizations working within the framework of coordination of an interagency body responsible for the commitments of the country under FCCC.

This system does not rule out involvement of an international foundation or patronage of a bilateral body that can operate, for instance, within the framework of the U.S.-Russian Commission for Economic and Technological Cooperation.

The creation of a domestic tons-allowed recordkeeping and trading system is a mandatory precondition for the participation of our country in the international greenhouse gas emissions system.

It seems expedient to select a number of organizations authorized to prepare specific contracts for trading in the Russian greenhouse gas tons-allowed. These authorized organizations could be appointed by federal executive agencies responsible for the implementation of the country's FCCC commitments, based on the results of consideration, at an interagency level, of proposals made by the interested ministries and agencies.

In order to successfully realize these opportunity, it would be expedient to engage international organizations in the establishment in the Russian Federation of an appropriate organizational and methodical basis. In particular, the question of using resources of the Global Ecological Foundation both as technical aid and for implementation of investment projects could be addressed through the Russian Program of Investments and Improvement of the Environment (PIIE).

U.S. DRAFT 2/4/99

Joint Statement on Development of Flexibility Mechanisms to Reduce Greenhouse Gas Emissions

Vice President Gore and Prime Minister Primakov reaffirmed the commitment of the United States and the Russian Federation to cooperate in addressing the issue of climate change in both bilateral and multilateral fora. They noted with approval the close cooperation of the two countries in supporting full use of the flexibility mechanisms (joint implementation, the Clean Development Mechanism and emissions trading) outlined in the Kyoto Protocol. In particular, they reaffirmed the opposition of the U.S. and Russian governments to any percentage caps or other restrictions on emissions trading among eligible countries under the Protocol.

The Vice President and the Prime Minister endorsed development of a pilot program whereby U.S. private sector entities would purchase options to acquire a limited number of greenhouse gas emission allowances (authorized amounts) from Russia for the first budget period (2008 - 2012). Exercise of these options would be conditional on agreement among the Parties to the Protocol on specific rules and procedures for implementing the flexibility mechanisms and on the Protocol coming into force, as well as on enactment of appropriate implementing legislation in both countries.

Russia and the United States intend to negotiate a framework agreement under which the purchase of options will take place. This agreement will specify the Russian government agency from whom U.S. private sector entities may purchase options and will have attached to it a form of options purchase agreement. The U.S. companies would then acquire options pursuant to an options purchase agreement setting out the price and term of the options and the price at which the options could be exercised. Both the framework agreement and the options purchase

agreements would provide for a formal transfer of allowances (authorized amounts) from the Russian Federation to the United States if and when the options were exercised.

The proceeds from the sale of options would be placed in a special fund to support greenhouse gas emissions reduction or sequestration projects in Russia. These projects would be selected on a competitive basis from proposals submitted by Subjects of the Russian Federation or their authorized organizations. Project sponsors would be encouraged to obtain additional project funding from complementary sources.

The pilot program will be supported by ongoing U.S. assistance to Russia in monitoring and measurement of greenhouse gas emissions and verification of activities designed to reduce or sequester those emissions.

DRAFT: EPA/OIA: WANitze/GWaxmonsky
2/4/99 564-6600/564-6427
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U.S.-R.F. Joint Commission
Environment Committee Meeting
Moscow, Jan. 21-22, 1999

Notes on Climate Change Discussions with State Committee for Environmental Protection (SCEP)

1. V.I. Danilov-Danilyan, Chm. SCEP - The GOR has not taken a formal position on how to use revenues from GHG emissions trading. SCEP's position is that 100% should go for retrofitting major GHG emitters in all sectors (power generation, metallurgy, petrochemical, etc.), since this will have both economic as well as environmental benefits. The Ministry of Fuels and Energy (MFE) is supportive as are some elements in the Ministry of Economics, but other parts of the government will oppose. The likely outcome is a compromise whereby the majority of revenues will be dedicated to emissions reductions. Serious discussion of this issue, however, must await GOR signature of the Kyoto Protocol and Duma ratification. Experts are still working on the legislative and regulatory steps that would need to be implemented in support of ratification. Signature is the crucial next step–others will follow in its wake. There are no issues of principal impeding GOR signature; Deputy PM Kulik is agreeable, and signature could happen in February. But the GOR is distracted with a host of domestic issues, and a decision on signing the Protocol may simply slip repeatedly from the agenda. In addition, Hydromet Director Aleksandr Bedritsky is still formally the proponent for GOR action under the Climate Convention (see below).
[Comment: Dan-Dan is staking out a position as the only environmentally responsible interlocutor within the GOR on trading. Work with SCEP, he is saying, if you want to see maximum use of trading revenues for emissions reductions/increased sequestration. Whether he can deliver remains uncertain. Regardless, the GOR should be urged to sign the Protocol as a critical next step that will pave the way for further progress on confidence-building measures and other trading infrastructure.]

2. Dan-Dan (cont'd) - Scientific issues are still an important element of the climate agenda. Climate change research in Russia is being conducted in too many institutes and agencies with too little coordination. Some narrow-mindedness is still to be seen: those who say that Russia can only benefit from global warming place provincial interests above those of the international community. No regional benefits can outweigh the global harm arising from uncontrolled climate change.
[Comment: This is a paper-thinly veiled assault on Yuriy Izrael and probably Bedritsky, Dan-Dan's chief domestic rivals and critics in the climate arena.]

3. Vsevolod Gavrilov, Director, Dept. for Science, Monitoring, and Information, SCEP, and member of Russian delegation at Kyoto - SCEP is currently working on a national registry for GHG emissions based on existing SCEP oversight operations and data bases. GHG emissions are mainly based on fuel budgets; most enterprises of any size are already involved. Beyond registration, SCEP and others are seized with the legal and economic bases for transferring rights to emissions allowances under Russian law; it is necessary to define in legal terms the commodity being traded and to structure its disposition. The Federal Eco-Fund can play an

important role in Russia's GHG emissions trading regime. The new budget code incorporates the FEF as a "targeted" fund with high political visibility. SCEP has done preparatory work towards an initial trade: different scenarios are being worked up based on current legislation and regulations, and are discussing how to structure the proceeds of trading with MFE and the Federal Forest Service (FFS).
[Comment: Gavrilov is seeking to reinforce the notion of SCEP as a serious partner in structuring emissions trading in Russia, one capable of bringing in MFE, the large enterprises, and other crucial Russian players. Though nominally independent, the FEF management is closely associated with SCEP. It and the various oblast/krai/republic eco-funds have been in place since 1991-92 to manage revenues from pollution charges paid by enterprises and utilities. At the same time, the Finance Ministry continues to push for "consolidation" of the FEF into the federal budget. The possible role of the FEF and sub-federal eco-funds in managing revenues from GHG trading merits further study.]

4. Dan-Dan (again) - Rigorous monitoring of methane leakage from pipelines and agriculture may not be worth the effort from either an environmental or economic perspective. On the other hand, coal-bed methane emissions are enormous: five years ago, Russian coal mines were emitting as much methane as Gazprom was producing each year! Western approaches to solving this problem are attractive: Amoco has established a model mine for methane extraction and a joint venture/PSA in the Pechora Basin is operating a unit to recover methane for heat and energy. But Russia should concentrate its efforts over the next 10-12 years on [monitoring, measuring, etc.] CO2 emissions and sequestration.
[Comment: ???]

5. Sergey Kurayev, Director, Dept. for International Cooperation, SCEP, and former senior staffer at Hydromet - The international process has not been particularly vigorous or productive of late. Bilateral contacts are critical to maintain momentum. The U.S.-R.F. bilateral environmental agreement provides ample authority for cooperation on the climate policy front, and the GPC Environment Committee is the preferred venue. The G-8 environmental forum also has a role to play; the G-8 enviro ministers will meet in Germany in late March. SCEP hopes for strong U.S.-Russian coordination of positions there. The two sides have not made much progress on GHG trading since last summer's workshop in Moscow. The Russian side continues to support the decisions/recommendations of that exercise. Let us continue to use existing resources and venues to move ahead together on trading.
[Comment: Kurayev's made only passing reference to the bilateral Climate Change Policy Working Group (CPG), which has previously been dominated by Bedritsky and his allies in Hydromet. The implication is that CPG is no longer essential; the two sides have reached a shared understanding of the issues and have effective channels in which to address them. However, USG interests may require preservation of the CPG forum as long as Hydromet plays a significant role in Russian climate change policy.]

6. Aleksandr Averchenkov, head of the National Pollution Abatement Fund (NPAF) established in 1994 under a World Bank environmental loan - SCEP has submitted a GHG emissions trading concept to the GOR for interagency approval. [Note: Nitze et al. brought back Russian text of SCEP's draft trading concept and an accompanying analysis. State Dept. Language Services is working on the translation.] On the Russian side, the principal actors would be public sector. All

proceeds (!) from trading would be plowed into environmental projects. NPAF is developing a GEF proposal to support methane recovery in the Kuzbass, building on a technical assistance project managed by EPA; initial funding is already in hand and UNDP is involved. The U.S. should consider participating financially. A separate UNDP project focuses on GHG control policy (monitoring, verification, etc.), energy efficiency upgrades, improved forest management, and introduction of alternative energy sources in protected areas. Initial funding is expected by the end of March.
[Comment: Averchenkov is heavily involved with World Bank and GEF program managers; he always offers practical, hard-headed observations with a clear bottom-line. The NPAF has been under fire of late from the Finance Ministry, and existing GEF-funded programs in Russia have been impacted by recent difficulties in the banking sector. Averchenkov is casting himself as part of the SCEP team but more financially focused and project-oriented than most of his colleagues. The GEF project in the Kuzbass bears looking into.]

7. Aleksandr Solovyanov, Deputy Chm., SCEP - Several questions: Does the U.S. side prefer to trade bilaterally in GHG emission allowances? Would revenues from such a trade be in any way tied? Would U.S. private sector entities be prepared to make payments to the Russian government under emissions trading? Would the U.S. be willing to participate in an international auction or bourse for the sale of Russian allowances? Some Russian regions are interested in participating in international trading of GHG allowances, and SCEP is wrestling with this problem.
[Comment: Solovyanov seemed to be signaling what SCEP sees as important sub-issues in international emissions trading. It might be useful to provide a considered U.S. response to these in further communication with SCEP and the GOR on trading.]

8. Dan-Dan (in concluding remarks) - Welcomes a March GPC deliverable (joint statement–U.S. side to draft) to move ahead on GHG emissions trading. The idea of an "experimental" or "pilot" forward trade should be explicitly mentioned. A separate "protocol of intentions" could address practical joint activities and the consolidation of funding from both sides to support such activities.
[Comment: Dan-Dan seems fully prepared to make use of the GPC process to overcome any GOR inertia on emissions trading, and to ensure that SCEP (not Hydromet) has the GOR lead.]

Next Steps:

a. U.S. side to present draft GPC joint statement to SCEP c. mid-February, incorporating as appropriate points from the July 1998 SCEP draft joint declaration on GHG trading.

b. Translate and circulate for interagency review SCEP's draft concept for GHG trading (awaiting GOR approval) and accompanying analysis of Kyoto Protocol "flexible mechanisms."

c. With interagency concurrence, explore U.S. industry interest in forward trading with Russia.

d. Approach S/NIS/C, AID, and other USG sources to compile leverage funding (to include

technical assistance) for any private sector commitment.

e. Finalize two pending EPA/OAP grants to Russian partners on 1) oblast-level GHG inventories and 2) legal/regulatory fixes necessary to support Russian participation in trading; move forward on existing coal-bed methane recovery project, DOE/Battelle energy efficiency investments, and examine potential GEF and USAID/FSA funding for emissions reductions in Russia.

f. Assemble these as a package of initiatives and circulate for interagency clearance in time for presentation at March 1999 GPC meeting and possible inclusion in bilateral framework agreement or "protocol of intentions."

g. Seek interagency comment/clearance on Russian draft of framework agreement on GHG trading (expected by end February?).

DRAFT: EPA/OIA: Gwaxmonsky
2/5/99 564-6427
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EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

cc: JY JA SP QF Comp

January 20, 1999

MEMORANDUM FOR SUSAN WICKWIRE, OFFICE OF GLOBAL CHANGE
STATE DEPARTMENT

FROM: JEFF FRANKEL QF

SUBJECT: State Department's Climate Change Talking Points for Environment Committee of Gore-Primakov Commission

We offer the following three-part suggestion.

1) Remove from main set of talking points the three page-2 bullets that begin as follows: "We noted..." "Russia could use a portion of these proceeds..." And "Proceeds could also go toward..." Their use might exceed the interagency consensus at this time.

2) Insert in their place a bullet along the lines: "To allay concerns from some [i.e., some Europeans and environmentalists] that the trading system might not produce genuine environmental benefits, we think that some further step may be needed on the Russian side, simultaneous with the revenue transfer. We would like to hear any ideas the Russian side might have on this score."

3) Then, if and only if the Russians sound responsive and ask what ideas **we** have on that score, we respond as follows:

   - One possibility is using the revenue for environmental purposes. (The three omitted bullet points would come in here.)

   - Further, I would suggest a second possibility that could be explored at this point, the idea explained in my memo of 1/19: A high-level US-Russia deal would offer them whatever private-sector permit-futures money we can put together *in exchange, not for any commitment about how they will spend the money, but for a commitment that part of their IMF-negotiated budget plan will include a reduction in their fossil-fuel subsidies* (with the budgetary savings earmarked for such social priorities as paying pension arrears).

It might be premature to raise either of these possibilities with the Russians this week. In that case, our people would not go beyond item (2).

cc: Melinda Kimble, State
Monica Eppinger, State

FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...

EPA

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Washington D.C. 20460

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The EPA is taking steps NOW to ensure no disruption in service or environmental protection occurs when our data systems convert to the year 2000. We are preparing for the year 2000 --- are you?

112 ISSIG Papers - for the meeting Thursday @ 1:00 PM

Page 1 of 6 (including cover sheet)

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		Gary Waxmonsky (t 564-6427 f 565-2412)
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Possible Framework for Early Greenhouse Gas Emissions Trading Agreements with Russia

Purpose of Early Trading Agreement

This paper describes a potential agreement between the U.S. and the Russian Federation on a framework for early international emissions trading under the Kyoto Protocol. The agreement would allow U.S. private sector firms to make early contracts with the Russian government (or legal entities empowered by the Russian government) for purchase of GHG emissions allowances drawn from the Russian emission budget under Kyoto. U.S. firms could use these allowances to substantially reduce the costs of meeting potential GHG reduction obligations. On the seller's side, Russia would agree to dedicate proceeds from these early contracts to (1) early development of the national emissions measurement and reporting system needed for compliance and trading eligibility under Kyoto, and (2) early investment in GHG reducing measures such as energy-saving plant modernizations, as well as in forest carbon sequestration projects — investments that would improve the Russian economy and further reduce GHG emissions.

Since it is not our intention to be exclusive, this agreement could also be open to other potential seller countries (principally the Ukraine) and to the private sector in other potential buyer countries (members of the Umbrella Group and beyond). This framework could lead to early market activity that benefits all participants and helps get international emissions trading "off the ground."

How Would Early Trading Work?

An early trading framework agreement would allow a U.S. private entity (or entity from another buyer nation) to enter into a contractual commitment with the government of the Russian Federation (or another seller nation, such as the Ukraine) for future delivery of GHG emission allowances drawn from the seller country's "assigned amount" under the Kyoto Protocol. The contract would commit the seller government to transfer an agreed-upon number of tradeable allowances (denominated in one-ton units of carbon dioxide equivalent) to the buyer firm; the actual transfer of the allowances would take place at a specified time, probably following the seller country's ratification of the Kyoto Protocol. In exchange, the buyer firm would pay a portion of the purchase price "up front" and the remaining amount upon actual delivery of the allowances.

The framework agreement would also include a specific commitment by the Russian Federation (or other sellers) to dedicate the proceeds of early trading to two purposes: (1) the development of the monitoring and reporting infrastructure that they will need in order to be eligible to trade under the international trading rules being negotiated in follow-up to Kyoto; and (2) investment in concrete modernization and efficiency projects to further reduce their emissions and in projects to increase absorption by forests and other sinks.

As an alternative to paying the proceeds into the dedicated fund, the agreement could also provide for buyer firms to make direct investments in specific modernization or efficiency projects (i.e., "joint implementation" projects) in return for a legal commitment for future delivery of tradeable allowances by the seller government.

The agreement could also include commitments by Russia (or other sellers) to take concrete steps to remove current barriers to direct investments in emission reduction and absorption projects.

Participation by U.S. private entities would be entirely voluntary. The proposal does not involve any transfer of U.S. government funds to the Russian Federation (or other sellers) for purchase of allowances, although limited technical assistance from USAID/EPA/DOE would be expected to continue. This proposal also does not require early implementation of a domestic emissions trading program in either the U.S. or Russia.

The number of firms that would be willing to make such contracts, and the prices they would be willing to pay for contractual promises to deliver allowances in the future, will depend critically on how certain and reliable such promises appear to be. While establishing a favorable investment climate in Russia or other potential seller countries is a much broader task, specific steps towards developing confidence in government sales of GHG allowances could taken by entering the proposed framework trading agreement. Other confidence-building steps forward specific to GHG emissions trading are suggested below.

Russian government representatives who work on climate change have already indicated great interest in an early trading arrangement and willingness to dedicate the funds from early trading as proposed here. Given their limited authority, however, we would have to pursue this issue at much higher levels of their government. Discussions on this type of arrangement have not yet begun with the Ukraine.

Basic Elements of the Framework Agreement

The U.S. and the Russian Federation would negotiate an inter-governmental agreement, memorandum of understanding, or other appropriate instrument that would commit the two countries to an early trading arrangement on the basis of the principles described above. (Other countries could be included in the same agreement, or there could be a number of parallel bilateral agreements.) The principal elements would provide for:

- Contracts between buyer-side private sector legal entities and seller country governments (or legal entities empowered by their government) for the future delivery of tradeable units, with partial payment up front and full payment on delivery after seller ratification;

- Seller country agreement to dedicate the proceeds of early trading to development of the needed measurement and reporting infrastructure and to investment in specific emissions-

reducing modernization and efficiency projects and forest projects to increase absorption by sinks;

- Buyer country agreement to recognize tradeable allowances purchased by and delivered to its private sector entities as valid for use against domestic obligations if and when Kyoto is ratified.

What Would the Russian Federation (or Other Seller Governments) Need To Do To Advance This Proposal?

The Russian Federation (or other seller country) would need to develop the legal structure and administrative arrangements to enable itself to enter legally binding contracts to deliver tradeable allowances to purchasers at a set point in the future. This would include giving a competent ministry the obligation to carry out such transactions and to set up and maintain a national registry to account for sales of allowances, including those that have been obligated, and actually delivered, to purchasers. In addition, the Russian Federation (or other seller country) would need to establish the legal and administrative framework to dedicate funds received to needed monitoring and reporting enhancements, as well as to emission abatement and absorption projects.

A firm legal basis in these areas would increase certainty for foreign investors and, therefore, increase the value of early tradeable units. This may require issuance of a new Russian Federation government directive and possibly passage of legislation.

What Would the United States Need To Do To Advance This Proposal?

The U.S. government would need (1) to set up a domestic means for tracking early trades and (2) to provide assurances that allowances purchased by U.S. private entities from Russia (or other sellers) will be accepted to meet domestic obligations in the event that the Kyoto Protocol is ratified. In addition, it would be essential to continue providing potential seller countries with limited technical assistance through USAID, EPA, and DOE.

How Would This Arrangement Be Perceived in the United States?

Since the early trading arrangement would be on a purely voluntary basis, much of the U.S. private sector should be supportive. Broad issues of uncertainty about doing business in Russia would discourage investor interest and lead to significant price discounting of tradeable allowances. Low prices may attract investors and entities wishing to hedge against domestic restrictions in the future.

Opponents of Kyoto in the private sector or in Congress may try to classify this activity as premature or "back door" implementation. However, because U.S. private sector participation would be voluntary and without governmental expenditures (beyond limited technical assistance),

such a characterization is unlikely to take hold.

Some U.S. environmentalists would likely view this arrangement as a positive step. A Russian commitment to dedicate the funds to needed monitoring and reporting infrastructure, as well as to concrete emissions-reducing projects, would go a long way to meet their concerns about "hot air trading."

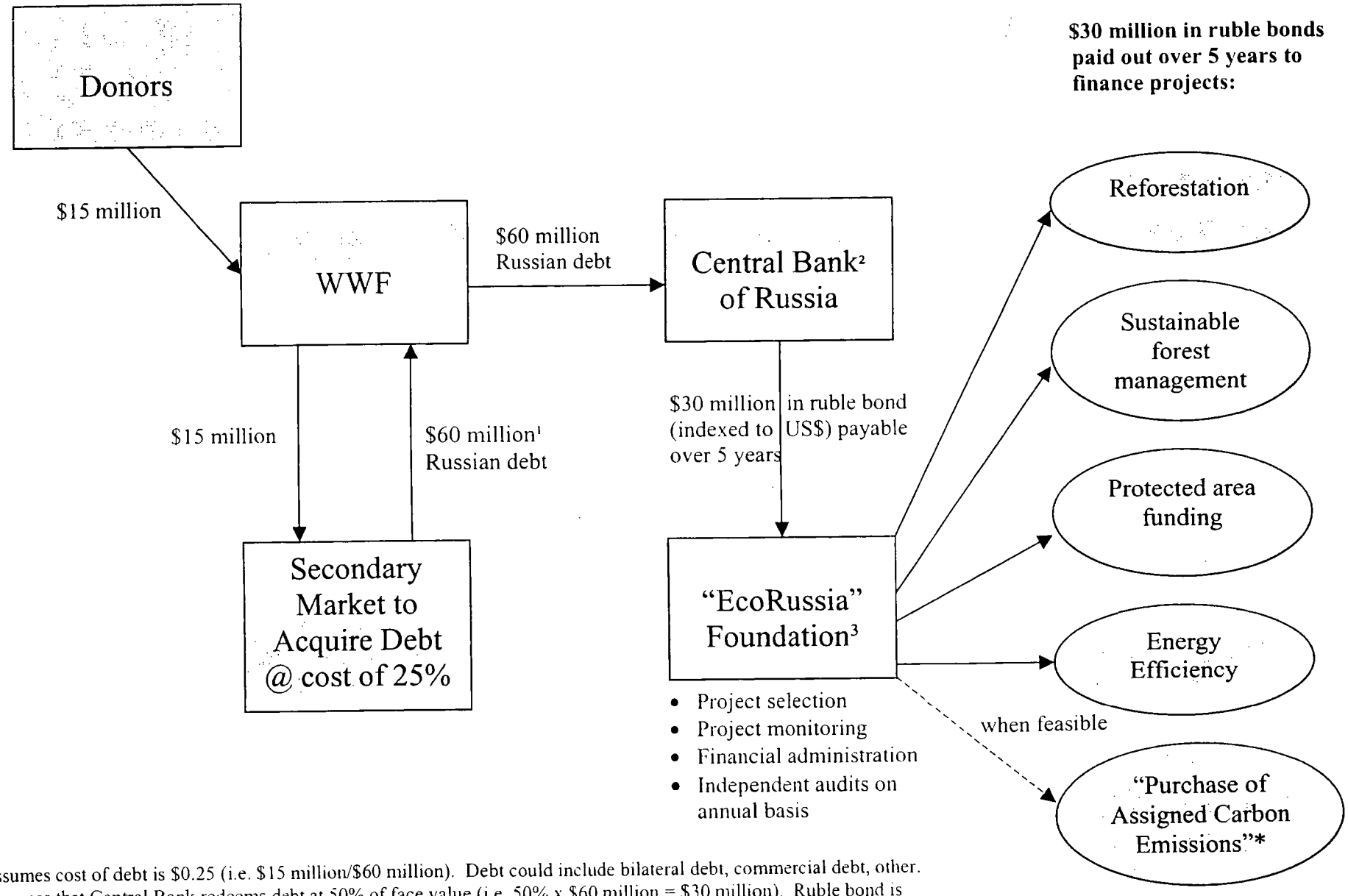
How Would This Arrangement be Perceived by the European Union?

One of the European Union's objections to trading with Russia is concern over "hot air." Russian representatives have already proposed to dedication the funds from early trading as described above, in part to diffuse the "hot air" issue. As with U.S. environmentalists, a Russian commitment to dedicate the funds to green purposes as described above would go a long way to meet their concerns. Maintaining an open, non-exclusive arrangement would also reduce tensions with the EU.

How Would This Arrangement be Perceived by Russia?

Russian government representatives working on trading have expressed great interest in an early trading arrangement. Their first thought and clear preference is for a U.S. government-funded purchase. It will take some work to familiarize them with the arrangement suggested here, in which the U.S. government role is to facilitate private sector investment. More important, it will take very high-level interaction to gain sufficient attention and commitment from levels of the Russian government who are capable of taking the actions needed on their side to make this arrangement viable.

Russia: Debt-for-Nature Swap with a Carbon Twist (Illustrative example only)



[1] Assumes cost of debt is $0.25 (i.e. $15 million/$60 million). Debt could include bilateral debt, commercial debt, other.

[2] Assumes that Central Bank redeems debt at 50% of face value (i.e. 50% x $60 million = $30 million). Ruble bond is indexed to US$ to protect real value. Debtor may not necessarily be Central Bank depending on which debt is used.

[3] Hypothetical "EcoRussia" Foundation could also secure co-financing to complement debt swap proceeds over life of projects.

* More precisely, this would mean the purchase of Russia's carbon emissions assigned under the Kyoto Protocol and required retirement of these purchased emissions.

Bureau of Economic Analysis

Study on Russian national strategy of greenhouse gas emission reduction

Executive summary

Moscow
May 1998

Table of contents

Introduction

The main output of the study was the conclusion that Russia is able to meet its obligations fixed in Kyoto Protocol. Even under the pessimistic development scenario (fast growth of GDP without structural changes and growth of GHG emissions) GHG emissions will not exceed Russia obligations established by Kyoto Protocol till 2012. Besides Russia has a great potential to trade emission reduction units (ERUs). Within the first budget period (2008-2012) Russia will not use its total quota of GHG emissions. With regard to technical reconstruction, structural changes, establishing of the effective mechanism for domestic GHG emissions regulation, speeding up of reforestation and afforestation, etc. Russia could increase its potential to transfer ERUs substantially.

Kyoto Protocol established for Annex 1 countries legal binding obligations for GHG emissions. These obligations have a different impact for the different FCCC parties. Some countries (USA, EC, Japan and some others) have to apply significant efforts to meets their obligations. Other countries (Russia is among them) could easily meet their obligations and will have significant unused quota of GHG emissions. There are different possibilities for international cooperation stipulated by the Protocol to meet obligations jointly. That cooperation could bring essential benefit to Russia. They could be counted for millions of USD even based on a very pessimistic estimation.

Broad international cooperation will speed up technical reconstruction, diffusion and dissemination of modern technologies in Russia. That technologies will meet the most strict ecological standards, standards of energy intensity, sustainable forest management, etc.

To implement that possibilities in practice Russia should play an active role at the international negotiations and propose specific GHG trading system. That system should be constructed in a way that will make it possible:

- to use as much as possible Russian supply potential;
- to be attractive for Russian partners.

During COP-4 in Buenos-Aires (fall, 1998) we expect establishing of principles for cooperation of parties and in particular for emission trading. That principles will define Russian incomes from emissions trading in future. Under favorable international regulation a lot depends on the Russian domestic GHG emissions regulation. It should include:

- effective mechanism to control GHG emissions;
- monitoring and reporting of GHG emissions;
- effective mechanism of GHG market management (registration of trades, etc.);
- channelisation of foreign and domestic investments in ERU projects.

In our study we present deep analysis on the questions mentioned above. we present recommendations for the Russian strategy for emission trading.

1. Market potential

The Kyoto Protocol created the first legal base for transferring of ERU and emission trading by GHG units or by emission quotas. In general the Protocol establishes commitments for Annex I countries to the Convention (developing and EIT countries excluding Belarus and Turkey) for the period after the year 2000, specifying targets in the form of emission budget of 2008-2012, known as the "first commitment period". Obligations are written in terms of CO_2-equivalent emission and cover all GHG, the three major CO_2, CH_4 and N_2O, and additionally HFCs, PFCs and SF_6. Countries have individual targets, *inter alia*, EU members and Switzerland -8%, USA -7%, Japan -6%, Russia and Ukraine 0%, different other EIT countries 5 - 8% below level of the base year (usually 1990, but 1995 may be applied to three additional gases). An additional kind of obligation is necessity to have national monitoring and verification/ certification system in a year prior to 2008. This obligation is considered as rather difficult for Russia. GHG emissions from Annex I Parties in 1995 were 5 percent lower than 1990 levels, but it is mostly caused by economic decline in EIT countries, and most of all, in Russia.

The Protocol allows Annex I Parties:

1) to implement their commitments jointly by entering into a formal agreement to undertake their obligations jointly (Article 4),
2) to transfer emission reduction units from projects (Article 6)
3) to undertake trading of their emission allowance (Article 17).
4) a form of joint implementation between Annex I and non-Annex I countries is "clean development mechanism" (Article 12) where emission reductions can be earned within a non-Annex I Party and used towards the Annex I Party's commitments. Then transfer of emissions reduction could take place in a form of transfers of certified emissions reductions.

On the other hand, a lot of questions are still open. Their clarification is an urgent and essential task. Therefore a lot international meetings and activities are planned in 1998 to prepare relevant proposal for COP-4 in Argentina in November, 1998, where international rules, regulations and other requirements and clarifications should be made.

International organizations and private business associations are interested to develop emission trading as a new global market. Many countries established official national entities to facilitate this activity. Usually they are directly linked with national Joint Implementation (JI) programs and relevant institutional systems (e.g. JI programs of USA, Germany, Holland, Switzerland, Finland, etc.). There are a wide range of activity, from directly related to the UN organizations (e.g., GHG Emissions Trading Policy Forum established by UNCTAD, Earth Council and Centre of Financial Products - permanent program for 1997-2000) to NGO (e.g., Emissions Marketing Association in the U.S. which hold already several conferences). The Global Carbon Initiative of the World Bank can be considered as one of largest, credible and feasible programs (additional details are provided below in sections).

Currently Russian total GHG emission is 70% of the level of 1990, however its reduction has been already replaced by stabilization. According to the prognoses from the Second National Communication, in the budget period of 2008-2012 GHG emission can even exceed level of 1990 (with no implementation of new technologies but very fast economic growth). More probable scenario leads to about minus 4% at the year 2010 (this year is considered as the middle of the budget period). More optimistic approach to the implementation of new energy and fuel saving technologies gives us -8% (92% of the level of 1990) or about 250 Mt CO_2-equiv./year as a potential annual volume of emission trading in the years 2008-2012 (or totally 1.25 billion t Mt CO_2).

Practically only one critical parameter is different in these scenarios - energy efficiency of GDP. In basic scenario it is negative but close to constant, almost nothing new technologies implemented. Values of probable and optimistic scenarios are close between one another and, in general, close to upper limit of probable range: -2%/yr. On the other hand, GDP growth is almost invariable in the scenarios, in average for 1998-2010 it is about 4%/yr. This fact certainly indicates that additional calculation are necessary. Therefore the model was specially designed and run for this purpose.

Model of GHG emissions and especially CO_2 emissions in 2008-2012 is based on modified G. Hughes[1] model that describes Russian economy in transitional period. Projected GDP volumes define total production level and characterise scenario of transition (minimal realistic - 10% growth to the level of 1990 by 2010, and maximal optimistic - 12% growth for the same period). Under model suggestions Russia also will be able to fulfil commitments and, besides that, will have larger potential for participation in emission trading than it is declared in the Second National Communication. The volume of potential depends on various factors that should be specified later. Many important things are not clear now (e.g. limits of forest sink use require additional clarification and special work is started by the FCCC Secretariat just in March, 1998). Current calculations allow to estimate order of magnitude as from 1 to 3.5 billion t CO_2 in the five years of 2008-2012.

In the Hughes model for initial state we assume the level of 1990 for final- the state of economy with modern high-efficient technologies, typical for the developed countries (USA, Great Britain, Spain). Each of these states is characterised by a number of parameters, such as power of industry sectors, energy intensity and efficiency of equipment and etc. The model assumes consequent change of technologies during transitional period, taking into account transition to market.

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[1] That is input-output model developed by the World Bank consultant Gordon Hughes. It was modified for Russia in 1995-1996 and adjusted for our research in 1997.

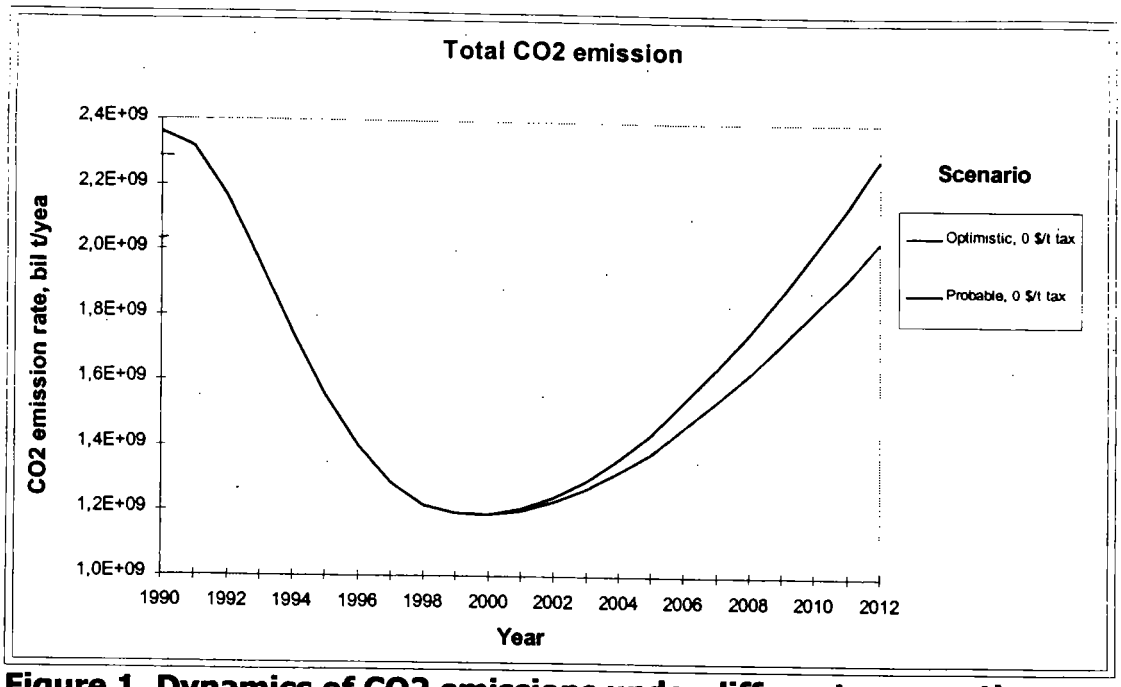

Figure 1. Dynamics of CO2 emissions under different assumptions about GDP growth

In any case Russia can fulfil its commitments and, besides that, will have potential for participation in emission trading. The volume of potential depends on various factors that will be considered later.

Table 1. Total potential of Russia in the first budget period 2008-2012 (in bln.ton of CO2 reductions and sequestration)

Sectors	Pessimistic scenario[2]	Optimistic scenario[3]
Industry, energy, transportation (model calculations)	2.66	3.58
Additional net sinks in forestry sector	0.17	0.34
Total	2.83	3.92

Other EIT countries, especially Ukraine also have large potential for supply. Estimates for four EIT countries were made below in consideration of international demand. There are not enough data on Ukraine, therefore estimates for this country were made separately. Order of magnitude of Ukrainian potential is one third of the Russian value. Developing countries also have a large potential, if they take obligations on emission limitation. However it is almost unfeasible for the first commitment period considered here. In 2008-2012 only clear development mechanism may works, but its

[2] We assume more rapid GDP growth and slow increase of area for reforestation purposes.

[3] We assume realistically slow GDP growth and more rapid reforestation rates.

rules are still very far from clarity (e.g. forest sinks are currently out of this mechanism).

Special investigation shown that there is a great international demand in emission trading. Prognostic calculation were carried out under two scenarios, so a range was also estimates. They have more qualitative or illustrative character. However some conclusions can be made. Total potential excess of GHG emission above the commitments of developed and several EIT countries in 2008-2012 can be from 10 to 15 billion t CO_2-equiv. The main contribution is related to the U.S. (from 60 to 80%). However contributions of other countries, especially Japan, Canada and Australia are also very large.

European Union in its current composition (15 members without probable EIT participants) will also has deficit of GHG emission reduction: from 500 Mt CO_2-equiv. to 2000 Mt CO_2-equiv. in maximum case. Probably 15 EU countries will be able to solve problem without international emission trading, but under conditions of developed GHG unit market it may be profitable to buy some quota. In this case possible volume of emission trading of four countries (taken only as an example: Finland, Netherlands, Sweden and UK) is from 70 to 150 Mt CO_2-equv.

Calculation for four EIT (Czech Rep., Slovakia, Poland and Hungary) countries shows that, first of all, uncertainty includes even "sign" of the problem. Under one scenario, these countries have significant deficit of GHG emission reduction (about 300 Mt CO_2 -equiv.). Under an another scenario, they have large offset (about 700 Mt CO_2-equiv.). Thus we have an evident conclusion - choice of development scenario is crucial (in the better case it can provide large carbon benefit, in worse case significant expenses for GHG units).

We can not consider total deficit of GHG emissions budget as potential demand for ERU. We present in Table 2 reasonable estimation of international demand that we discussed in Task 3 of the report.

Table 2. Draft estimation of international GHG unit demand in 2008 - 2012 (in mil. ton of CO2 equivalent)

	Max demand	Min demand
Europe total	**282**	**169**
Australia	**132**	**79**
Canada	**355**	**214**
USA	**1755**	**877**
Japan	**608**	**365**
TOTAL	**3131**	**1703**

Probable range of the total GHG unit demand potentially linked to Russian supply is a very rough estimate. However it gives us order of magnitude and also provides possibility to correct values if additional data are available.

There is an idea of international open and gentle umbrella in commitment implementation. Interest can be not only from countries with big problems of emission reduction but also from countries where emission reduction are more expensive than in Russia or in other EIT countries. Thus it is possible to conclude that ***Russia could benefit from new technologies and additional investments***, and simultaneously ***European and other developed countries could benefit from technology transfer and cheaper GHG emission reduction***.

2. Carbon market development

2.1 The definition of good at the carbon market

At present the good at the carbon market is not well defined yet. The good could be

- unused by the selling party quota for GHG emissions (the difference between permitted volume of GHG emissions and actual emissions within the budget period);
- additional ERU achieved after implementation of projects aimed at GHG emissions reduction or carbon sequestration increase (production of ERUs).

Additional ERUs could be obtained after realisation of two project types:

- joint implementation projects (JI projects). In this case project is to be implemented jointly by two partners;
- ERUs production projects for realisation of ERU producer himself.

Measures to produce ERUs will increase unused GHG emissions quota. That is why in fact we talk about the same good. The difference is that based on the analysis of Kyoto Protocol and negotiations process we can come to the conclusion that each type of ERUs will appear at the carbon market at the different stages of its development.

Several channels exist for GHG emission reduction trading. The most developed form of such trading is traditional JI. Under this approach projects and emissions reductions would be credited either by forward sales (commitments or pledges) or by future crediting from the 2008-2012 sovereign budget. Domestic reductions from purely Russian sources could also move through these channels. Finally, forward sales or option sales of portions of the Russian budget could also be undertaken. The stages of carbon market development are presented on the Figure 2.

For Russia the earlier start of JI and emission trading means the greater benefit. Late trades will result in losses presented in the Table 3.

Table 3. Potential losses for Russia from the late start of transactions on emission trading on the base of ERUs production (bln. USD at the price 10 USD per 1 ton of $\tilde{N}\hat{I}_2$ equiv.)

Transactions start at	2000	2001	2002	2003	2005	2008
Losses	0	1.4-1.9	3.1-4.2	4.8-6.7	8.7-12.6	14.7-22.9

That is why it is in the interests of Russia to undertake all possible efforts to speed up carbon market development and to promote maximum utilisation of unused GHG emissions quota at this market without differentiation due to the origin of this potential.

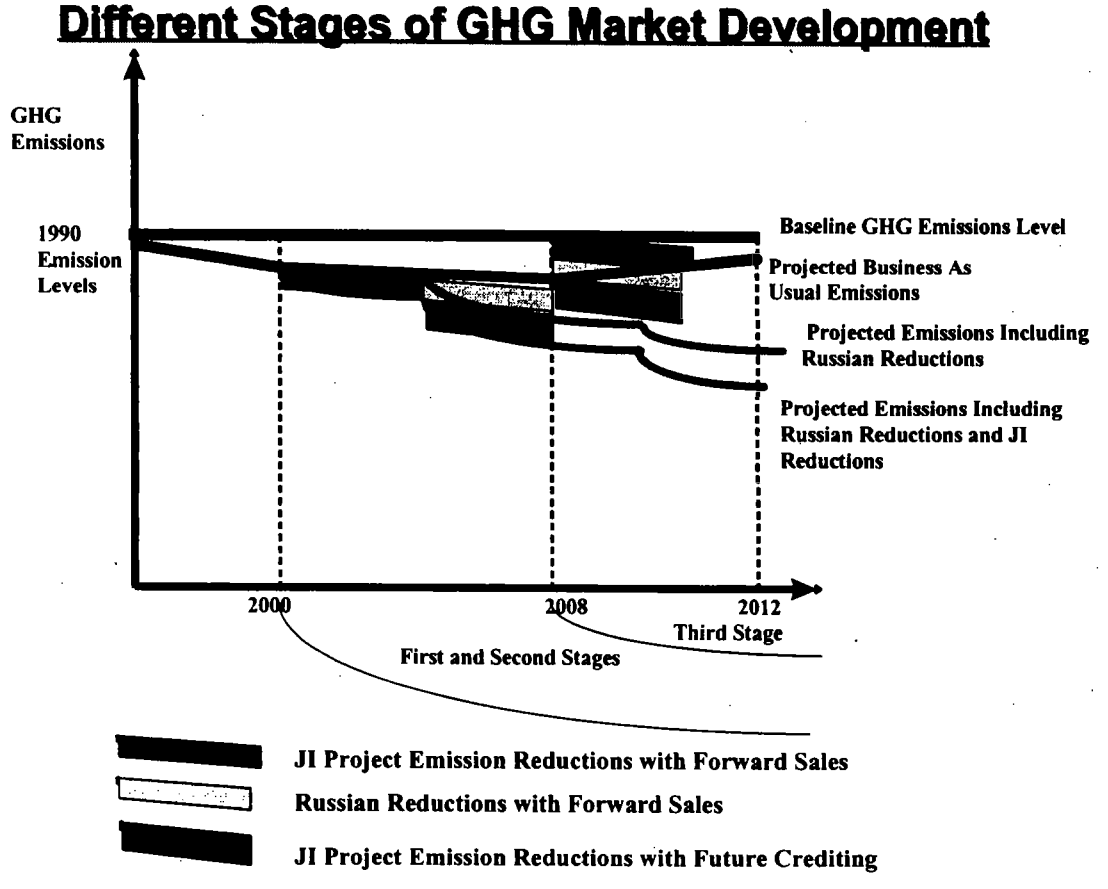

Figure 2. Stages of Development of the GHG Market

2. 2 Institutional support for the carbon market

Russian contribution to carbon market development should be concentrated on two main directions:

- participation in the negotiation process and promotion of decisions corresponding to Russian interests;
- creation of adequate institutional conditions inside Russia.

The Kyoto Protocol as well as the Convention as a whole attracts a great attention to verification, reporting and registration system. Special Articles 5 and 7 (FCCC/CP/1997/L.7/Add.1[4]) deal with reporting and establishing of relevant national system no later that one year prior to the start of the first commitment period (2008-2012). Special Guidelines for such national systems should be developed internationally under conventional IPCC process and should be adopted by Conference of the Parties serving as the meeting of the Parties to the Protocol. Establishing of an appropriate system looks like very difficult obligation for Russia. It is possible to expect that system for GHG units traded or transferred should be more strong and sharp than for other units (e.g. FCCC format for JI projects requires significantly more information than routine parts of GHG inventory).

Currently only question on registration looks like non difficult - FCCC Secretariat can be registration entity and entity for organisation of audit, possibly by development of in-depth review system used for National Communications (e.g. see FCCC/IDR.1/RUS or FCCC/IDR.1/FIN). Other questions are actually subjects of intensive elaboration and development. At present we can say only about use of system for National Communications (guidelines, timing and process of consideration see in FCCC/CP/1996/15/Add.1) as a background for establishing in future more comprehensive system of verification.

As each developing market, market of GHG emissions reductions is a very risky one. Usual financial risks for such market are accompanied by specific risks, that occur due to specific commodity circulating there. GHG reductions as a commodity are subject to international agreements, macroeconomic development of all countries participating, structural changes in each country, energy and forestry sectors development, energy prices, institutional constraints for market development in transition countries.

Russian strategy in domestic policy should be aimed at reduction of risk and transaction costs for ERU project implementation. That will facilitate better promotion of Russian ERUs and will ensure higher benefits.

Specific risks for GHG project implementation are described in Czech study (A National Strategy for Joint Implementation in the Czech Republic, 1998, p. 53-54). It is very important to create a clear system of property rights for unused quota and distribute them only through agencies with transparent system of project selection and implementation.

The World Bank proposed to establish Carbon Investment Fund - Global Carbon Initiative. That fund meets the aim to supply high quality GHG reductions at a competitive price. Another aim is to ensure that suppliers and buyers get a fair share of carbon benefit. Through this Fund it is quite possible to reduce GHG reduction costs and risks primarily by pooling funds of investors to finance a portfolio of offsets projects. By pooling different projects the Fund diversifies the risks of project failure.

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[4] All documents are available at the UN FCCC home pages http://www.unfccc.de

CIF investors are likely to include both governments and private sector entities. Currently 5 governments and 12 companies have signed memoranda of understanding indicating that they have an interest in investing in the CIF. CIF's pipeline should consist of projects in the economies in transition and in the developing countries and result primarily from the World Bank Group pipeline, but would also be open to third party projects.

2.3 Existing institutional preconditions for emission trading in Russia

According to the Kyoto Protocol, JI projects and activity are joined with other kinds of multilateral and bilateral activities. Thus some features of JI (e.g., official adoption of projects, existence of special criteria) may be extended and applied to all international activity.

Russian Federation established special JI structure, including special official authorised entity for coordination of JI activity and consideration of projects - Interagency Commission of the Russian Federation on Climate Change Problems. The Interagency Commission is also coordinator of the special Federal Target Program "Prevention of dangerous climate changes and their negative consequences". This is official program of the Russian Government, included in the Federal Budget (funding, probably, will be started in 1998) and specially developed and aimed at climate change mitigation and adaptation activity. It is essential that JI is considered as important part of the Federal Program. So there is official link between Government's activity and JI projects.

As of December 1997, there are nine JI projects officially adopted by the both: Russian and foreign sides. Four are under successful implementation. Three projects are completely adopted by two sides but they are waiting for start of implementation. Two projects were completely adopted by two sides just recently (November, 1997), however the first positive steps have been made.

Obviously carbon market development requires development of its institutional structure in Russia.

2.4 Capacity building at the different stages of carbon market development

With regard to the stages of carbon market development we formulated the main steps to be done by Russian Government to implement the strategy of emission trading. The strategy should comprise the following steps:

Stage 1. Development of JI institutional scheme in Russia

1. Commitment to achieve agreed limits of net emissions (agreed in Kyoto);

2. Establishment and enforcement of baselines for domestic sources on national, sectoral and project basis;

3. Creation of credible institutional structure for JI projects, providing proper project selection, ERUs verification, project monitoring, reporting and insurance.

4. Elaboration of national system of project certification and carbon balance accounting with regard to JI projects;

5. Development of national and international co-financing strategies for JI projects implementation.

6. Develop authorised scheme for GHG emissions potential accounting, mainly based on aggregate fuel consumption figures;

7. Develop consistent monitoring and annual reporting through authorised agency to international authorities of net emissions;

Stage 2. ERUs production scheme development

1. Establishment and enforcement of emissions limitations and allocating of baselines for domestic sources on national, sectoral and project basis;

2. Authorise special Governmental Agency to transfer unused GHG reduction;

3. Facilitate domestic pipeline for additional GHG reduction and sequestration projects to provide ERUs production on the national level;

4. Agreement to participate in a system of accounting for international authority of holdings and transfers of ERUs;

5. Development of reporting system with regard to ERUs transfer.

Stage 3. Allowances trading

1. Create bubbles as a framework for GHG emissions transfer;

2. Allocating of allowances for domestic sources on national, sectoral and project basis; at first only national obligations should be enforced and only unused quota could be transferred;

3. Facilitate creation of domestic information cervices for GHG trading;

4. Agreement to respect free trade in emissions allowances or savings established by the system and to refrain from expropriation;

5. Financial contribution to implement trading system;

6. Submission of national-level sanctions for violation of commitments and provide any kind of governmental guarantee for tons sold;

7. Agreement to participate and abide by the outcomes of dispute settlement procedures;

8. Adoption of appropriate domestic legislation to implement the trading system.

This three stages could be implemented in during the same period with JI stage development ahead of two others.

2.5 Development of domestic GHG emissions regulation

Development of domestic regulation of GHG emissions is necessary to ensure that Russia will fulfil its own obligations under Kyoto Protocol. Among them are

- meeting of fixed GHG emissions limits;
- reporting on GHG emissions.

Besides, domestic regulation is necessary for Russia to be present at the carbon market. Then certain trading infrastructure should be created as well as a number of measures should be taken to increase Russian trading potential.

The main condition for domestic regulation mechanism development is establishment of adequate monitoring system of GHG emissions from single sources. Then standard reporting form (2-TP air) should be supplemented by GHG emissions. Special measures to monitor GHG emissions from mobile sources should be undertaken. Then it is essential to increase reliability of data and to verify data obtained.

That information will ensure further development of the system of ecological standards and other regulation of pollution sources in Russia.

Some efforts should be apply to speed their development and to adjust to international system

In our study we mainly considered two types of options for GHG emissions control:

- allowances distribution;
- GHG emissions tax.

Each measure could be used separately or they could be used in a combination.

Preliminary results showed that it will have different incentives effect for different sectors and in different time periods. Our main conclusion is that Russian domestic mechanism should be based on allowances for stationary sources of pollution and

CO2 tax for mobile sources or for small stationary GHG emitters. However, more precise and comprehensive analysis is required.

Comprehensive mechanism of GHG emissions control will take a number of years. Good guess is that by 2005 Russia should come up with allowances distribution system. At that time each source should have permits for GHG emissions. They will be issued based on the rules that have to be elaborated by appropriate authorities responsible for GHG emissions regulation. Such distribution could be done in a different way. Basically it would be based on a grandfather rule. Official forecast of GHG emissions broke down by industries and regions should exist and support distribution strategy.

To ensure an early involvement of Russian enterprises into ERU production we should establish mechanism for baseline identification that will not contradict to the regulation established in 2005.

For JI or other projects for ERU production baseline established once should not be changed. It should be invariant to any changes of existing legislation. We propose to consider voluntary preliminary taking of obligations to be combine with certain GHG emissions level by enterprise as a baseline introduction. Then the enterprise that would like to produce ERU should voluntary take an emission budget. Its baseline approved by authorities will be converted in 2005 into its allowances.

Domestic GHG emissions regulation will both ensure meeting of Kyoto obligations by Russia and increase its potential for ERUs trade.

To illustrate the topic we present an example of CO2 emissions under the different CO2 tax strategies.

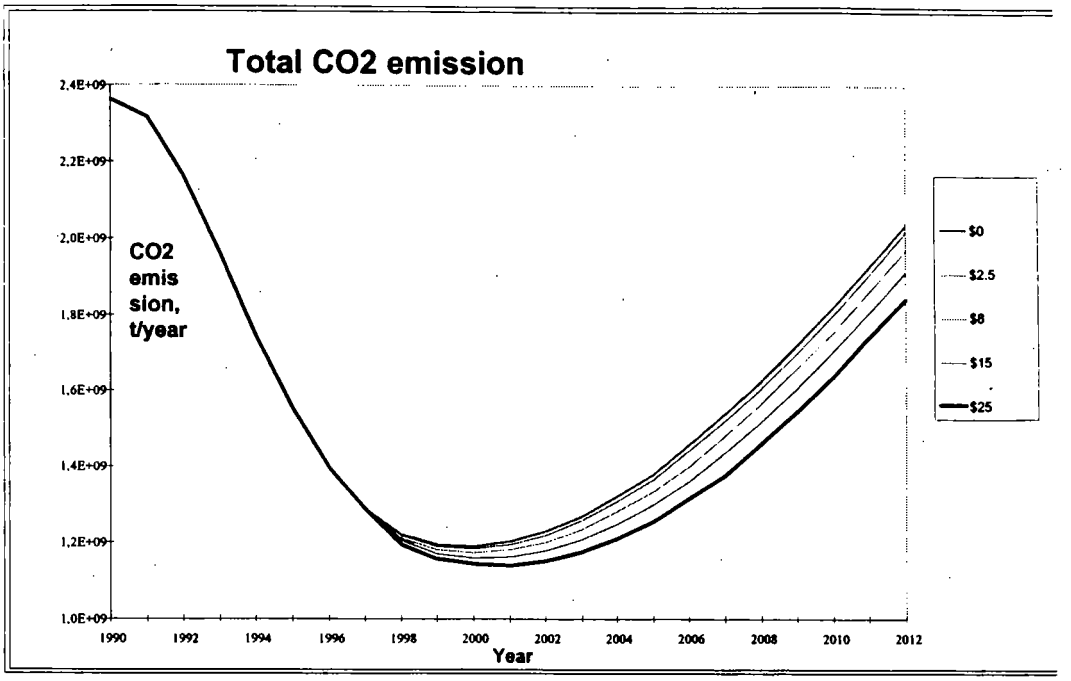


Figure 3. Total CO2 emissions under different rate of CO2 tax

The Figure presents additional potential that could be received due to domestic regulation measures implementation. Even at the tax level of 8 USD per 1 ton of additional reduction of GHG emissions will allow to receive an income not lower than 3 bill. USD during the first budget period. Potential of different sectors to reduce CO2 emissions increases after CO2 tax introduction.

It is important to elaborate and adopt the Action Plan to create conditions for participation of Russia in the international GHG emissions trading and implementation of measures to increase Russian carbon potential for sale. It should include the measures to realise the steps presented above at the different stages of carbon market development as well as the measures for domestic GHG emissions regulation and financial flows into GHG reduction projects facilitation.

3. Sectoral strategy and pilot project pipe-line facilitation in Russia

3.1 Sectoral analysis of GHG emissions reduction potential

At the first stages of carbon market development dominating with ERUs production projects it is very important to analyse the weight of each sector in GHG emissions. It will define sectoral policy based on each sector's potential to reduce GHG emissions with certain costs.

Figures 4 and 5 present the share of selected sectors in CO2 offsets in the first budget period and after the first budget period.

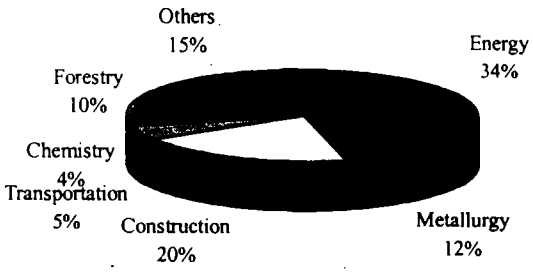


Figure 4. Sectors share in GHG offset in 2008-2012

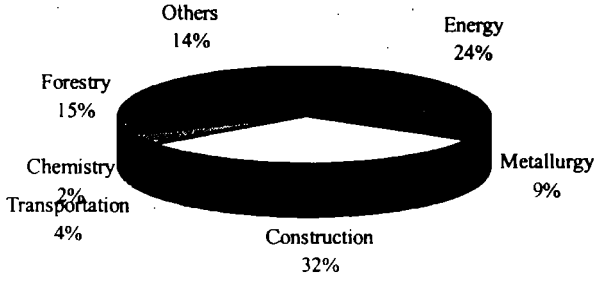


Figure 5. Sectors share in GHG offset after the first budget period

Different approaches to calculate costs for CO2 reduction has been used in our study. Based on model calculations (top-down approach) additional 1.85 bln.ton of CO2 offsets could be achieved during the first budget period for less than $ 25 per ton. Bottom-up approach for different sectors gave us lower figures (no-regret options were included). For energy sector we got a range from approximately from $5 to $10 per ton of CO2 reduction for the first 300 mln.ton of CO2 reduced in the first budget period. If price is rising up to $ 20 per ton then it is possible to get additional 220 mln.ton of CO2. In forestry it is possible to get 500 mln.ton CO2 for less than $ 15 per ton of CO2 sequestration.

In cost calculation we used additionality approach when only incremental costs for GHG emissions reduction should be included into costs calculation. At the same time uncertainty at the Russian capital market defines the difference between economic and financial costs. Financial costs include but are not limited by costs for project preparation, fondraising, insurance, monitoring, etc.

We have big range of costs on a project level from negative figures up to hundreds dollars per ton of CO2. However each figure should be verified carefully and cost for CO2 reduction or sequestration will be not necessary directly interpreted as a price for GHG offset (ERU). Last one is a product of negotiations between producer and consumer. It depends on different factors that should be specified in the contract agreement.

3.2 Pilot project pipeline facilitation in Russia

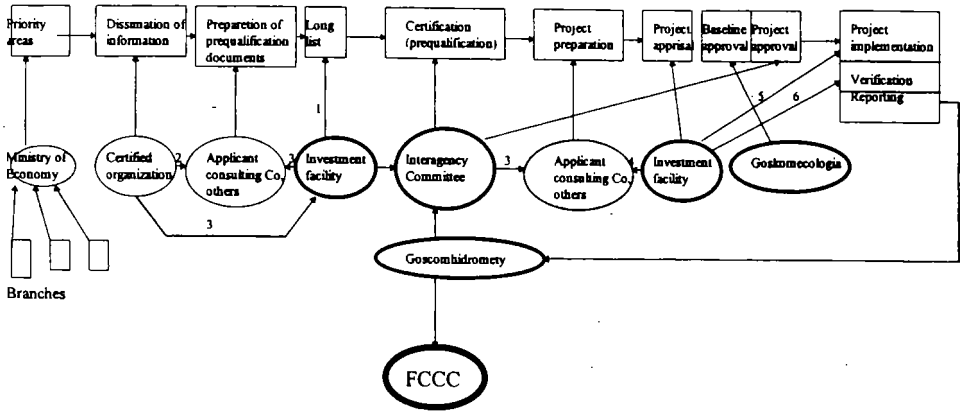
Russia should develop comprehensive and flexible system of financial flow facilitation that would be adaptable to bilateral and multilateral agreements

Authorised investment facility will have its special place in emission trading in Russia. We consider three basic schemes here. They are presented in the main report. In the first scheme investment facility has a role of investment flow facilitator with ERUs production or JI projects implementation, in the second scheme the investment facility actually plays role of GHG emissions unused quota trader within one umbrella, in the third scheme GHG emissions trading scheme is presented and investment facility is facilitating investment flow into ERUs production projects.

It should be a special mechanism for investment resources distribution. The investment facility will do it based on its own project cycle, the same as presented on the Figure 6.

As a result of this study a preliminary Portfolio of Pilot Projects for funding in the framework of the Global Carbon Initiative of the World Bank and of Joint Implementation has been prepared.

The selected portfolio represents a variety of possible projects from different regions and sectors of the Russia economy. Among them there are projects of energy efficiency improvement in industrial processes, fugitive gas capture, optimisation of gas transportation systems, waste disposal, reforestation. There is a great variety of projects in energy efficiency improvement in municipal heating systems as well as in methane leakage termination and its utilisation.



1 - consultations
2 - carbon credit production projects handbook, prepared in Task 4
3 - accreditation
4 - advance for project preparation
5 - verification
6 - monitoring

Figure 6. Project cycle for ERUs production and JI projects.

Proposed portfolio was formed using the different sources. We have used a list of projects already certified for JI implementation. The National Pollution Abatement Facility (NPAF) and Russian Centre for Energy Efficiency portfolios were screened to select environmental projects having significant carbon emission reduction effect. We have developed communicative channels and a background for collaboration with Federal Forestry Services and Russian Coalbed Methane Centre.

As a result of this identification process we have compiled a long list of 25 projects at total CO2 emission reduction - more then 100 mln.t.CO2/ yr.

Using results of pre-selection from above sources 9 projects were short listed and have been appraised according to methodology prepared and presented in this report. Total CO2 emissions reduction for them is 30 mln. ton. These projects are at a very advanced stage of project cycle development and can be implemented within nearest future. Some of these projects are presented in the Uniform Format for Pre-qualification Phase of JI-ERUs production developed during this Study as well. Elaborated uniform format for pre-qualification phase of JI-ERUs projects will assist in publicity of information for interested parties and investors at the moment.

The portfolio of pilot JI-ERUs projects is accompanied by methodology of these projects' assessment and implementation. Proposed methodology on JI-ERUs identification, assessment and preparation will help to develop a more solid base for development of methodological background of JI-ERUs projects implementation (see Annex 1). This methodology provides with approach to identification and negotiation of project baseline, analysis of additionality based on the profound barrier approach, incremental cost calculation, etc. We approach problems of JI-ERUs project cycle development with particular emphasis on inter-institutional communication and crediting procedure. A few possible investment models were suggested as a part of this study. Most of the above projects are elaborated using proposed methodology.

The study team proposes as a next working step to assess these projects concerning the JI-ERUs eligibility.

ANNEX 1

Proposed Methodology of Joint Implementation and Transferable GHG Emission Reduction Units Production (JI-TERUP) Projects Assessment and Implementation in Russia

JI-TERUP Pilot Projects Portfolio

The main objective of this study was the development of procedure and methodology of selection, assessment and implementation of the projects on transferable green-house gases emission reduction units production (JI-TERUP), as well as preparation of the portfolio of projects directed at green-house gases (GHG) reduction in Russia.

It is assumed that the methodological decisions of the work group will be modified as experience accrues. Thus the present methodology will at best serve as a starting point for further development both from the point of view of new theoretical work as well as from practical experience gained from working out pipeline of specific projects.

In accordance with the presented methodology, JI-TERUP projects being implemented in Russia are to meet the obligatory requirements of international and national character that are respectively formulated by the Secretariat of the UN Framework Convention on Climate Change and by the Interagency Commission of the Russian Federation on Climate Change Problems. They also are to meet special requirements of potential investors and additional requirements which include accounting of project implementation impact upon social, environmental and financial-economic indexes of enterprises or whole regions activities.

General assessment of the project shall be carried out in two steps: the preliminary assessment carried out at the pre-qualification phase and defining whether JI-TERUP project meets Russian standards; and the detailed assessment carried out during preparation of project feasibility study at the qualification phase after the interested investors are found.

The key points in projects assessment are a correct calculation of emission reduction units, project time and approval of the principle of its additionality.

The volume of emission reduction is calculated through difference of indexes characterizing GHG emissions before project implementation (so-called baseline emissions) and after project implementation.

The baseline calculation is carried out by assessment of current level of GHG emission under actual production volume and technical characteristics of equipment at enterprise. Final baseline is a basis of the contract between investor and enterprise implementing the project, and apparently remains constant during the whole period of project implementation.

It is necessary to regard the following items under baseline calculation:

- equipment up-date, amortization and maintenance during project implementation;

- existing plans and trends of engineering, technology and legislation development;
- dynamics of demand for relevant enterprise's product.

JI-TERUP project's life-time (or crediting period) is the period of production and sales of GHG allowances.

Theoretically, maximum JI-TERUP project durability can be defined by the time of possible technical durability of project implementation. Mostly, the crediting period is much shorter than project technical durability, because the time interval of JI-TERUP project implementation must be limited by the interval baseline of which can be calculated with sufficient exactness and transparency.

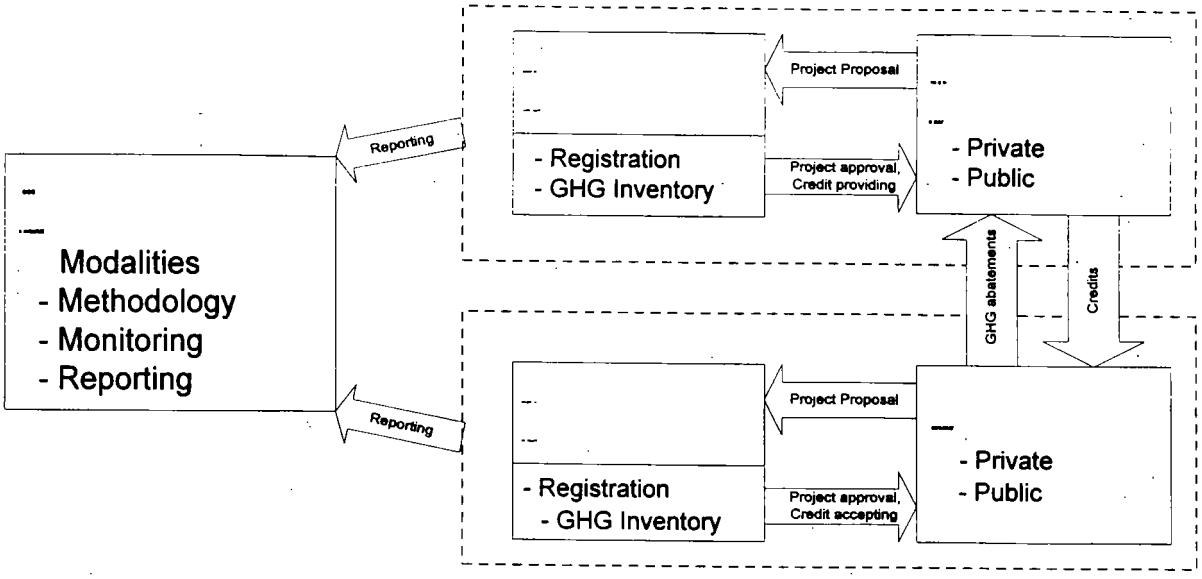
The principle of additionality means that the given project can not be implemented without additional inflow of know-how and/or capital. The principle of additionality will be observed when there are one or several barriers of project implementation under normal economic conditions to be overcomed mostly by financial measures.

The main barrier at present time for Russia is a limitation and high cost of investment capital, that ensure observation of the principle of additionality for most of the presented JI-TERUP projects. Other possible barriers can be technological, institutional, legal, environmental, etc.

The main stages of project implementation include preliminary assessment, detailed assessment, preparation and coordination of contract terms and conditions, monitoring and verification of the JI-TERUP project results. Preliminary assessment serves to define conformity of the project to requirements of project implementation in the frame of JI-TERUP and is to be approved by a special delegated for this purpose national agency or organization. The information shall be submitted for preliminary assessment under uniform format specially developed for that.

The detailed assessment envisages preparation of feasibility study that is carried out after defining of sources of financing and principal approving of this project by the government of the country granting carbon credit (Russia in our case) as well as the government of the country accepting carbon credit. In Russian this function can be performed by the Interagency Commission of the Russian Federation on Climate Change Problems.

The process of contract preparation between an investor, project owner and, if necessary, delegated for this purpose agencies of both countries interested parties, is shown below:



Issues of emission reduction units (ERU) calculation, estimation of JI-TERUP project costs, terms of carbon credits transfers, project technical data, its period, etc. are to be coordinated during contract preparation. Draft final contracts are to be presented to the Secretariat of the Convention or delegated by it body which sets a project monitoring and verification scheme, baseline estimation and an amount of ERU to be transferred from Russian into the a Credit Accepting Country. After this procedure relevant governmental bodies of the Credit Providing and Credit Accepting Countries will be able to approve a final scheme of project crediting time and credits transfer scheme.

All operations to transfer ERU shall be accounted on a national level. To make the deals on transferring ERU conformable to international requirements the adequate monitoring of GHG emissions and reporting on each JI-TERUP project are to be established.

As part of this study a preliminary Portfolio of Pilot Projects for funding in the framework of the Global Carbon Initiative of the World Bank and of Joint Implementation, as well as a Uniform Formats for Pre-qualification Phase of JI-TERUP Projects have been prepared.

The selected projects represent a variety of potential projects from different sectors and regions of the Russian Federation. Among them are projects of energy efficiency improvement in industrial processes, fugitive gas capture, optimization of gas transportation systems, waste disposal, reforestation. There is a great variety of projects in energy efficiency improvement in municipal heating systems as well as in methane leakage termination and its utilization.

The Portfolio of Pilot Projects for funding within the framework of the Global Carbon Initiative of the World Bank and of Joint Implementation was formed using different sources. First, we started with a list of nine projects which had already been certified for JI implementation by the Russian Interagency Committee on Climate Change.

Then, the NPAF projects portfolio, which consists of more than 100 projects, was screened to select environmental projects which have a carbon emission reduction effect. The Russian Center for Energy Efficiency has also proposed a list of ten

district heating efficiency improvement projects. International Forestry Institute has submitted several pilot projects on reforestation.

As a result of these project identifications we have compiled a long list of twenty five projects which bring significant carbon emission reduction benefits (total CO_2 emission reduction - more then 100 mln.t.CO_2/ yr.) and can be realized within the Global Carbon Initiative of the World Bank and Joint Implementation scheme.

Using the results of pre-selection from the above sources, ten projects were short listed and should be assessed concerning their JI-TERUP eligibility according to the methodology prepared and proposed in the draft final report of Task 4 of this study. These projects are at a very advanced stage of project cycle development and can be implemented in the nearest future. Technical, economical and ecological feasibility studies on these projects are available. The annex to this paper represents this list of projects.