

The Kyoto Protocol and Civil Society

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LEGAL, ECONOMIC, AND ORGANIZATIONAL PRINCIPLES OF IMPLEMENTATION OF THE KYOTO PROTOCOL. RECOMMENDATIONS OF THE ENVIRONMENTAL COMMITTEE OF THE STATE DUMA

A year has passed after the Russian Federation ratified the Kyoto Protocol. The spirited debate about Russia's commitments to limit anthropogenic greenhouse gas emissions and their impact on climate processes has gradually subsided. Does this mean that the process has died down? The editors of the bulletin Towards a Sustainable Russia requested chair of the Environmental Committee of the State Duma of the Russian Federal Assembly V.A. Grachev to comment the existing situation from the position of legislative power. As a detailed answer of Mr. Grachev, we offer our readers Recommendations of the Environmental Committee of the State Duma of the Russian Federal Assembly resulted from the Round Table's meeting "Legal, Economic, and Organizational Principles of Implementation of the Kyoto Protocol. Efficiency and Energy-Saving Technologies" held in the State Duma on February 9, 2006.

The Round Table was attended by deputies to the State Duma and members of the Federal Council of the Russian Federal Assembly and representatives of the Russian Presidential Administration, Russian Government Staff, corresponding ministries and agencies, executive and legislative (representative) constituent bodies, the Russian Academy of Sciences, nongovernmental scientific and educational institutions, public organizations, and the media.

Having heard and discussed issues of formation of legal, economic, and organizational mechanisms for implementation of provisions under the Kyoto Protocol that meet Russia's interests in the transition to the, best efficient energy-saving technologies, the participants in the Round Table emphasized as follows.

1. Information about events related to the implementation of provisions under the Kyoto Protocol

Last year, following the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change by the Russian Federation and the international legal recognition of this fact on February 16, 2005, key areas of Russian state policy were outlined and measures aimed at implementing the Kyoto provisions began to be taken.

Federal legislative (representative) bodies represented by the State Duma focused attention on the necessity to establish legal, economic, and organizational infrastructure in compliance with the Kyoto Protocol to meet Russia's commitments under the Protocol with the emphasis on the need to concentrate the efforts on establishing infrastructural mechanisms for joint implementation projects rather than on providing a market infrastructure for greenhouse gas emissions trading. This was dictated by the modern tactical challenge – to double the gross domestic product by 2010 – and the long-term strategic goal – to assure Russia's sustainable, environmentally sound economic development not only in the first commitment period from 2008 to 2012 but in the subsequent periods as well.

In Russia, it was recognized that the mechanisms under the Kyoto Protocol to the United Nations Framework Convention on Climate Change aimed to reduce the anthropogenic factors of climate change are a universal ecological and economic tool for global economy management with environmental development aspects taken into consideration. This circumstance was the reason for the ratification of the Kyoto Protocol regardless of the availability of evidence that current climate changes have resulted from man-caused greenhouse gas emissions. However, this tool may be of benefit only when it is used correctly and purposefully.

During one year after the ratification of the Kyoto Protocol, the following arrangements were made at the governmental level:

- An Integrated Action Plan of the Russian Government was drawn up to implement the provisions under the Kyoto Protocol;
- An Interagency Commission for coordination of actions to implement commitments under the Kyoto Protocol was set up;
- Regulatory documents and instructional methodological guides necessary for the implementation of the Kyoto Protocol at the national level were prepared but not approved;
- The rate of charge for emitting methane – one of the six greenhouse gases – was increased 1000 times.

The latter measure had a significant effect on the financial and economic situation of Open Joint Stock Company «Gazprom», which is a major industrial emitter of methane and a leader in transferring production processes to the best existing technologies.

In Russia, agreements to transfer greenhouse gases emissions allowances with deferred entry into force have been concluded at the level of individual economic entities. In addition, a small number of preliminary agreements on joint implementation projects have been made. As regards the nonproductive sphere, there have appeared some organizations dealing with consulting and certification related to the implementation of the Kyoto Protocol along with ones that either substitute or copy the functions of executive government agencies provided for in pursuance of the Kyoto Protocol to ensure greenhouse gases emissions allowance trading. Such substitution of functions in the absence of reliable official information and instructions from the authorized executive bodies may lead to abuses and discredit of useful ideas areas of activity under the Kyoto Protocol, which is inadmissible.

In December 2005, a regular Conference of the Parties – the supreme organ of the United Nations Framework Convention on Climate Change – was held in Montreal. The conference should have produced basic instructional and methodological documents for the implementation of the Kyoto Protocol. However, no official information documents based on the outcome of the conference have been published.

The lag in taking steps to establish organizational and legal principles for introducing the Kyoto mechanisms in Russia necessitates enhancing the responsibility of authorized agencies and

officials in charge of implementation of the Kyoto provisions, since Russia may run the risks of sanctions and economic actors, a loss of profit.

II. Identification of priority measures for introducing the Kyoto mechanisms in the Russian Federation

The specific feature of the package of documents that cover the substance of the Kyoto Protocol to the United Nations Framework Convention on Climate Change is the presence of special terms that cannot be unambiguously interpreted or used without an appropriate glossary and thesaurus. Unfortunately, the absence of a system of semantic Russian analogs for these terms largely hinders effective development of a system of relations requisite for the implementation of the Kyoto provisions.

Analyzing information on the implementation of policies and arrangements in pursuance of the Kyoto Protocol allows one to conclude that the problem has passed the phase of permanent public discussions and by January 1, 2007, that is, one year prior to the beginning of the first commitment period, Russia is likely to have established at the federal level all elements of the infrastructural basis of market regulation in the sphere of greenhouse gas emissions and removal needed for launching the Kyoto mechanisms.

The key elements of the market regulation mechanism and the priority areas of activity are as follows.

1) Establishment of a system of greenhouse gas inventory.

This requirement refers to the National Communication that each Annex I country must submit to the Secretariat of the United Nations Framework Convention on Climate Change once in three years. The next presentation of the Russian National Communication must take place in 2007. The main sections of this report include emissions prediction, emission reduction arrangements, adaptation to climate change, and others. Without the inventory, the Communication will not be approved internationally.

2) Development of a methodology for identification of an emissions baseline.

The baseline is used for computing additional emission reduction achieved due to a joint implementation project with clear establishment of emission reduction units. These units may be transferred to the project investor on mutually beneficial conditions. The lack of methodology makes it impossible to implement joint implementation projects.

3) Creation of a registry of Joint Implementation or Clean Development Mechanism projects.

The registry of projects with indication of the number of emission reduction units that may be transferred to the country of the project investor is necessary for accounting reduced greenhouse gas emissions.

4) Establishment of a system for distribution of Assigned Amount Units.

The total amount of anthropogenic greenhouse gases emissions permitted for Russia must be distributed among the emitters as allowances. Emissions trading implies Assigned Amount Units transfer under joint implementation and Clean Development Mechanism projects resulted in reduction emission units, which, in turn, may be added to the Assigned Amount Units of the investor country. The allocation of units is a documented statement of the physical value of greenhouse gases emission and removal within the framework of joint implementation and Clean Development Mechanism projects.

5) Establishment of an infrastructure for the emission trading market – buying and selling emissions in the internal and external markets within the Assigned Amount Units bounds among the Parties of Annex B to the Kyoto Protocol.

6) Development and keeping of a sink inventory – accounting of greenhouse gas removals.

The sequestration of CO₂ from the atmosphere is done by ecosystems, especially, forests, and the rate and volume of sinks depend on land-use and forestry practices. A lack of the inventory will make it impossible to promote effective forestry and land management and, in addition, will entail loss of profit in the light of Kyoto mechanisms.

7) Development and keeping of an Assigned Amount Units ownership registry.

The availability of a certified registry is mandatory for participation of the country in emissions trading. The national registry reflects the process of motion (sale/transfer) of the greenhouse gas emission and removal ownership measured in appropriate units. Without the registry, Russia will not have access to the international emissions market.

8) Development of a system of certified emission reduction.

The emission reduction certification is a documented validation of the amount of greenhouse gases emission reduction and has a legal force. Emission reduction units are

calculated from the baseline and measured in tons of CO₂ equivalent. It is unfeasible to implement joint implementation and Clean Development Mechanism projects without the certification system.

The reliability of relations within the framework of trading of emissions allowances and certified emission reduction units when implementing joint implementation and Clean Development Mechanism projects may be achieved through a system of ecological insurance of business and environmental risks. Today, the restraining factor for introducing a system of ecological insurance is a lack of a regulatory basis to support the key elements and principles of operation of this system. Another deterrent is a lack of corporate interest of Russian insurance companies in ecological insurance that provides for a targeted receipt of sums insured by funds for preventive arrangements, to which projects aimed to reduce greenhouse gases emission are referred.

III. Identification of basic principles of state regulation in the area of greenhouse gases emission allowance distribution

There are several fundamentally different approaches to the execution of state regulation in the above-mentioned area.

The first approach implies participation in the international emissions market of the state only. In this case, the state does not distribute allowances at the national level but places an administrative limitation on the assigned amount of greenhouse gases or the greenhouse gases emission level, which is maintained by fines and encouraged by tax concessions.

The second approach provides for participation of the state in the international emissions market within the limits of the unused part of Russia's allowance. Enterprises are entitled to transfer their rights to the amount of reduced greenhouse gases emissions to the international market via state agencies.

The third approach implies the state's oversight over the fulfillment of national obligations and distribution of the general allowance among entities that may independently operate with their individual allowances both at the domestic and international markets.

In fact, it is a question of the choice between prohibitive and permissive systems of state regulation. With a prohibitive system, when a certain level of greenhouse gases emissions is exceeded, state expenses bourn due to

international sanctions are made up by fines while reduction of emissions below the established level is not encouraged.

The state's distribution of certain amount of rights to emissions or emission allowances among companies increases their capitalization and opens up a possibility for them to buy a necessary amount of allowances, which expands a commercial turnover of allowances and encourages further greenhouse gas emission reduction. Obviously, the market mechanism is more efficient and less bureaucratic than the administrative one (fines, taxes, project tenders).

The market model of emissions management is more flexible and represents several variants of market regulation of entities' activities at the internal and external levels as well as the degree of involvement of the state in operation at the carbon market.

Studying the applications of these models shows that in a number of cases it is expedient to use combined models depending on the sectoral features and the special attitude to some branches, such as housing and communal services, industry, transport, forestry, and agriculture.

It is possible to establish either voluntary or mandatory forms of inventory and monitoring of emissions as well as the sequence of these arrangements or their simultaneity for groups of plants depending, for example, on their size or integration.

Considering that the necessary conditions for participation of an enterprise in the carbon market is holding an inventory and introducing an emission monitoring system prior to January 1, 2007, it becomes clear that these tasks cannot be fulfilled on a mandatory basis by administrative means simultaneously for all enterprises. Therefore, it is essential to establish legislatively timeframes for voluntary accomplishment of these arrangements through engagement of authorized private organizations.

Apparently, the market infrastructure must ensure a series of functions that may be exercised by both government agencies and accredited private companies.

IV. The efficiency of energy-saving activity and transfer to the best technologies

As noted above, Russia's commitments undertaken in connection with the ratification of the Kyoto Protocol

imply establishing at the national level of a system of institutional and legal mechanisms, including a national system for monitoring, accounting, and control of greenhouse emissions at the level of enterprises.

Since this system must be launched a year before the first commitment period, that is by January 1, 2007, the absence of data on greenhouse gases emissions monitoring, accounting, and control may become an obstacle to an effective use of the Kyoto mechanisms by individual enterprises in their efforts to introduce energy-saving technologies.

To remove these obstacles, a voluntary form of such system may be implemented based on declaration and subsequent validation. This principle should be laid down in the laws on technical regulation and, therefore, development of instructive and methodological documents is requisite to build capacity for practical application of the mechanism for greenhouse gases emission and removal accounting.

Gaps in information supply of economic actors lead to delayed implementation of paying projects and their impaired competitiveness at the international emissions market. The delay is also related to the fact that until now, no procedure has been established for expert review, validation, and verification of projects in the area of greenhouse gas emission and removal. Also, it is necessary to establish legislatively allowance and reduced emission units property relations. In this case, it is essential that each emitter or remover has a priority for direct access to the carbon market in order to avoid costs related to intermediary services.

To intensify activity on establishing legal, economic, and organizational mechanisms for the implementation of the Kyoto provisions in the Russian Federation and the enhancement of responsibility of officers in charge thereof, the participants in the Round Table propound as follows.

1. The Russian Public Chamber

1.1. To recommend taking over the public control of activities of the government bodies related to the implementation of Russian commitments under the Kyoto Protocol.

2. The Russian Government

2.1. To consider an issue of establishing personal liability for assurance of activities related to the implementation of Russia's international

obligations under the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

2.2. To assign an authorized agency in the system of federal executive bodies with a function to command the national greenhouse gas emissions allowance.

2.3. To develop a draft federal law "On State Policy and the Economic Mechanism for Regulation of Greenhouse Gas Emission and Removal in the Russian Federation."

2.4. To develop and adopt regulatory acts and approve formally instructive and methodological documents to assure effective implementation of joint implementation projects in the Russian Federation.

2.5. To develop and publish a glossary and thesaurus for a system of notions used in documents related to the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

2.6. To ensure tax and budget protectionism in respect of activities related to the introduction of the best existing technologies aimed to limit greenhouse gas emissions through modernizing the key assets.

2.7. To develop and introduce a system of environmental quality standards and a technological regulation system for activity of economic entities, primarily, for major industrial greenhouse gas emitters, and to prepare instructive and methodological documents on limiting human-induced impact on the environment and allocating allowances to economic actors depending on the volume of greenhouse gas emission and removal at the regional level.

2.8. To announce an research and development competition in 2006, at the cost of research and development funds of the Russian Ministry for Natural Resources, in the following fields:

- Problems of capitalization of the environment and integration of natural capital into the gross domestic product structure as basic production assets with pecuniary valuation and a legal status of property, in respect of which civil circulation is allowed;
- Problems of proprietorship during the circulation of greenhouse gases emissions allowances and certified emission units with the object of effective implementation of provisions under the Kyoto Protocol.

2.9. To carry out procedures for the establishment and formal approval of the amount

of greenhouse gases emissions for the baseline and current years.

2.10. To ensure research and development work to identify scenarios of development of productive forces and variation of the baseline using extrapolation and purpose-oriented prediction methods for the first and subsequent commitment periods to be carried out by the Russian Academy of Sciences for preparing on these grounds of proposals on Russia's further participation in the Kyoto process.

3. The Russian Federal Assembly

3.1. To speed up the development and adoption of regulatory acts in the following areas: state policies and economic mechanism for regulation of greenhouse gas emission and removal; environmental charge; introduction of an ecological insurance system; and the use of waste for secondary material resources.

3.2. To assure interaction with the Russian Public Chamber on issues related to oversight in the sphere of effective implementation of provisions under the Kyoto Protocol in the Russian Federation.

V.A. Grachev

RAS Corr. Member,
Chair of the Environmental Committee of the State Duma
of the Russian Federal Assembly

ON THE IMPLEMENTATION OF PROVISIONS UNDER THE KYOTO PROTOCOL

The present-day advancement of the world economy along the path of a comprehensive, responsible approach that takes into account environmental and economic processes and involves establishment of a management system for the latter stems from the action of objective global factors of both political and climate-related nature. The alarm of the world community in connection with growing environmental problems began to be especially pronounced in the mid-1980s. The concern about the global environmental situation inspired the world economic community to start searching for an adequate nature-use analysis and management model. The ratification of the Kyoto Protocol by the Russian Federation thus putting it into effect was a sort of "gift" for the international environmental community, which regards the Protocol as a universal instrument for regulating man-caused greenhouse gases emissions. The principles and mechanisms that are laid down in the Kyoto Protocol serve as the groundwork for building new, environment-conscious relationships between countries.

Today, 194 states are Parties to the United Nations Framework Convention on Climate Change. In the list of obligations foreseen in the Kyoto Protocol, the member countries assumed responsibility in the following areas:

- Enhancement of energy efficiency in relevant sectors of the national economy and reduction of energy intensity;
- Promotion of sustainable forest management practices for enhancement of sinks and reservoirs of greenhouse gases;
- Promotion of research and development and increased use of renewable forms of energy and innovative environmentally sound technologies.

Having considered all possible implications for the national economy and changes in the world economy, the Russian Federation passed Federal Law on Ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change No 128-FZ in November 2004 and undertook commitments in respect of greenhouse gases emissions. Russia's participation and role in the implementation of the Kyoto Protocol at the intergovernmental and national levels may set the heading for a new epoch in economic progress when ecology will no more be an economic "hostage." Russia has a chance to lead the evolutionary movement of humanity, including its ecological component, through realizing its potential as the world's biggest environmental donor. Along with existing economic indicators of the national economy, environmental responsibility is becoming the chief criterion of good reputation in the world business community. Today, environmental ratings rank on a par with economic ones, begin to vector high-tech development, and prove to be an effective index of competitiveness of the national economy.

Immediately after the ratification of the Kyoto Protocol, representatives of legislative and executive power commenced developing necessary laws, decrees, and arrangements aimed at implementing the provisions of the Protocol for the first commitment period (from 2008 to 2012).

An Integrated Action Plan of the Russian government to implement the Kyoto Protocol was drawn up at the governmental level. On May 25, 2005, Order of the Russian Ministry for Economic Development No 107 on the

In 2005, the Federal Council of the Russian Federal Chamber twice held parliamentary hearings on the implementation of provisions under the Kyoto Protocol. The outcomes of the hearings were recommendations that concretized the actions of parliamentarians, the government, ministries, and departments aimed to meet the Russian commitments under the Kyoto Protocol.

Interagency Commission for the Implementation of the Kyoto Protocol in the Russian Federation was signed.

In 2005 and 2006, the Russian State Duma held parliamentary hearings on issues pertaining to the implementation of the Kyoto Protocol. Based on their outcomes, recommendations regarding the establishment of legal, economic, and organizational arrangements to meet the Kyoto provisions were worked out.

The Federal Council of the Russian Federal Assembly twice held parliamentary hearings in 2005 to discuss the implementation of the Kyoto Protocol.

On March 31, 2005, the Federal Council Committee for Industrial Policy had parliamentary hearings to the subject Measures to Be Taken Under the Kyoto Protocol to the United Nations Framework Convention on Climate Change. When addressing the meeting, chair of the Federal Council Committee for Industrial Policy V.G. Zavadnikov reminded the audience that the ratification of the Kyoto Protocol by the Russian Federation was decisive to make it effective and emphasized that immediate implementation of the Kyoto Protocol necessitates development of a concept for legal regulation. S.Yu. Orlova, vice chair of the Federal Council, emphasized that having ratified the Kyoto protocol, Russia gave a new impetus to the progress of innovative technologies. In her opinion, the first stage should involve preparation and adoption of statutory acts in the environmental area. The next stage would be the development of international legal cooperation. Orlova pointed out that Russia is an energy donor and the effectiveness of implementation of the Kyoto mechanisms would positively affect the life of future generations.

Much attention was given to the EU climate policy and its economic importance for Russia in the report of head of the office of the European Commission in the Russian Federation Franco Mark. He discussed the emissions trading system, European experience in the implementation of the Kyoto Protocol, and a possibility of applying certain environmental patterns in Russia.

E. Utkin, 1st Secretary of the Department for International Relations of the Russian Ministry of Foreign Affairs, suggested that governmental structures with coordination and executive functions should be established under the Russian government to promote activities under the Kyoto Protocol.

Proceeding from the parliamentary hearings, recommendations were worked out for the Russian government to the effect that it should develop a State Program for the Implementation of the Kyoto Protocol, a concept for legal regulation aimed to reduction of the GDP energy intensity, and a system for accounting actual and standard greenhouse emissions.

On December 20, 2005, the Federal Council Committee for Science, Culture, Education, Public Health, and Ecology organized parliamentary hearings Legislative Support to the Protection of the Atmospheric Air and to the Implementation of the

Kyoto Protocol to the United Nations Framework Convention on Climate Change. In the course of discussion, regulatory aspects of protection of the atmosphere and implementation of the Protocol were touched upon. V.E. Shudegov, chair of the Federal Council Committee for Science, Culture, Education, Public Health, and Ecology, pointed out that not a single regulatory document had been drawn up to put the rules under the Kyoto Protocol into effect. He drew attention to the necessity of state regulation of greenhouse gases emission and sequestration, creation of an emissions market including definition of the legal status of the reduced emission unit, and a state system for greenhouse gases estimation and recording to provide justification of the Russian position regarding the scope of national allowance. Another task mentioned by Shugurov was the finalization of the existing Integrated Action Plan and the development and adoption of a Federal Target Program for the Implementation of the Kyoto Protocol. N.P. Churkin, vice chair of the Federal Council Committee for Natural Resources and Environmental Protection drew attention to the political aspect of the implementation of the Kyoto Protocol and discussed joint discussions on this issue with lawmakers from Finland and Italy. Also, he emphasized the necessity of meeting commitments undertaken after the ratification of the instrument. In his opinion, effective realization of the Integrated Action Plan necessitates building partnerships with public organizations.

Participants in the parliamentary hearings discussed problems of protection of the air in Russia and the state of the legal framework in air-protection activity, the progress in implementing the Kyoto provisions including at the regional level, principles of certification of greenhouse gases emission reduction projects, and other issues. Based on the outcome of these discussions, recommendations for the Federal Assembly and the Russian government were adopted.

From the above, it may be concluded that active work on building capacity for Russia's participation in the realization of the provisions under the Kyoto Protocol is in progress at all levels. Both government officers and the general public recognize the urgency of challenges faced by the Russian Federation in this process. It is likely there are people who think that the rates, at which we are advancing towards the goal, are not fast enough, but one thing is certain – the vector has been set correctly.

E.N. Vasilishen

Member of the Federal Council from the Bryansk Oblast Duma, head of the Working Group for Development of Draft Federal Laws to Ensure Implementing the Kyoto Protocol to the United Nations Framework Convention on Climate Change

ON THE KYOTO PROTOCOL TO THE FRAMEWORK CONVENTION ON CLIMATE CHANGE

The ratification by the Russian Federation of the Kyoto Protocol gave rise to the establishment of the world system for energy consumption regulation, the priority of energy efficiency, the sustainability of forestry, and the restriction of adverse processes related to extensive anthropogenic impacts on the planet's ecosystems. In the Russian greenhouse gas emission structure, the combustion of hydrocarbon fuel in the energy sector, industry, and housing and communal services accounts for more than 60%. We do not mean to minimize the importance of greenhouse gases emission reduction as the primary intent of the Kyoto Protocol, but reducing the anthropogenic effect of the environment, raising the efficiency of the use of hydrocarbon resources, and introducing renewable energy sources into the power supply system are issues of no less importance.

By Order of the Russian Government No 215-r of February 20, 2006, the Ministry of Natural Resources of the Russian Federation was designated the executive body in charge of the establishment and function of a Russian Carbon Unit Register – a national accounting and monitoring instrument for implementing the Kyoto Protocol. The Register per se represents a data bank for accounting and redistributing carbon units among industrial facilities, companies, and countries. In the first commitment period (2008–2012), the Russian Register will include only enterprises or companies that are prepared on a voluntary basis to ensure and verify their greenhouse gases emission reduction and participate in the system of carbon unit trading with other countries. When implementing emission reduction projects, respective number of carbon units may be transferred to other countries through the established intergovernmental mechanism. The Federal Center for Geoecological Systems (FCGS Ecology) was commissioned to develop the Russian Carbon Unit Register based on experience gained in European countries. As is well known, European registers were established in compliance with the EU Directive on the organization of the system of greenhouse gases emission trading among EU countries, which became effective in 2005, that is, prior to the first commitment period under the Kyoto Protocol (beginning in 2008).

Another important task on building capacity for meeting Russian commitments under the Kyoto Protocol facing the Ministry of Natural Resources of the Russian Federation and the Federal Forestry Service is making an inventory of greenhouse gases emission and sequestration by Russian forests and wetlands. The outcomes of the inventory will essentially influence the formal assignment of carbon units for the Russian Federation. Russian forests represent a huge carbon sink as biomass, plant residues of various degrees of decomposition, humus, and peat. Anthropogenic activity related to forestry and forest-management arrangements may lead to either increase or decrease of total forest ecosystem biomass accompanied by net CO₂ removals (sequestration) from or emissions into the atmosphere. The emissions of greenhouse gases are also associated with forest fires. According to Intergovernmental Panel on Climate Change, the forests in the temperate represent a global-scale net sink for carbon dioxide. When computing sequestration and emission, difficulties may arise to allow for fires and considerable amount of wood waste resulted from clear felling. The inventory of greenhouse gases emission and sequestration by Russian forests (the forest carbon budget) based on international methodologies began to be conducted on the order of the Ministry of Natural Resources of the Russian Federation early in 2005.

Opportune implementation of these and other arrangements foreseen by the Integrated Action Plan for Implementation of the Kyoto Protocol would give us hope for Russia's successful finalization of the first global environmental project.

V.G. Stepankov

Deputy Minister of Natural Resources of the Russian Federation

INTEGRATED ACTION PLAN FOR IMPLEMENTATION OF THE KYOTO PROTOCOL IN RUSSIA: INTENTIONS AND REALITIES

Implementation of policies and basic measures to reduce emissions and increase removals of greenhouse gases

The first section of the Plan directly correlates with the provisions of Article 2 (a) of the Kyoto Protocol related to key areas of national actions to meet the quantified commitments.

The first two parts of this section indicate fundamental arrangements immediately aimed to reduce greenhouse gases emissions in various economic sectors; targets for specific dates, mostly for 2008; and federal authorities responsible for meeting concrete targets.

The central place in the list of arrangements in the Integrated Action Plan is occupied by measures and indicators related to reduction of energy process emissions from the Energy-Efficient Economy program. This program is of paramount importance for Russian climate policy as well. However, instead of projected extension to 2006–2010, the program was frozen till the end of 2006. года. Now, an endless process of finalization of program alternatives is underway. As a result, we are facing a controversial situation: there are targets but no mechanism for meeting them.

Regarding steps to increase greenhouse gases removals on the lands of the State Forest Resources, the Plan contains respective targets but without any reference to a particular state program to meet them. As to agriculture, the Plan has just a reference to the Strategy for the Agroindustrial Complex and Fishery, which still needs to be developed.

For some unclear reasons, the Plan fails to provide any actions on cutting methane emissions related to waste storage, although the waste management problem is very urgent.

It should be pointed out that the targets are given in the Plan in different units but not evaluated in tons of CO₂ equivalent emissions, which could make it possible to assess the action of these measures on the emissions and removals of greenhouse gases.

From the notes to the Integrated Action Plan and the comparison of the Plan's targets with those contained in other governmental documents, primarily, various federal targeted programs, it is apparent that these values practically coincide. Consequently, the ratification of the Kyoto Protocol has not yet led to intensification of state economic, energy, environmental, and sectoral policies that could result in a greater greenhouse gases emission reduction and removal/sequestration as compared to federal targeted programs in progress.

A separate subsection deals with objectives associated with reforming economic relations in various sectors providing for gradual reduction or removal of market disproportions, fiscal incentives, tax and duty exemptions, and grants that contravene with the United Nations Framework Convention on Climate Change (UNFCCC) in all sectors – sources of greenhouse gases emissions, on the one hand, and implementation of market mechanisms, on the other hand. They include, in particular, the abolishment of a rent and utility subsidy system and the organization of cash grants on citizens' personal social accounts.

After the ratification of the Kyoto Protocol by the Russian Federation, federal authorities led by the Ministry for Economic Development worked out and coordinated targets and concrete actions to meet Russian commitments under the Protocol. They made up the governmental Integrated Action Plan for Implementation of the Kyoto Protocol in the Russian Federation. The Plan became a formal basis for the national climate strategy and policy till the end of the first commitment period (2012). On February 24, 2005, the Chair of the Russian Government commissioned corresponding ministries and agencies to execute the Plan. The Plan's structure and content of actions basically follow the structure and provisions of the Kyoto Protocol. The latter formulate obligations and potentialities of Annex B member states, including Russia.

A central place is given to the demonopolization of the gas and energy sectors and a transport reform.

It should be emphasized that all the structural and economic transformations envisaged in the Plan are not new initiatives advanced in connection with the implementation of the Kyoto Protocol and it is unlikely that the Protocol may become an essential factor affecting these reforms. At the same time, it is difficult to realize how and to what extent these reforms will promote high emission limitation or reduction.

The next section entitled "Organization of Research and Implementation of Innovation Projects Aimed to Reduce Emissions and Increase Removals of Greenhouse Gases" outlines at least 50 research and development projects involving development of energy-efficient technologies to build capacity for cutting greenhouse gases emission. Other fields of research foreseen cover studying the effect of anthropogenic greenhouse gases emission on the climate system, appraising climate-related economic and environmental damages for the Russian Federation, and developing steps to prevent possible damage. All these projects are going to be carried out as part of existing federal programs.

We believe the incorporation of this item into the Integrated Action Plan is useful, since it is well known that the scope of research and development along these lines cannot be considered sufficient. This brings up the question: Will these research and development projects receive additional financing owing to the adoption of the Plan? Because the official Instruction of the Prime Minister regarding the Implementation of the Integrated Action Plan fails to provide for that.

The Action Plan foresees a set of measures to assure an effective interaction among federal executive bodies concerned while implementing the Kyoto provisions. The first step was the establishment by the Ministry for Economic Development of an interagency commission by the summer of 2005 to deal with issues related to the implementation of the Kyoto Protocol. Before the end of the year, the commission held two meetings. It should be noted that the status and level of departmental representation and the competence of this interagency commission is lower than that of its earlier counterpart dealing with climate change. This is indicative of lowering the status of the aims and objectives to be coordinated by the commission.

Among other measures in this set is adjusting the authority of federal bodies of executive power in connection with the ratification of the Kyoto Protocol (by mid-2005) and the list of arrangements foreseen in federal targeted programs to assure reduction of greenhouse gases emissions by sources and increase of their removal by sinks with adding concrete quantified targets and tasks. As mentioned above

by the example of the Energy-Efficient Economy targeted federal program and other targets, the latter measure needs further attention.

Proposals to alter the authority of federal agencies had been worked out by the second meeting of the interagency commission, where they were taken into consideration. It is obvious that altering the authority of federal agencies is of great importance. This will attach a mandatory status to the function of these agencies in connection with the implementation of the Kyoto Protocol and significantly raise the level of their responsibility.

Establishment of and capacity-building for a national system for assessment of anthropogenic emissions and annual submission of an anthropogenic emissions inventory to the UNFCCC and Kyoto Protocol organs

This field of activity is associated with the fulfillment of obligations under Articles 5 and 7 of the Kyoto Protocol. It was planned to develop a national system for assessing anthropogenic emissions of all greenhouse gas emissions from sources and their removals by sinks by the middle of 2005. Without this, Russia would not be able to take part in emissions trading. Also, it was projected that at about the same time an ordinance of the Russian government would approve Regulations for the National System to define its major characteristics (functions, authority, and so on) and make it legal. In compliance with Russian laws, any activity on assessing anthropogenic emissions and removals is considered illegal unless such ordinance is adopted. Otherwise, the authorized government bodies will not be held liable for the system's function and results.

It should be noted that the Kyoto Protocol imposes a rather stringent timeframe for the completion of a national system for assessment of anthropogenic emissions – not later than the end of 2006. The necessary level of execution responsibility may be ensured by an ordinance of the Russian government alone. A draft ordinance was adopted by the interagency commission as late as in the middle of November 2005.

It is necessary that by the middle of 2006 authorized ministries should organize preparing inventories of anthropogenic greenhouse gases emissions from sources and their removals by sinks for all years starting with 1990. These inventories must be submitted to the organs of the UN Framework Convention on Climate Change and the Kyoto Protocol, which will approve the Russian national allowance (assigned greenhouse gases emissions in the 1990 base year) for 2008 to 2012.

It should be borne in mind that until recently Russia has not presented to the UNFCCC Secretariat any inventory reports in compliance with UNFCCC,

not to mention a document in a Common Report Form (CRF). It is important to remember that without submission of such report to the UNFCCC organs and its approval after receiving a positive opinion of the international expert group the country will not have a formal national allowance, which is a necessary condition for participation in the Kyoto emissions trading mechanisms. Authorized ministries and departments should organize preparation of Russian National Communications under Article 12 of the United Nations Framework Convention on Climate Change. So far, Russia has presented 3 National Communications covering 1999 and has delayed the submission of the next one to the secretariat.

Work on inventory, national communication and CRF development began in 2005. At this point, it is difficult to say if it will be completed at the proper time and, above all, if the developed documents will meet the international requirements receive a positive expert statement and approval of the Secretariat.

Assurance of Russia's participation in the mechanisms under Articles 6, 12, and 17 of the Kyoto Protocol

To assure gaining potential economic benefits related to Russia's participation in the market mechanisms under the Kyoto Protocol, it is essential to provide timely a requisite legal and institutional framework. To this end, the Integrated Action Plan envisages a series of arrangements.

Authorized ministries were to prepare by the middle of 2005 a list of legal and normative documents to build capacity for implementation of Articles 6, 12, and 17 of the Kyoto Protocol and submit this list to the Russian government. In addition, by the same time they were to prepare and submit to the government a Procedure for Approval, Registration, and Follow-up of Joint Implementation Projects in the Russian Federation in Compliance with Article 6 of the Kyoto Protocol and a draft ordinance of the Russian government to approve thereof.

Also, the Russian Ministry for Natural Resources in association with a number of other agencies were to prepare and submit a statutory act of the Russian government on organizing and keeping a register of transfer of Assigned Amount Units (AAUs) to other countries – parties to the Kyoto Protocol. Work on the establishment of a national register is in progress and proceeds in a sufficiently intensive manner. The present-day task is to select the best alternative among ones developed and tested in other countries and then acquire and adapt it to the Russian conditions.

The fulfillment of the above-listed tasks aimed to implement the Kyoto mechanisms was considerably protracted. They had been made ready only by the second meeting of the interagency commission in

the middle of November 2005. The meeting backed the instruments and recommended to submit them to the government. There is a danger that it might take these vital documents infinitely long time to become effective.

The lack of formal rules and procedures to regulate the implementation of the Kyoto mechanisms, especially, joint implementation projects, does not encourage potential participants to begin preparing proposals and project portfolios and put Russian companies and the economy as a whole under a competitive disadvantage in the carbon investment market.

The Integrated Action Plan provides for holding by federal executive bodies of consultations and negotiations with international financial structures and potential investors. This activity proceeds, in part, thanks to initiatives showed by potential investors and donor countries. In particular, it is expected that bilateral agreements of intent will be signed with a number of countries.

Every year, authorized ministries must submit reports on the implementation of the Kyoto mechanisms to the Russian government. The first report was scheduled for March 2006.

Participation in international activity under the Kyoto Protocol

This area of activity implies continuous participation of Russian delegations in the Conferences of the Parties to the UN Framework Convention on Climate Change and the Kyoto Protocol, arrangements of subsidiary UNFCCC organs, and control and subsidiary organs of the Kyoto Protocol.

The authorized Russian bodies should take part, again on a continuing basis, in negotiations and consultations with UNFCCC and Kyoto Protocol member states on issues of economic, environmental, and scientific and technological partnership.

Authorized and concerned federal bodies of executive power were commissioned to develop proposals for the position of the Russian Federation at negotiations on greenhouse gases emission reduction after 2012. This activity of public agencies is of strategic importance and should be especially well-considered and efficient – on this depends how much future agreements on global climate policies will fit with Russia's national interests. In the absence of the United States, Russia could play a great part in the elaboration of further actions of the world community to mitigate implications of global climate change.

Proposals for the next period – after 2012 – were developed and presented at the 11th Conference of the Parties to the United Nations Framework

Convention on Climate Change and the 1st Meeting of the Parties to the Kyoto Protocol in Montreal in December 2005.

What does the Integrated Action Plan lack?

The Integrated Plan fails to mention any actions related to the state or companies' participation in international greenhouse gases emissions trading. This can be probably explained by the statements of EU representatives to the effect that they would acquire only allowances resulted from concrete project activity rather than from the economic recession in the 1990s. At the same time, taking into consideration the bureaucratization of procedures related to projects of joint implementation, some Russian companies possessing sufficient own investment resources and implementing projects, an outcome of which is a reduction in greenhouse gases emission, might be interested in taking part in emissions trading.

Also, the Plan lacks a challenge to establish a state system for greenhouse gases emission management. This is primarily owing to the predictions that Russia will not exceed its allowance for 2008 to 2012 without even making any additional efforts and, besides, there is a risk of provoking a negative response of Russian companies to extra restrictions on their production activity. Nevertheless, it was resolved at the second meeting of the interagency commission to recommend the Russian Ministry for Economic Development to speed up work on developing a concept for a law to regulate them. At the first stage, it is foreseen to use voluntary management mechanisms associated with a possibility of receiving carbon investment.

Finally, the Plan is not prefaced with a political document, in which Russian national goals and priorities of climate policy and approaches to implement them would be stated.

Conclusion

The Integrated Action Plan adopted in February 2005 as guidelines for implementing the Kyoto Protocol in the Russian Federation may be considered as the basis for national climate strategy and policy till the end of the first commitment period – the year 2012. The Plan's sections and arrangements basically follow the structure and provisions of the Kyoto Protocol. The latter formulate national obligations of Annex B member states. Executing the main arrangements of the Plan opportunely would assure the fulfillment of national commitments of the Russian Federation as an Annex B country and allow Russia to take part in all the Kyoto mechanisms in a not too stringent

procedural regime.

At the same time, the insufficiently high status of the Integrated Action Plan and the interagency commission, the unavailability of a political document declaring the priority of actions while implementing the Kyoto Protocol as an area of state policy, and the fact that the Plan is not supported by target financial resources lead to inadequate mobilization and consolidation of the efforts of public authorities in the implementation of the Plan and delays in the fulfillment of certain tasks. This may result in Russia's failure to meet all its commitments, on which the participation in the Kyoto mechanisms depend, in good time and at a satisfactory level, in which case Russia will not be able to gain potential economic and environmental benefits under the Protocol in full.

To make the climate policy exert a considerable positive effect on the national economy and create long-term incentives for intensifying actions aimed at sustainable development, it is necessary to establish an efficient system for management of greenhouse gases emissions and removals in the Russian Federation through implementing the energy-efficiency potential, pursuing sustainable forest management, and taking other appropriate steps.

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ON PROCEDURES AND METHODS FOR THE ESTIMATION AND VALIDATION OF GREENHOUSE GASES EMISSIONS AND REMOVALS

The approval by the Montreal Conference of the Parties (December 2005) of the rules for the implementation of the provisions of the Kyoto Protocol and Marrakech accords has acutely challenged the Russian Federation to establish a state system for the estimation and recording of greenhouse gases emission volumes. The role of such system consists in assuring justification for the position of the Russian Federation regarding the national allowance volume in the second and subsequent commitment periods based on a quantified verifiable estimation of the aggregate greenhouse gases emissions. One necessary – and, perhaps, the most important – element of the state recording system should be a system for the estimation and verification (certification) of greenhouse gases emissions reduced and removals increased. Using this system will ensure efficient control of accountability for emissions of greenhouse gases and their actual emissions reduction at the federal, constituent, and sectoral levels as well as at the level of industrial and associations and individual enterprises.

In spite of the fact that the Kyoto Protocol provides for greenhouse gases emission reporting at the state level only, certification of greenhouse gases emissions at the level of constituents, industrial facilities, and associations would allow them to play an active part in the implementation of the Kyoto flexibility mechanisms, have economic inducements to introduce energy-saving and energy-efficient technologies, and use more extensively renewable energy sources.

The establishment of the Watch Committee for Joint Implementation Projects at the Montreal Conference of Parties means that countries that are undergoing a process of transition to a market economy, including the Russian Federation, will in the near future be able to commence registration of joint implementation projects – the channels for foreign investment inflow in the Russian economy. However, this process, too, is impossible without a system for verification of greenhouse gases emissions resulted from the implementation of such projects.

For Russia it would be expedient to use for this purpose a national emission certification system, which operates with simple, transparent procedures.

Here, of primary importance are the following objects:

- Development of a national emission reduction certification methodology, including for joint implementation projects in Russia;
- Harmonization of the Russian system with those of EU and other countries to comply with the United Nations Framework Convention on Climate Change and the Kyoto Protocol; and
- Rendering services on certification of emission reduction and removal increase and validation and verification of climate projects and programs.

It is obvious that when establishing a greenhouse gases emission certification system it is necessary to take into consideration the interests

In spite of the fact that the Kyoto Protocol provides for greenhouse gases emission reporting at the state level only, certification of greenhouse gases emissions at the level of constituents, industrial facilities, and associations would allow them to play an active part in the implementation of the Kyoto flexibility mechanisms, have economic inducements to introduce energy-saving and energy-efficient technologies, and use more extensively renewable energy sources.

and capacities of different stakeholders, such as public authorities, commercial enterprises, and others, and ensure compliance with international requirements.

A major current problem in generating a certification system is certainly associated with the fact that the Russian government has not made a final decision regarding how the greenhouse gases emission management system will be organized and whether clear goals, tasks, and mechanisms will be provided for. This would allow Russia already now to tackle technically complicated, labor- and time-consuming problems of building a reliable greenhouse gases emission monitoring and certification system in a more effective way.

To date, there is just one Kyoto-related document adopted – Order of the Russian Government on the Russian Carbon Units No 215-r of February 20, 2006. The other documents are being coordinated.

At the same time, the use of the Kyoto market mechanisms (joint implementation projects under Article 6 and emissions trading under Article 17) by Russia may, given certain conditions are met, yield investments in industrial sectors with a high energy-saving potential and direct budget receipts from emissions trading.

There is good reason to believe that the Montreal resolutions regarding the implementation of Marrakech arrangements and decisions of the negotiations on future commitment periods will become an essential motivating factor for further expansion of the carbon market and attraction of investment in Russian projects related to cutting greenhouse gases emissions.

The apparent object in this connection is the establishment and commissioning of a Voluntary Certification System for business operation (activity) aimed to reduce the emissions and increase the removals of greenhouse gases.

Such system created in conformity with the existing laws on technological regulation is designated, among other things, for assurance of compliance with the United Nations Convention on Climate Change, the Kyoto Protocol, and the Marrakech arrangements.

It should be emphasized that although the Kyoto Protocol became, after the ratification, part of the Russian legal system, it does not regulate technological relations, whereas the existing Russian laws in that sphere fail to form the basis for developing clear national estimation and verification procedures and methods or harmonizing them with international ones. The legal gap may be bridged by expediting the process of development and approval of national procedures or by adapting the available procedures and methods of the world's

biggest speculators in the market of estimation and verification procedures.

In this connection, the Russian Commerce and Trade Chamber held on February 2, 2006 a meeting to the subject "Legal and Technical-Organizational Support of Project Activity Aimed to Reduce the Emissions and Increase the Removals of Greenhouse Gases in the Russian Federation" represented by bodies of legislative and executive power, big businesses, social institutions, and scientific organizations.

Participants in the meeting resolved to request the Russian government to speed up the development and adoption of a package of legal instruments for regulation of the content, principles, and rules of the emission reduction certification system not only at the federal level but also at the level of constituents, industrial associations, and individual enterprises and make such certification mandatory for certain economic sectors.

With a view to exchange opinions on a wide range of issues related to the implementation of the Kyoto Protocol in Russia, it was resolved to organize, under the aegis of the Russian Commerce and Trade Chamber, a conference in the fourth quarter of 2006. It is expected that representatives of industrial facilities will discuss principles and methods of certification activity at plants.

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THE KYOTO PROTOCOL: ITS PRESENT AND FUTURE (RESULTS OF THE 1ST SESSION OF THE MEETING OF THE PARTIES TO THE KYOTO PROTOCOL)

Key goals of the conference¹

The primary goal was to adopt the Marrakech Accords – a code of by-laws of the Kyoto Protocol. There were serious concerns regarding whether it would be possible to adopt them directly in the form they had been agreed upon in 2001 at the 7th Conference of Parties in Marrakech. Even if just one country wanted to “improve” the Accords, this would entail re-discussing them, which would take all the conference time. That is why before and in the early days of COP11/MOP1, prior to the plenary session on the Marrakech Accords, the talks were focused on barring their revision.

Second, it was necessary to establish working bodies of the Kyoto Protocol and discuss their function. Decisions were made on the Joint Implementation Mechanism and the Joint Implementation Supervisory Committee as well as on the observance of obligations (two bodies were set up under the Compliance Committee). The Clean Development Mechanism and the Clean Development Executive Committee had already been functioning, so it was necessary to discuss their work and elect a new roster of the Executive Committee.

The third object was to commence a negotiation process on future commitments. It was difficult to determine the format and timeframe of negotiations, especially taking into consideration the unwillingness of the United States even to begin discussing the future agreement. It was possible to start the talks under the Kyoto Protocol, but then they would be held without the US participation. At the same time, within the UNFCCC framework the United States would bar the adoption of any document, in which the Kyoto Protocol is directly mentioned. Many developing countries were against the increase in the number of countries with quantified greenhouse gases emission reduction commitments.

The COP11 (194 UNFCCC member states) and MOP1 (157 Parties to the Kyoto Protocol: all developed countries, except the United States and Australia; the greatest developing countries – China, India, and Brazil; and almost all of the CIS countries) sessions were held in rotation in the same hall. It took two days to prepare for voting on the Marrakech Accords and coordinating the establishment of contact groups on various issues.

After the adoption of the Marrakech Accords, the operations essentially proceeded in the contact groups (from November 30 to December 8). On 7–8 December, a Ministerial Segment was held for the ministers to state their formal positions. On the last day, final meetings took place with decision-making on the Kyoto compliance regime and future commitments.

Besides, every day from 20 to 30 Side Events were organized to discuss views of business groups and environmental and scientific organizations

It is well known that the Kyoto Protocol expires on December 31, 2012. This immediately puts a number of questions. How could the carbon business be planned beyond 2012? How to ensure the continuity of the use of emissions units and the “smoothness” of project implementation? To answer these questions, it would be expedient to review the results of the 11th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and the 1st Session of the Meeting of the Parties to the Kyoto Protocol COP11/MOP1 (Montreal, November–December 2005) and consider COP11/MOP1 decisions and the positions of the leading countries, our partners in the negotiations. Another aspect of the problem is Russia’s future commitments beyond 2012. It is necessary to determine the sort of commitments preferable for Russia and their quantified parameters.

¹ Document of the UN Framework Convention on Climate Change FCCC/KP/CMP/2005/1/Add.1

as well as about 10 press conferences and other arrangements for the press. There, future partnerships were negotiated, working contacts established, and project development agreements made.

Review of leading countries' positions

The European Union has not once declared its unwavering purpose to maintain and expand the European trading system irrespective of the future agreement. The EU adheres to the idea of strong and stringent commitments, for example, a 15–30% emission reduction (from the 1990 base year) by 2020 for developed countries. Such commitments would answer the strategic goal – to stop global climate change at the level 2–3°C.

Japan, Canada, Norway, and other developed countries (except the United States) also plan to establish and expand national emissions trading systems and organize “connecting” windows for international trading. One example of such window is access of emission reduction units resulted from JI projects (in particular, in Russia) to the EU emissions market. The EU countries would prefer to have their future commitments less stringent than ones proposed by the EU. However, they do not doubt that it is necessary to maintain the structure of the Kyoto mechanisms and the general cap-and-trade principle, which implies that the countries' emissions form a sort of common stock (or «cap») to trade within.

Each of those countries pursued their own goals too. Thus, Japan did its best not to allow the preferable variant of the Protocol to fail. Since this country was likely to face considerable difficulties in emissions reduction, its position tended to adhere to an advisory, “mild” commitment system and was inclined to concern about future commitments. Canada was on the eve of election, and that circumstance predetermined many actions of its politicians – it was important for the government to demonstrate the successfulness of the conference the independence from the United States while advocating a mandatory US participation in the future agreement. Australia declared that it was prepared to negotiate future commitments in the Kyoto format. Norway spoke in support of promoting technologies for CO₂ burial in geological strata and exhausted gas and oil fields.

The leading developing countries that had ratified the Kyoto Protocol – China, Brazil, Mexico, the Republic of South Africa, Argentina, India, and South Korea recognized the necessity of an agreement beyond 2012 and market-based regulation methods. However, they many times emphasized that the commitments should not hamper the economic growth or create social problems. India especially insisted on that aspect. The overwhelming majority of developing countries are united in the Group 77 and China (G77), which now

comprises more than 120 states. As a rule, they have a unanimous position, the elaboration of which involves considerable efforts, because G77 is very diverse. Most of these countries typically urge towards an intensive clean development mechanism expansion and wish to obtain relief for climate change adaptation arrangements. The least developed countries insist on a direct financial support. G77 comprises a group of small island states (AOSIS), for which climate change is especially dangerous. They usually demonstrate the most radical position and demand soonest possible emission reduction and energetic actions.

On the other hand, a number of OPEC countries, especially Saudi Arabia, fear that the raising of energy efficiency and the promotion of renewable energy might lead to a decline in oil prices. They are trying to put the brakes on the process from inside but do not dare to openly oppose the overwhelming majority of the G77 countries. According to economic estimates, the reduction of oil export income owing to greenhouse gases emission cutting measures is negligible in comparison with the impact of other geopolitical factors.²

The United States, the world's biggest greenhouse gases emitter, is not participating in the Kyoto Protocol and does not intend to do this till its expiration. On the other hand, this country is taking progressively more intensive steps to reduce greenhouse gases emissions, has demonstrated initiatives from more than 20 states, and backs market-based regulation mechanisms – emissions trading. There is understanding at the level of US Presidential Administration that the United States would not wish to be internationally isolated, especially after typhoon Catherine, when even President Bush acknowledged the existence of a serious threat of human-induced climate change and the necessity of cutting greenhouse gases emissions. The United States initiated signing the so-called Asian-Pacific Pact (the USA, Australia, Japan, China, South Korea, and India) aimed not to destroy the Kyoto Protocol but to demonstrate its actions on combating global climate change to the whole world³. Consequently, the United States is doing quite a lot but it refuses flatly to discuss future commitments as continuation of the Kyoto Protocol. It is important to take into consideration the attitude of other countries to US participation. Great Britain, Canada, Australia, and a number of other countries have a strong conviction that the new agreement should, without fail, cover the United States. The EU position is more diplomatic:

² Corppy, A., Grabb, M., and Carras, J. *Russia and the Kyoto Protocol: Problems and Opportunities*. The Royal Institute of International Affairs, Chatham House, London, Nuffield Press, 2005.

³ *Vision Statement of Australia, China, India, Japan, the Republic of Korea, and the United States of America for a New Asia-Pacific Partnership on Clean Development and Climate*. The Australian. 27 July, 2005. 27 July, 2005.

the US participation must not damage the essence and efficiency of the new agreement. In the opinion of environmentalists, in particular, WWF, no concessions should be made to the present US administration. The US position would change in several years following the emergence of new climate-related dangers. It is necessary to resolutely work to limit climate changes by the 2°C level.

The Russian position was to foster soonest possible implementation of the Kyoto Protocol and to involve all countries in undertaking future commitments. The principal task declared was promoting the mechanism for joint implementation projects, which is especially important in light of competitiveness with clean development mechanism and certain opposition from G77. Russia energetically backed the desire of Belarus to enter into Annex B of the Kyoto Protocol with quantified commitments (95% of the level of emissions in 1990).

Adoption of the Marrakech Accords

On November 30, all sections of the Marrakech Accords were approved unanimously except the compliance system. The documents tackled the following key issues:⁴

- Greenhouse gases emission accounting and reporting;
- Joint implementation project evaluation and approval;
- Clean development mechanism evaluation and approval;
- Keeping national emission unit registers;
- Terms of emissions trading;
- Additional emissions of countries under Article 3.4 of the Kyoto Protocol (forestry measures).

Thus, the green light was given to the expansion of unique mechanisms under the Kyoto Protocol – joint implementation projects and emissions trading. The EU emissions trading system began functioning in 2005, and the global system is likely to work in 2008 after the countries have fulfilled certain obligations on emissions accounting and reporting. This directly concerns Russia. Alas, Russia is the only developed country that has not prepared emissions accounting in conformity with the international format. Russia will not be able to participate in international emissions trading until this is done. For joint implementation projects, Variant 2 was chosen – a very complicated,

⁴ Marrakech Accords. Documents of the UN Framework Convention on Climate Change FCCC/KP/CMP/2005/3 and Add.1-4, FCCC/KP/CMP/2005/L.2, FCCC/KP/CMP/2005/L.3.

⁵ Corppy, A., Grabb, M., and Carras, J. *Russia and the Kyoto Protocol: Problems and Opportunities*. The Royal Institute of International Affairs, Chatham House, London, Nuffield Press, 2005.

long procedure for international consideration of projects similar to the clean development mechanism.⁵ By special decision-making, Italy's application for emissions allowance revision under Article 3.4 of the Kyoto Protocol was entertained. That allowed the conference to prevent opening a discussion of the Marrakech Accords themselves.

Some difficulties arose when approving the compliance system. Saudi Arabia proposed to reinforce the system through making it an amendment to the Kyoto Protocol, which had to be ratified. All the countries were against that proposal, as it was an obvious attempt to destroy the Kyoto Protocol. To this end, a special contact group had to be nominated to start negotiations. The system had been agreed upon back in Marrakech – it is quite "gentle" and does not imply any fines or other financial sanctions. The issues of "enforcement" are under the jurisdiction of each country. Thus, the EU has already imposed fines for insufficient emissions reduction €40 per CO₂ ton till 2008 and €100 from 2008 on. It is unlikely that Russia will have to introduce so strong sanctions. We stand a good chance of meeting our commitments without resorting to forcible measures. On the contrary, we need the Kyoto measures as an additional incentive for improving the energy efficiency of the national economy.

The subject under discussion was not the system itself but the mode of acceptance. The supporters of a "strong" system – EU and most of G77 – insisted on the "adoption." Their argument was that investors should not fear to invest in clean development projects. The advocates of a recommendatory system, primarily Japan and Russia, suggested its "approval."⁶ Japan has an apprehension that it would confront with difficulties when fulfilling its obligations. Russia would prefer a strong system for joint implementation projects and emissions trading, but, perhaps, from political considerations, Russia insists on home decision-making and considers that at the international level, only recommendations are acceptable. Anyhow, with the rather "gentle" compliance system, this aspect is actually observed.

In the end, on December 9, it was resolved to "approve and adopt" the Kyoto Protocol compliance system and to commence negotiations on amending the Kyoto Protocol.⁷ The latter, however, was considered to be a diplomatic move to reach agreement with Saudi Arabia. Nobody was seriously going to consider a re-ratification of the Kyoto Protocol.

⁶ Presentations of Japan and Russia at a plenary meeting of COP11/MOP1, November 30, 2005.

⁷ Document of the UN Framework Convention on Climate Change FCCC/KP/CMP/2005/L.5.

Decision-making on the function of the Joint Implementation and Clean Development bodies

The sharpest debates in the talks on joint implementation projects were around two issues. First, the EU, Russia, Canada, and the East-European countries suggested using for joint implementation projects the same accredited organizations and evaluation methodologies as ones approved for clean development mechanism, because this would allow the parties to save time and promptly launch joint implementation projects. Second, Russia and the East-European countries insisted on a simplified procedure for small projects (as is the case with clean development mechanism). Both proposals were opposed by G77, which viewed the joint implementation mechanism as a competitor to clean development mechanism. In the end, both proposals were adopted⁸.

Working bodies were elected for joint implementation mechanism, clean development mechanism, and the compliance Committee. Russian representatives were elected to all the bodies. To appreciate the importance of these accords and the outlook for JI projects, it would be expedient to review the clean development mechanism progress. The clean development mechanism is actively working in practice, although it has a very complicated bureaucratic procedure. In compliance with the Marrakech Accords, clean development mechanism projects may be launched in developing countries already now. As of November 2005, 39 projects were underway and officially registered, with 34 commenced over the past 6 months. Early Certified Emissions Units had been issued. About 90 more projects had been applied for and were expected to be registered soon. It was predicted that the number of clean development mechanism projects would range from 500 to 700, which would make it possible to reduce greenhouse gas emissions by 500 to 700 million tons of CO₂. The volume of "carbon" investment in these projects would run to about €3 billion.⁹ These are just the funds to be paid for the emission reduction. According to expert assessments made at the Side Events, the aggregate volume of project investment would be 6–10-fold.

EU representatives declared that they intended to acquire 520 million tons of emission reduction to the amount of €2.7 billion.¹⁰ Hopefully, a great part of these resources will be appropriated for implementing environmentally and socially significant emissions

reduction projects in Russia. It is essential that the Russian internal project registration procedure should be convenient and "transparent" and begin functioning as soon as possible. Last November, the Interagency Commission for the Implementation of the Kyoto Protocol approved the Russian procedure, which then had to be approved by the Russian government. Of interest was China's suggestion: immediate decision-making on clean development mechanism continuation beyond 2012 and initiation of projects invested by companies from developed countries that are not Parties to the Kyoto Protocol.¹¹ Obviously, it was an attempt to attract private resources of US and Australian companies. Of course, in that case it would not be possible to use the resulted reductions for emissions trading under the Kyoto Protocol but they could be used after 2012 or, at least, serve as demonstration of environmental activity in leading American and Australian corporations.

Arrangements on future negotiations

At the conference, a clear understanding was reached to develop a new international agreement that will have to come into effect in 2013. This is of critical importance, because without tackling this issue, it would be hardly possible to speak about long-term emission reduction actions or carbon business. Three formal negotiation grounds were established and respective decisions were made for each of them.

- Negotiations under the UN Framework Convention on Climate Change, in which the United States participated too, included holding formal seminars, gathering views of the Parties, and a report for COP12. The corresponding decision on COP11 had gentle wording which suited the United States. It did not contain any direct reference to the Kyoto Protocol and mentioned both multilateral and bilateral initiatives (by which, for example, the US methane initiative could be implied). In this context it is important to emphasize two aspects. First, the Asian-Pacific Pact implicitly states that it functions as part of activity under the UN Framework Convention on Climate Change. Second, Australia declared that it was prepared to undertake commitments for the next period in the Kyoto format: percentage of its 1990 emissions and corresponding trading opportunities. On the whole, this testifies to good negotiation prospects.
- Negotiations in compliance with Article 3.9 of the Kyoto Protocol, which prescribes to initiate the consideration of commitments for the second period at least seven years before the end of the first commit-

⁸ Documents of the UN Framework Convention on Climate Change FCCC/KP/CMP/2005/L.6, FCCC/KP/CMP/2005/L.7.

⁹ Address of chair of Clean Development Executive Committee at a plenary meeting of COP11/MOP1, November 30, 2005.

¹⁰ Address of a British representative on behalf of EU at a plenary meeting of COP11/MOP1, November 30, 2005.

¹¹ Address of a Chinese representative at a plenary meeting of COP11/MOP1, November 30, 2005.

ment period (2005). To this effect, a special body was set up – the Ad Hoc Group. In the decision of COP11, it was emphasized that there should be no gap between the first and second commitment periods, which means that carbon business and trade systems will not have to interrupt their operations until new commitments have come into effect. Of course, it will not be easy to complete the talks and ratify the future agreement before 2013. Some experts informally discussed an idea of prolonging the first period if the second period was not ready (not ratified by a necessary number of countries) by 2013. On the final day of negotiations under Article 3.9, a problem emerged in connection with Russia's proposals on more intensive involvement of countries in undertaking commitments. In particular, Russia suggested establishing a procedure for consideration of voluntary greenhouse gases emissions limitation and reduction commitments. All negotiators admitted that Russia had advanced a good idea but pointed out that it was outside the scope of Article 3.9 and no time was available for further discussion. Then, a trade-off decision was made: by the next Conference of the Parties, the chair of COP11/MOP1 would hold consultations on the Russian proposal and report the outcome.

- Negotiations under Article 9 of the Kyoto Protocol, which states that the first review of commitments under the Kyoto Protocol takes place at MOP2 with the object of elaboration of future commitments. G77 emphasized that there was an explicit indication to the fact that this process should start at MOP2, whereas some Parties (EU and a number of developed countries) insisted on the need to prepare for the talks well in advance. In the end, it was decided to gather the Parties' opinions, commission the Secretariat with pertinent actions to issue compiled documents, and start negotiations at MOP2.

Meanwhile, the talks would be held simultaneously by the Parties to the UN Framework Convention on Climate Change, including the United States, and by the Parties to the Kyoto Protocol, which would proceed in the Ad Hoc Group to discuss issues under Article 3.9 of the Kyoto Protocol and from 2006 on, would start negotiations under Article 9 of the Kyoto Protocol. Today, it is too early to judge about what kind of commitments should be undertaken in the future. Some developing countries, among them India, have not once emphasized that the start of negotiations does not mean that the developing member states would assume new obligations. The United States was rather passive at the conference and tried all ways to demonstrate that it did not prevent other countries from going ahead. Much interest was shown to the informal participation in the conference of US ex-

President Bill Clinton who made a speech backing the Kyoto Protocol and emphasized that human-induced climate change is an accomplished fact and called upon energetic actions. He pointed out that that renewable energy, energy saving, and energy efficiency mean new jobs and constitute a necessity. He urged to take care of economic progress and children, who need climate.¹²

Yet, we may conclude already now that there is no serious risk that after 2012 the emission reduction process may stop. Nor there is risk that the market mechanisms would be eliminated and administrative regulation at the international level would come back. However, the scope and efficiency of carbon business depend on the kind of commitments beyond 2012. It is important to understand that poor commitments mean a poor business, because if everyone meets them anyway, foreign trade is unnecessary.

Russia's strong points in the talks on climate

From the point of view of both business and ecology, Russia needs strong commitments from all countries that would emphasize its strong points. Here, "strong" implies participation in the carbon market rather than the general situation in the Russian economy and environmental protection. Russia has a potential for

- reducing total CO₂ and methane emissions using relatively inexpensive projects and measures (regarding the price of an emission reduction unit) and
- considerably reducing its emissions per GDP unit. In addition, Russia
- has relatively low CO₂ emissions per unit of energy and heat generated at major power stations owing to the use of gas and combined cycle and
- has capacity for substantial increase in renewable energy generation through the use of relatively cheap projects.

¹² Address of US ex-President B. Clinton as guest of COP11/MOP1, November 30, 2005, December 9, 2005.

A.O. Kokorin

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THE OUTCOME OF THE MONTREAL MEETING

After Russia ratified the Kyoto Protocol in 2004 thus ensuring its coming into effect, Canada took the baton. In the late November – early December of 2005, the 11th Conference of the United Nations Framework Convention on Climate Change Parties, which simultaneously was the first Meeting of the Parties to the Kyoto Protocol, took place in Montreal. The key items on the agenda were triggering the Kyoto mechanisms and discussing the format of future international cooperation in the area of climate change after 2012. The conference successfully reached its goals.

It adopted a code of by-laws of the Kyoto Protocol – the so-called Marrakech Accords of 2001 comprising, among other things, rules for accounting carbon sequestration resulted from special forestry arrangements and various guides, including on national systems for accounting anthropogenic greenhouse gases emissions and removals, reporting to the United Nations Framework Convention on Climate Change organs, obligation observance systems, procedures for joint implementation projects, the clean development mechanism, emissions trading, and the procedure for keeping national registers.

The conference established working bodies of the Kyoto Protocol – the Clean Development Executive Committee, the Joint Implementation Supervisory Committee, and two compliance bodies. Russian representatives were elected to all the bodies.

The conference resolved to commence the formal acceptance procedure for Belarus to make it a Party to the Kyoto Protocol with a commitment to restrict greenhouse gases emissions to 95% of the 1990 level.

There is no need to enumerate all the Montreal decisions. Yet, we would like to focus on two aspects.

Clean Development Mechanism versus Joint Implementation Mechanism

The principal intrigue in the talks on Kyoto market mechanism procedures was the competition of the clean development mechanism and the joint implementation mechanism. These two mechanisms per se are identical. They both deal with greenhouse gases emissions reduction through implementing appropriate investment projects, but in one case these projects are implemented in developing countries and this is called a clean development mechanism and in the other case, in economically advanced countries and ones in transition to a market economy (listed in Annex I to the United Nations Framework Convention on Climate Change) and this is named a mechanism for joint implementation of projects.

For developing countries, preferences are foreseen. Thus, emission reductions under the clean development mechanism have been accounted since 2000. As regards those under the joint implementation mechanism, they will be accounted from 2008 on. Accordingly, the methodology, procedures, and special organ of the Kyoto Protocol – the Executive Committee – have been established for the clean development mechanism but not yet for the joint implementation one.

Meanwhile, countries with transient economies have no less capacity for emission reduction than developing countries. Take, for instance,

A lot of things may change over the forthcoming seven years – in climate, in the world economy, in politics, and in the position of the countries. Yet, the Montreal proclaimed the most important thing: to be continued.

Russia or Ukraine. The level of gross domestic product energy intensity in these countries is many times higher than in developed European countries, Japan, or Canada. Of course this in itself is bad, and there is nothing to boast of. On the other hand, however, this means Russia and Ukraine have a considerable potential for reducing their fuel and energy consumption and, consequently, for cutting their greenhouse gases emissions.

That is exactly where the competition manifested itself. Actually, the buyers do not care where to acquire emission reductions – in developing or more developed countries. Their primary concern is about the amount and price rather than the origin.

That was the reason for the nervous atmosphere of the negotiations, which at one point nearly deadlocked. China poured oil on the flames having suggested that 2% should be collected from joint implementation projects in favor of the relief fund to help the developing countries in the adaptation to climate change.

That was a challenge. Back in 2001 it was resolved in Marrakech that the relief fund would be increased at the expense of deductions from clean development projects. At that time all countries, including China, agreed to that. The attempt to impose a tax on joint implementation projects for benefit of developing countries was manifestly beyond the scope of the Marrakech Accords. The goal pursued was to delay decision-making on this mechanism to gain time and ensure competitive advantage for the clean development mechanism.

In response, Russia proposed to fix a \$0.5 deduction from each ton of reduced emissions for clean development mechanism administrative and organizational expenses while the developing countries insisted on \$0.2/t.

In the upshot, both proposals were withdrawn with the status quo restored.

Participants unanimously elected the Joint Implementation Supervisory Committee (with Oleg Pluzhnikov, head of the Environmental Economics Department at the Russian Ministry for Economic Development, representing Russia) and the Clean Development Executive Committee; approved, without amending, the joint implementation and clean development mechanism rules and procedures that had been agreed upon in Marrakech back in 2001; and adopted a number of transitional provisions in respect of joint implementation projects to put them on a par with clean development ones. In particular, the provision that joint implementation projects shall comply with the methodology earlier approved by the Clean Development Executive Committee until the Advisory Committee works out a different one. Also, such projects may be evaluated by the auditors earlier accredited to the Clean Development Executive Committee. Besides, on the insistence of Russia and East-European countries, it was resolved to develop

and adopt simplified procedures for small joint implementation projects.

Thus, all international-level barriers to the launching of joint implementation and clean development projects and to the expansion on these grounds of a global emissions market were successfully removed.

The conference discussed the state of affairs in this market. A number of figures were presented as follows: 34 clean development mechanism projects had been registered over the past six months, with about 90 more projects applied for and being registered at the Clean Development Executive Committee. Earlier, 5 clean development mechanism projects had passed the formal evaluation and registration procedure. For some of them, the emission reduction had already been certified.

It was predicted that by 2008, the number of officially registered clean development mechanism projects would vary from 500 to 700 with the aggregate expected emission reduction totaling to 500–700 million tons of CO₂ equivalent. According to expert's assessment, the emissions trading volume under the clean development mechanism would run to about €3 billion and the volume of investment in respective projects, to €20–30 billion.

EU representatives declared that they intended to acquire 520 million tons of emission reduction to the amount of €2.7 billion. No information was provided regarding the total amount of emissions and the additional sum the EU emitters were prepared to spend in the conditions of greenhouse gases emission restriction. It seems those figures would sound no less impressive.

On the whole, the game is worth the candle, and its rules have been defined in the end. Now, it is important not to lose the chance.

Post-Kyoto Period: What Is in Store for Us?

Future commitments were another fundamental issue discussed in Montreal. It is well known that the Kyoto Protocol expires on December 31, 2012. What is going to happen afterwards? A lot depends on the answer to this question, including the behavior of member States that are Parties to the Kyoto Protocol and their emitters while the Protocol is effective.

If the process stops on the 31st of December 2012, it will be a matter of tactics, rather than strategy, for the country as a whole and for big businesses. If, however, the emission cutting is going to be a long-term process, the motivation, the strategy, and the pattern of the market will be different.

The Montreal meeting failed to make a final decision regarding the post-Kyoto period. In fact, it was unlikely it could be possible, because the member states had very different views. Yet, one critical decision was adopted, namely, development of a new international agreement to come into effect in 2013. To this end, three negotiation grounds were foreseen

First, the talks will be held within the framework of the United Nations Framework Convention on Climate Change. All United Nations Framework Convention on Climate Change Parties, including those that are not Parties to the Kyoto Protocol, for example, the United States and Australia, will take part in them. The negotiation process will involve holding formal seminars, gathering views of the Parties, and preparing an integrated report for the 12th Conference of the Parties to the United Nations Framework Convention on Climate Change in 2006.

This quite satisfies the United States, which recognizes that synergies are necessary to mitigate the implications of climate change but refuses to undertake quantified emission limitation and reduction commitments. It is to be noted that US ex-president Bill Clinton, who was present at the Montreal Conference as a guest, spoke in support of the Kyoto Protocol and urged to intensify the efforts. He emphasized that renewable energy, energy saving, and energy efficiency are of vital importance in this context.

Australia declared that it was prepared to undertake emission limitation and reduction commitments for the next period in the Kyoto format, that is, in percentage of its 1990 emissions base year on the assumption that the emissions trading mechanisms are maintained.

The second negotiation ground was established in conformity with Article 3.9 of the Kyoto Protocol, which prescribes to initiate the consideration of commitments for the second period at least seven years before the end of the first commitment period, that is, in 2005. To this effect, a special body was set up – the Ad Hoc Group. In a resolution of the Meeting of the Parties to the Kyoto Protocol, it was emphasized that there should be no gap between the first and second commitment periods. In the lobby, the experts even discussed a possibility of prolonging the first period if the timeframe of the second period was not agreed upon (ratified by a necessary number of countries) by 2013.

Third, a decision was made to commence work on analyzing and reviewing the Kyoto Protocol within the framework of Article 9 to enable the 2006 Meeting of the Parties to begin official negotiations on this issue. It is expected that the outcome of this effort will be used for working out decisions regarding the second commitment period after 2012. At this point, it is not clear what commitments will be provided for and what countries they will cover. It is likely that quantified emission limitation and reduction commitments will be maintained for developed countries and countries that are undergoing the process of transition to a market economy, while the possibility of active involvement of developing countries in this process is still open to question. Actually, some developing countries, for example Kazakhstan and Argentina, once declared that they

intended to undertake such commitments. However, this was met with neither approval nor support among India, China, Saudi Arabia, and some other developing countries. If they could have had their way, they would have not let Belarus join the Kyoto Protocol with quantified commitments to prevent others to do the same. However, Russia interceded for Belarus, and they had to give in.

It is interesting to note that EU representatives were not delighted with the declaration of Belarus either but for a different reason. They considered the Belarussian emission reduction commitments (95% of the 1990 level) too low, since its present-day de facto emissions are considerably higher.

On the other hand, the accession of Belarus to the Kyoto Protocol even with these “low” commitments creates a precedent for the future, especially, in the context of incipient negotiations about a new international agreement within the United Nations Framework Convention on Climate Change framework and about the second commitment period under the Kyoto Protocol. The fact is that in the gross domestic product per capita level, Belarus considerably lags behind many developing countries. The developing countries justify their aversion to quantified emission limitation and reduction commitments exactly by the economic weakness and the need to intensify the industrial production. However, the talks are just beginning, and a lot of things may change over the forthcoming seven years – in climate, in the world economy, in politics, and in the position of the countries. Yet, the Montreal proclaimed the most important thing: to be continued.

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¹ The author sincerely thanks Aleksei Kokorin, WWF Russia, for making available information and his impressions of an eyewitness of and participant in the events described.

CLIMATE PROBLEMS AND SUSTAINABILITY INDICATORS

Controlling global climate necessitates integration of the climatic factor into the system of basic socioeconomic indicators. This can be attained through developing and allowing for sustainability indicators at the global and national levels. They should be incorporated in international and national programs for sustainable development, economic development plans and programs, and environmental action plans. In recent years, nearly all international organizations and advanced countries have included indicators of sustainable development, with the climatic factor taken into consideration, in their own systems of sustainability measures. The amount, as well as the range, of these indicators is substantial, and each indicator may embody from one to several parameters, including those related to climate indirectly.

We can emphasize a number of climate-related sustainability indicators that are present in international and national indicator systems:

- Carbon dioxide emissions;
- Total greenhouse gases emissions;
- Per capita carbon dioxide emissions;
- Carbon intensity;
- Energy intensity;
- Coal-based power generation;
- Deforestation; and many others.

Three of these indicators are presented in the table for groups of countries depending on their per capita income, with Russia's indicators given separately. In the per capita CO₂ emissions, Russia is inferior to high-income countries and outstrips low- and medium-income ones. As regards carbon and energy intensities, Russia far exceeds all other countries.

It is difficult to analyze within the framework of a small article the host of approaches to integration of the climatic factor into sustainability indicators that are available in the world. We will discuss only two developed by the largest international organizations – the World Bank and the United Nations. Both approaches are well known and widely spread in the world and applied by many countries for their own systems of indicators. The World Bank has developed a system of World Development Indicators, which are published every year. Within this system, there are key indicators that make it possible to identify priorities and measure the progress towards meeting the objects of environmental sustainability. The United Nations Organization has proposed the Millennium Development Goals for the whole world and individual countries. The UN Commission on Sustainable Development has designed a system of sustainability indicators.

In the world, people are becoming progressively more aware of the fact that the available traditional macroeconomic measures, such the gross domestic product (GDP), the gross national income (GNI), per capita income, and other development and growth estimates, ignore environmental degradation. Today, the growth of these

The reference is to the elimination of direct relation between two trends: macroeconomic measures and greenhouse gas emissions. It is not only scientists and economists who formulate this problem in respect of global and some countries' economies – it has been extensively used by politicians as well. Based on experience of advanced countries, we may infer that Russia's nature intensity could be reduced 2–3 times at the least. From the viewpoint of climate changes, this is particularly important for national carbon and energy intensities.

indicators may be based on a technogenic, nature-intensive development. This may lead to a dramatic deterioration of economic indicators in the future as a result of depletion of natural resources and pollution of the environment.

We will now consider in more detail possibilities of including the climatic factor in sustainability indicators. The two prevailing approaches to building such indicators in the world are obtaining an integrated economical aggregate and building a system of indicators with environmental, economic, and social indicators included separately. The availability of an integrated environmental and economic indicator at the macrolevel is ideal for decision-makers with relation to allowance for the environmental aspect in the national development. One such indicator would be enough to judge about the extent of sustainability of the country and the ecological compatibility of the path of development. However, due to methodological (including statistical) problems and computational complexity, there is no universally recognized integrated indicator in the world. Nevertheless, constructive approaches in this field are being intensively developed.

The integral approach to building an aggregated sustainability indicator has been best embodied in the developments of the World Bank. For example, the genuine (domestic) savings indicator directly reflects climate-related damage. The genuine savings represent a real rate of accumulation of national savings with due account of natural resources depletion and pollution-related environmental damage. This indicator includes a carbon-dioxide-emission damage assessment. Climatic and related problems are reflected in three other components of genuine savings: the depletion of energy and forest resources and the dust-emission-related damage. To measure carbon-dioxide-emission damage, WB experts used a unit damage of \$20 per ton of emitted carbon.

The importance of measuring genuine savings for a sustainable development policy is quite clear: constantly negative genuine savings rates are indicative of an unsustainable type of development and would invariably lead to degradation of the well-being of people. For politicians, the relationship of sustainable development with the rates of genuine savings means that there is a variety of possible means to intensify sustainability ranging from macroeconomic to purely environmental arrangements.

Calculations for individual countries have shown a considerable divergence between conventional economic indicators and environmentally adjusted ones. This is essential for Russia now, when an economical upsurge has started. The country, with its large-scale degradation and depletion of natural resources and environmental pollution, may face a

situation when an economic growth is accompanied by natural capital squandering and the accounting of the environmental factor results in a dramatic GDP and industrial growth reduction down to negative growth rates. This divergence for Russia has been validated by computations. Thus, over all (!) recent years, the Russian genuine savings indicators have been negative on the background of a considerable GDP growth. This is a typical sign of unsustainable trends in the development of the Russian economy. Economically advanced countries and many developing countries and ones with transitional economies have positive genuine savings.

The second of the above-mentioned approaches to building sustainability indicators is based on a system of indicators that embody certain aspects of sustainability, such as environmental, economic, social, and others. This approach has gained more popularity worldwide as compared with integrated sustainability indicators. Today, many countries are developing or adjusting the UN Millennium Development Goals (MDGS) suggested for appraising the efficiency of actions aimed to implement human potential development policies in various countries. All the 189 UN member states have undertaken obligations to meet these targets by 2015. The MDGS system identifies eight fundamental development goals with more concrete tasks specified for each, including quantitative targets. Among these, there is Goal 7 – Ensure Environmental Sustainability.

The MDGS system has parameter No 28 – “carbon dioxide emissions (per capita) and consumption of ozone-depletive substances (tons). It should be pointed out at once that Russia does not produce the ozone-depletive substances included in this parameter, so they are unimportant for us. Also, it should be emphasized that the implementation of the Kyoto Protocol is not related to the per capita carbon dioxide emissions, as suggested in MDGS, but rather to the countries’ commitments regarding total CO₂ emissions. Therefore, it would be better to reword this MDGS parameter for Russia as “carbon dioxide emissions (tons)”¹.

One critical feature of the MDGS system, which distinguishes it from many other international and national indicator systems, is the time frame (1990–2015). The total CO₂ emissions in 2015 could be related to Russia’s commitments under the Kyoto Protocol. The emissions of carbon dioxide (together with the other five greenhouse gases) are an ecological limit for the country in the first commitment period from 2008 to 2012. It is yet unclear what agreements and figures will follow after 2012, but the determination

¹ This and other indicators within the framework of Goal 7 “Ensuring Environmental Sustainability” were in more detail discussed by the author for Russia in a separate chapter of the 2005 Report on Human Potential Development in the Russian Federation prepared for UNDP with this author being the Editor-in-Chief as well.

Table. Climate-related indicators

	Carbon intensity (kg/GDP at purchasing power parity (USD))	Per capita CO ₂ emissions (t)	Energy intensity (kg oil equiv/GDP at purchasing power parity (USD))
World	0,6	3,8	0,24
Low-income countries	0,5	0,9	0,28
Medium-income countries	0,7	3,4	0,27
High-income countries	0,5	12,4	0,21
European Community	0,4	8,0	0,17
Russia	1,5	9,9	0,63

Source: Calculated based on The Little Green Data Book 2004. World Bank, Washington DC, 2004.

of nearly 130 countries that have ratified the Kyoto Protocol demonstrates that the world community's intentions to combat climate change are really firm. The upper limit of greenhouse gases emissions will most probably become more stringent by 2015. Today, the issue of whether the Russian commitments under the Kyoto Protocol restrain the economic progress or not is being much discussed. The overwhelming majority of experts believe they do not. According to the optimistic scenario, which implies a radical reorganization of the energy sector and a reduction of energy intensity, Russia will in no case exceed the 1990 greenhouse gases emissions.

When identifying sustainability indicators, an essential problem is choosing absolute or relative (specific) measures. It is apparent the MDGS uses an absolute carbon dioxide emissions index. The table shows three specific measures, with two of them – carbon and energy intensities – related to so-called nature-intensity parameters. Most often, the latter are measured as inputs of natural resources or emission or pollution volumes, etc. per unit of final result (most often, GDP). The nature intensity parameters themselves convey little. Their principal advantages are manifested in two aspects – when they measured in dynamics or compared with other countries, economic structures, technologies, and so on.

Russia's present-day economy is extremely nature-intensive and requires a considerably higher unit consumption of natural resources (emission volumes of various substances) for product manufacture in comparison with the available economic structures in other countries and modern technologies. Russia's carbon and energy intensities are 2–4 times higher than in other countries irrespective of their per capita income (see the table).

The selection and measurement of climate-related indicators is a practical matter needed, in particular, for developing post-Kyoto arrangements and commitments of the countries to combat global climate change. For example, in the United States, they are widely discussing the expediency of choosing carbon intensity (or total greenhouse gases emissions)

for a measure of international commitments of the countries after 2012. Cutting the carbon intensity should organically correlate two economic processes: reduction or certain stabilization of this greenhouse gases emission, on the one hand, and growth of macroeconomic measures, GDP through improving technologies and introducing energy- and resource-saving production methods, on the other hand. Both these aspects necessitate radical economic restructuring in favor of nature-saving and science-intensive types of activity. In fact, the reference is to compounding, the elimination of direct relation between two trends: macroeconomic measures and greenhouse gas emissions. It is not only scientists and economists who formulate this problem in respect of global and some countries' economies – it has been extensively used by politicians as well. Based on experience of advanced countries, we may infer that Russia's nature intensity could be reduced 2–3 times at the least. From the viewpoint of climate changes, this is particularly important for national carbon and energy intensities.

The development of sustainability indicators that embody climate problems apparently needs inventory taking, monitoring, and controlling parameters related to emissions of carbon dioxide and other greenhouse gases. All this necessitates including this figure in the annually published official state statistics.

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THE CARBON MARKET AFTER THE MONTREAL MEETING: WHY SHOULD RUSSIA CREATE A GREEN CARBON INVESTMENT FACILITY?

The first meeting of the Parties to the Kyoto Protocol (Montreal, December 2005) resulted in the adoption of a number of important decisions that will have a major influence on the international carbon market. First, compliance rules were adopted. Now a country that violates its Kyoto commitments will face a penalty equal to 1.3 of the shortfall calculated in terms of emission allowances that will be subtracted from the second emission budget. Second, the member countries reached an agreement to start negotiations concerning the second commitment period. Therefore, there will be no interruption in the carbon market and the countries will have incentives to comply with the Kyoto rules. Emissions trading (allowances trading) is one of the most efficient options to lower compliance costs for developed countries that are Parties to the Kyoto Protocol.

EU¹, Japan and Canada will obviously face a significant shortfall in allowances. All these countries have rigid emission targets and will have to significantly cut their carbon emissions between 2008 and 2012. For instance, a year ago EU introduced a Kyoto-like greenhouse gases act, which demands from large emitters meeting tight emission targets. Canada and Japan are also considering domestic greenhouse gases regulation to be implemented prior to 2008. It is difficult to estimate the total shortfall these countries will have. According to various studies, it could be between 3 and 6 billion tons of CO₂ equivalent. The recent acceleration of economic growth in Europe, Japan and Canada could make this shortfall even larger.

Over the last 4 years, the elasticity of CO₂ emission with respect to gross domestic product has significantly increased² and it may be difficult to reverse this tendency within such a short period of time.

Over the last 5 years Russia, on the contrary, has demonstrated high economic growth followed by just a moderate increase in emissions. The gross domestic product carbon intensity in Russia has been declining and now is below the 1990 level. The elasticity remains at a very low level (0.2–0.3 % of CO₂ emission growth per 1% of gross domestic product growth).

Future economic growth will be accompanied by a moderate increase in CO₂ emissions, but under any reasonable scenario, Russia is expected to have surplus allowances between 2 and 4 billion tons of CO₂ equivalent.

Consequently, Russia appears to be an attractive compliance option for developed nations that are Parties to the Kyoto Protocol. However, there are other options as well:

1. Domestic greenhouse gases reduction.

This option will be to some extent used by developed countries,

¹ Here and elsewhere in the paper we mean the "old" EU.

² In Western Europe, for instance, the elasticity of CO₂ emission with respect to gross domestic product over 1999–2003 was about 0.66, while that over 1990–2003, only about 0.21.

Supporting investment activities to reduce carbon emissions is an urgent task. Otherwise, the investment decisions made now by companies may lock in a higher emission trajectory and then Russia may lose some trading potential.

but the costs of domestic reduction will be very high ranging from \$20 to \$200 per ton of CO₂ emission. Relatively cheap options are limited, and if countries that face a significant shortfall in carbon allowances rely on domestic reduction they will confront a very high cost of climate policy. Today, the acceptable cost level for EU is about \$30 per ton of CO₂: European companies participating in EU Pre-Kyoto cap and trade program are ready to pay this price at the European carbon market.

2. Substitution of coal by natural gas.

Natural gas combustion produces twice less carbon emission than coal one. EU could boost the share of natural gas in the fuel mix through increasing the export of natural gas from Russia. However, the export opportunity is restricted by the capacity of existing pipelines.

3. Eastern Europe and Ukraine.

These countries are also expected to have surplus allowances that may range from 0.5 to 1 billion tons of CO₂.

4. Clean development mechanism.

This alternative mechanism may generate additional allowances. However, it suffers a generic inefficiency of credit trading programs, when emission reduction is counted not against a fixed emission target but against a baseline that has to be justified and proved. Additional criteria rule out the most promising no-regret options. The clean development mechanism board has approved several small projects with expected emission around 30 Mt of CO₂. This is just the first step. When projects are completed, the attained emission reduction should be verified and certified.

None of the options listed above, nor even all of them taken together will be able to cover the shortfall that EU, Japan and Canada will have in 2008–2012. Therefore, transactions with Russia are inevitable.

At the same time, there is no activity in the forward market yet. A few joint implementation projects would not make any difference. One would expect beginning of negotiations for large transactions. There are several reasons why potential buyers are passive:

1. Most of analysts understand the arithmetic of carbon balance but politicians are not in a position to acknowledge the problem and start searching for solutions. Therefore, political

rhetoric does not represent this understanding. On records the responsible officials continue to assure that most of the required reduction could be achieved based on domestic measures.

2. The way how domestic regulations are designed does not create incentives for polluting companies to shop at the carbon market. Japan does not have domestic regulation yet. The ongoing discussion concerning a carbon tax does not motivate them to seek for offsets from abroad, since the proposed tax of around \$6/t CO₂ is too small to create incentives for cutting emissions in Japan or to buy allowances now. In Canada the intensity of emission targets is complemented by a cost cap around 10 USD/t CO₂. This level is not sufficient for creating incentives for emission reduction domestically or stimulating the import of carbon allowances by individual companies.
3. EU is the only group of countries that has manifold incentives to reduce carbon emissions and purchase carbon allowances, but the EU trading directive does not let individual companies participate in international emission trading. joint implementation and clean development mechanism is the only option for European businesses to acquire allowances abroad.

Most likely, the governments of Japan and Canada will have to cover the emission shortfall and obtain required allowances. They have already made some initial steps in this direction. For instance, Canada has allocated 1 billion canadian dollars in the current fiscal year to the newly created fund that should provide support to greenhouse gases reduction projects including overseas "green investments" but the overseas investments are now just a marginal activity. As for EU, it is not clear if the European governments authorize the businesses to use imported assigned amount units for compliance purposes or allocate them more allowances and cover the difference between the emission and the initial budget (redistributed EU quota within the European bubble) by purchasing allowances at the international market. In any case, some important political decision should be made before the "final consumer" of assigned amount units enters the international carbon market. Taking into account the political time horizon, such decision is unlikely to be made sooner than in two or three years.

Consequently, we have to conclude that there is still time before final consumers of assigned amount units become visible at the carbon market. Traders and strategic investors are well aware of

this circumstance and consider filling in the gap. They are willing to gamble on the emerging market and take some risks now in anticipation that this risk will be rewarded in the future, when countries and individual firms confront shortage of assigned amount units.

For Russia, the above developments dictate the following strategy:

1. Creation of an investment facility to support businesses that implement investment projects to cut carbon emissions. In order to create an endowment, Russia should allocate some assigned amount units to the investment facility. Russia can easily (with no risk to compromise domestic needs for carbon allowances) allocate up to 1 billion assigned amount units to this facility, but it will be sufficient to start with 200-300 Mt allocation.
2. Open the door for strategic investors and traders. The facility should be able to accept collateral investment, sale options, borrow against endowment etc.
3. Facility should organize a flow of investment projects using simple selection criteria and providing financial support vs. emission reduction.
4. Track the origin of emission reductions in order to demonstrate a "green" outcome of investments.

Such green carbon investment facility has a significant advantage over joint implementation and clean development mechanism, since the investment cycle does not have to meet all joint implementation criteria, especially, baseline justification. In order to assure environmental integrity and keep assigned amount units balance, all recipients of financial support should have an emission target (emission budget allocated to them by the Russian government). The difference between the emission target and the actual emission will be recognized as an emission reduction eligible for emission trading. Russia may consider using domestic carbon allowances exchangeable for assigned amount units according to the rules that Russia still has to come up with.³

Supporting investment activities to reduce carbon emissions is an urgent task. Otherwise, the

investment decisions made now by companies may lock in a higher emission trajectory and then Russia may lose some trading potential. Cooperation with traders and strategic investors at the carbon market is important for forming financial resources of the carbon investment facility. Besides, such cooperation makes it possible to better understand the political constraints in the carbon market and their influence on the behavior of final assigned amount units consumers.

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³ We skip these technical details here.

ENVIRONMENTAL AND ECONOMIC ASPECTS OF THE IMPLEMENTATION OF KYOTO PROTOCOL PROVISIONS IN RUSSIA

To develop recommendations for implementing market-based mechanisms under the Kyoto Protocol in the Russian Federation, it is necessary to identify economic incentives that would be able to attract investors in this new economic sector.

In our opinion, capping greenhouse gases emissions is part of a general global problem – the inefficiency of price policy in managing natural resources, including energy.

According to UNEP expert assessment, the excessive energy consumption and greenhouse gases emissions are responsible for an annual \$300-billion loss in the world economy.

As for Russia, the energy consumption per unit of industrial product and for housing and communal power supply is 3–5 times higher than in Western countries. This fact was confirmed by direct space observations over the cities of St. Petersburg and Helsinki.

It is obvious that energy saving will promote fossil fuel economy and, accordingly, reduction of greenhouse gas emissions. Consequently, Russia has a unique opportunity to raise the energy efficiency of the national economy within the framework of the Kyoto Protocol.

Within the next few years, Russia's interaction with the world community on this problem will be coordinated within the framework of the Action Plan of the Big Eight: Climate Change, Clean Energy, and Sustainable Development, which was adopted on July 8, 2005 in Gleneagles, Scotland.

Russian Federation's activity aspects in the key fields of the Big Eight's Action Plan

The utilization of energy can be optimized along several lines as follows:

- Improvement of energy supply in various sectors of economy and housing and communal services through:
 - (a) raising the energy efficiency throughout the technological chain starting with fuel production and ending with manufacture and electric power transmission;
 - (b) maximum utilization of the potential of alternative energy sources with low-level adverse implications;
 - (c) using nuclear energy based on safer technologies; and
 - (d) ensuring environmentally sound and more effective production or electric power from coal and other types of fossil fuel.
- Financing activity to create environmentally sound energy sources through
 - (a) forming market-based investment projects to promote direct investment and mobilization of private capital for designing environmentally safe technologies;
 - (b) developing long-term policies at the sectoral, national, and international levels; and

Energy saving will promote fossil fuel economy and, accordingly, reduction of greenhouse gas emissions. Consequently, Russia has a unique opportunity to raise the energy efficiency of the national economy within the framework of the Kyoto Protocol.

- (c) organizing a greenhouse gases emissions allowance market and establishing joint implementation mechanisms to promote clean development projects and processes.
- Mitigating climate change implications provided that
 - (a) the Intergovernmental Panel on Climate Change (IPCC) submits necessary information that will enable the countries to consolidate their strategies for development and sustainable energy utilization for the purpose of raising resistance to climate effects;
 - (b) the Global Environmental Facility supports developing countries in strengthening their potential in the field of adaptation and mitigation of climate implications.

The above-mentioned list of problems will be discussed during the St. Petersburg summit of the Big Eight scheduled for June 15–17, 2006.

It is expected that the same problems will be discussed at the Social Forum on Climate Change held right before the summit. For this reason, we think it expedient to analyze the conformity of the tasks set at the national (Russia) level to those at the international (the Big Eight) one.

Russia's preparation for the implementation of Kyoto provisions

Early in 2005, the Russian Ministry of Economics, Development, and Trade submitted a draft Action Plan for Kyoto Protocol Implementation in the Russian Federation to the Russian government.

Upon careful examination of this document, the following drawbacks were found:

- The designers of the draft Action Plan failed to take into consideration the contribution of the private economic sector in the atmospheric emissions of greenhouse gases;
- The greenhouse gases emission invariance coordination was foreseen for federal executive bodies only, which implied that market-based mechanism under the Kyoto Protocol should be implemented based on a centralized administrative control system.

Besides, the Action Plan ignored the role of public environmental organizations capable of developing alternative solutions for socioeconomic problems.

Unfortunately, no new draft Action Plan with appropriate adjustments has been proposed so far.

Today, there are three corporate centers at the federal level that are willing to attract investment in the regions using market-based Kyoto mechanisms. These are:

1. The Energy Carbon Fund established by RAO UES, which has concluded its first two contracts with

the Danish Environmental Agency to modernize thermoelectric power stations;

2. The National Carbon Agreement established under the aegis of supreme legislative and executive agents, which aspires to the leading role in the management of Russia's environmental and energy costs using market mechanisms under the Kyoto Protocol; and
3. NP ROSPROMECO, now completing the registration procedure, was established by
 - The Russian Union of Industrialists and Entrepreneurs, which attracts investment from national and foreign sources and regional project participants;
 - Moscow Energy Institute, which has capacity for making a register of domestic energy-saving technologies;
 - The Russian Independent Environmental Commission of Experts, which is capable of making public environmental review of projects; and
 - The Cedar Constructive Environmental Movement, which is building partnerships with local communities and municipal entities in housing and communal services.

The assurance of interaction between state- and private-owned economic sectors by all the above-mentioned organizations would lead to the best action scenario when production facilities are modernized through attracting investment for introduction of domestic technologies. However, the practical implementation of available plans is hindered by a lack of legal infrastructure to regulate activities in the new economic field. According to representatives of different agencies responsible for the implementation of the Kyoto Protocol, the most part of instruments will be adopted by legislative and executive bodies in the first half of 2006.

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LEGAL ASPECTS OF THE KYOTO PROTOCOL: FOREIGN EXPERIENCE

Analysis of the laws of the European Community and other economically advanced countries that build capacity for the implementation of economic mechanisms under the Kyoto Protocol

The European Emissions Trading Scheme (ETS) has been in effect since January, 1, 2005. It was established by European Union Directive 2003/87/EG, which came into force on October 25, 2003.

The European Emissions Trading Scheme is an independent internal trading scheme introduced to cap the volume of greenhouse gases emissions in European Union countries by 8% against the base year of 1990 (this is in line with the European Union commitments under the Kyoto Protocol).

It is foreseen that the European Emissions Trading Scheme has several stages that coincide with reporting periods under the Kyoto Protocol. Currently, the first allowance trading stage is in progress.

The quantitative characteristics of the first European Emissions Trading Scheme stage (2005–2007) are as follows:

- 1) It covers 12 000 industrial installations in such industries as
 - Power engineering, including heat production (for equipment of installed capacity more than 20 MW), except trash burning facilities; oil refineries; and coking plants;
 - Metallurgy, including production of iron ore, cast iron, and steel (more than 2.5 ton (metric ton) per hour);
 - Production of building materials: cement (more than 500 tons a day), lime (more than 50 tons a day), glass (more than 20 tons a day), bricks, and china (more than 75 tons a day);
 - Pulp-and-paper (for installations with production capacity of more than 20 tons a day);
- 2) It issues permits for carbon dioxide (CO₂) emissions only;
- 3) A voluntary nature of accession and secession for businesses coming within the scheme;
- 4) Penalty provision at the rate of €40 per ton of CO₂ for exceeding corporate allowances assigned;
- 5) Sequential transfer of businesses to emissions trading: introduction of accounting for fuels utilized, rated direct CO₂ emissions, and a system of emission validation.¹

The Kyoto Protocol is a unique international instrument in that a sovereign's quantitative commitments of an obvious ecological legal nature may become the object of bargain between member countries.

¹ European Union ETS Overview (www.natsource.com)

At the second stage (2008–2012), which coincides with the first commitment period under the Kyoto Protocol, the European Emissions Trading Scheme foresees some additional provisions:

- 1) Mandatory participation in the European Emissions Trading Scheme of all established emitters coming within obligations to cap CO₂ emissions;
- 2) Increase in penalties for exceeding the assigned corporate allowances to €100/t; and
- 3) Other adjustments and amendments in the scheme formulated based on the outcome of the initial stage.

Besides, it is projected to revise the European Union Directive in 2006 and extend the greenhouse gases list to include methane (CH₄), nitrous oxide (N₂O), fluorocarbohydrates, and perfluorocarbons as well as expand the sectoral structure of participants through adding the chemical and aluminum industries. It is planned that by 2010 about 45% of total carbon dioxide emissions will be covered by the RTS system.

The CO₂ emissions allowances are allocated among European Union industrial installations coming within the above-mentioned definitions in an "old-world" way in conformity with the European Union Directive, which prescribes allowance distribution based on the values of absolute and per unit CO₂ emission in the past and is of a centralized and mandatory character.

To allocate and support emission allowances in a common legal landscape, each European Union member country prepares a National Allocation Plan (NAP), which has to be approved by the European Commission. This plan is intended for distribution of CO₂ (its equivalent) emission allowances and defines the position of each European Emissions Trading Scheme company and installation. To participate in this market and be on the list of installations, among which allowances are distributed, each company must submit an investment plan to support the company's intention to invest in greenhouse gases emission reduction. The NAP approval serves as a starting point for making a national emission allowance register. The latter actually represents a set of accounts to keep record of emissions permitted to a particular plant or installation.

Data from national registers arrive at the European register. Consequently, emission permits are accounted at the national and supranational levels and legal prerequisites are provided for circulation of emission permits.

In Great Britain, the two major statutory acts in the environmental realm are the Environmental Protection Act (1990) and the Environment Protection Act (1995). The 1990 law specifies major environmental sights to be protected from pollution, types of environment-unfriendly activity, and measures to protect and oversight over complying with the laws. The 1995 law lays down the establishment of an environmental agency and a Scottish agency for environmental protection with definition of their functions, capacity, rights, and obligations (hereinafter, the Agencies).²

Basic environmental activities are laid down by the UK's Climate Change Program, which was originally adopted in 1994 and then regularly revised.³ The 2000 Climate Change Program specified how the UK was going to meet its Kyoto commitments to cut the greenhouse gases emission by 12.5 % as well as its domestic challenge to reduce in 2010 its carbon dioxide emissions by 20% against the 1990 baseline. This program serves as a framework document for implementing an integrated long-term greenhouse gases emission cap strategy throughout the United Kingdom of Great Britain and Northern Ireland. In 2002, the world's first Emissions Trading Scheme was developed in the Great Britain as part of activities under the Climate Change Program.

Canada's policy in the field of environmental protection and sustainable development is aimed at regulating external and internal activities in this sphere. The main internal statutory act is the Canadian Environment Protection Act adopted in 1999.⁴ To build legal capacity for the implementation of the Kyoto Protocol, Canada has made an important step to amend the Act through:

1. Making a proposal to include a greenhouse gases provision in accordance with the Kyoto Protocol;
2. Projecting introduction of a Large Final Emitters System including enterprises of the energy and oil-and-gas sectors and the mineral resources industry committed to cut emissions down to 45 million tons.⁵ It will start till the end of 2005.⁶

² Environmental Protection Act 1990, Environment Protection Act 1995, www.opsi.gov.uk

³ The UK's Climate Change Programme, <http://www.defra.gov.uk/environment/climatechange/02.htm#uk>

⁴ Canadian Environment Protection Act 1999, http://www.ec.gc.ca/CEPARRegistry/documents/part/kyoto_ghg/

⁵ From materials of the Climate Change Plan Report, http://www.climatechange.gc.ca/kyoto_commitments/report_e.pdf

⁶ From materials of the Climate Change Plan, www.climatechange.gc.ca/english/offsets

The currently functioning Project Green⁷ – a program of activities and initiatives of the Canadian government, nongovernmental commercial organizations, and the general public aimed to conserve biological diversity, protect water resources, clean polluted areas, and ensure clean atmosphere.

In 2004, Canada launched a program named Pilot Emission, Removals, Reductions and Learnings Initiative (PERRL)⁸, which had been proposed in the 2002 Climate Change Plan. The program is aimed to provide economic incentives for the population and commercial organizations taking greenhouse gases emission reduction arrangements, encourage emissions capping, and implement projects related to afforestation and the use of renewable energy sources and gas from organic waste. The Pilot Emission, Removals, Reductions and Learnings Initiative program is directed by the Canadian Ministry for the Environment and supported by the Ministry for Natural Resources.

The Canadian Environmental Protection Act passed in 1999 established a unified system of measures for Canadian economic actors in order to ensure compliance with environmental rules and prevention of environmental offences.⁹

The system comprises the following instruments:

1. Monitoring and oversight of the compliance with legal rules through a requirement to provide accounts and perform checks;
2. Accounting of environmental violations;
3. Investigation of offences committed;
4. Verbal and written notices of prevention of wrong;
5. Administrative instructions or orders;
6. Administrative fines;
7. License limitation; and
8. Filing of legal actions.

Oversight of the compliance with legal rules is exercised by the Ministry for Environment.

In 1993, China ratified the United Nations Framework Convention on Climate Change (FCCC) and in 2002, the Kyoto Protocol. For

China, the Protocol does not lay down emission reduction commitments but its provisions offer an opportunity to develop resource-saving technologies and industries, in particular, using renewable energy sources. The Chinese law on renewable energy sources has been approved by the Standing Committee of the National Popular Congress. The use of renewable energy sources is necessary for addressing issues related to global warming and China's sustainable development.

The United States' national environmental policy is governed by the National Environmental Policy Act (NEPA) adopted in 1970.¹⁰ The law lays down challenges to ensure environmental protection, sustenance, and development of the environment; meeting these challenges by federal agencies; and the role of the Council for Environment Quality (CEQ). CEQ coordinates government environmental policy in close association with other federal agencies. Among these federal agencies, the Environmental Protection Agency (EPA)¹¹ is empowered with special authority – to appraise actions of federal agencies, i.e., to issue the Environment Impact Statement (EIS).¹² In the event that EPA finds an agency's actions unsatisfactory, the matter is committed to CEQ.

Of great importance for environmental protection is the Clean Air Act, 1990.¹³ In compliance with the Act, the Agency for Atmospheric Pollution establishes for each state marginal pollutant emissions in the atmosphere, which the state may increase. The law provides an opportunity of trading SO₂ emissions based on the cap-and-trade system.

US environmental policy is implemented along three basic lines:

1. Carrying out research in the field of global climate change and building research capacity for decision-making.

The U.S. Global Change Research Program (USGCRP)¹⁴ was established by the Congress in 1990 for participation of the United States in international environmental research. The main fields of research embrace issues of greenhouse gases effect on climate, impact of climate changes on the environment and health, and protection

⁷ From materials of the Project Green program, http://www.climatechange.gc.ca/kyoto_commitments/report_e.pdf

⁸ From materials of the web site www.ec.gc.ca

⁹ Canadian Environmental Protection Act, 1999, <http://www.ec.gc.ca/CEPARegistry/documents/policies/candepolicy/s7.cfm#12>

¹⁰ The National Environmental Policy Act (NEPA), <http://www.epa.gov/compliance/basics/nepa.html#eparole>

¹¹ The Environmental Protection Agency, *ibid.*

¹² Environment impact statement (EIS), *ibid.*

¹³ Clean Air Act 1990, <http://www.epa.gov>

¹⁴ The U.S. Global Change Research Program (USGCRP), <http://yosemite.epa.gov/OAR/globalwarming.nsf/content/ActionsNationalSoundScience.html>

against and adaptation to these changes. The 1990 act on global change research charged USGCRP with regular estimation of possible implications of global climate changes for the United States.

2. Mutually beneficial cooperation with the states, local authorities, the private sector, and NGOs.

One important outcome of multilateral partnership was the adoption in May 2002 of the U.S. Climate Change Action Plan (CCAP).¹⁵ This integrated plan calls for greenhouse gases emission reduction in all economic sectors and incorporates more than 50 voluntary programs. The Climate Change Action Plan plan, too, provides for implementation by the states of their own greenhouse gases emission reduction programs and initiatives and determination of obligations as well as regional state programs. The states undertake voluntary greenhouse gases emission reduction programs within the framework of partnership agreements, with emission allowance trading forming part of such programs.

3. Drawing more attention of the international community to climate-related risks and the necessity of global decision-making in this sphere.

The 2002 Climate Change Action Plan also embodied a new approach of the US government to the problem of climate change. In 2001, the United States refused to undertake obligations under the Kyoto Protocol to cut greenhouse gases emissions by 7% against the 1990 level. In February 2002, the country issued the challenge of an 18% greenhouse gases emission cap by 2012, improvement of activity of the National Emission Registry (see 1.1.2.1.4.), reduction of corporate emissions, and ensuring a possibility for enterprises that have cut their greenhouse gases emissions to obtain carbon credits. The new approach was presented in such spheres as R&D; the use of renewable energy; improvement of transportation; and programs to monitor and control climate change in developing countries.¹⁶

Consequently, the United States is establishing its own system of arrangements to curb climate change and control greenhouse gases emissions based on voluntary initiatives of the states. On the other hand, the absence of a legislative regime to govern the system of greenhouse gases emission allowance allocation and trade at the national, regional, and state levels restrains potential market capacities.

Although the US government has declared an 18% greenhouse gases emissions reduction by 2012, no legislative regime is available in the United States to determine respective obligations, and all emission reduction commitments are taken by the states on a voluntary basis. In 2003, a number of eastern US and Canadian states developed and adopted a joint greenhouse gases Emission Reduction Program based on the goals proposed by each state. The Program covers Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. Maryland, District Columbia, Pennsylvania, eastern Canadian provinces, and New Brunswick are observers.

The Emissions Inventory Group of the Environmental Protection Agency has designed a National Emissions Inventory (NEI) – an atmospheric emissions database including data on polluting gases provided by the states, local environmental agencies, and industrial companies.¹⁷ Such National Emissions Inventory bases are used for simulation, development of national strategies, control, risk assessment, and identification of trends related to gas emissions. The database contains information on stationary and mobile pollution sources. Traditionally, the exchange of environmental information was achieved through interaction of environmental departments in the states and the Environmental Protection Agency. To improve the process of creation and exchange of new databases, an Exchange Network has been designed for exchanging new information among the states and the Environmental Protection Agency in a more efficient mode – DBs are prepared in the same format and are independent of support systems.

The Exchange Network also allows participants to send information on other environmental databases – for example, the EPA's Air Quality System (AQS). Besides, the US Department of Energy has developed a National Emission Registry to follow the established baseline emissions and to record greenhouse gases emissions. The participation in the Registry is voluntary, with flexible accounting standards provided, which, on the one hand, encourages businesses to participate but, on the other hand, reduces the degree of belief in the registry's data. The cuts attained by Registry members within the framework of trading in the Chicago Climate Exchange are verified by independent verifiers approved by the Exchange.

¹⁵ The U.S. Climate Change Action Plan (CCAP), www.epa.gov

¹⁶ TFrom materials of CO2e.com, <http://www.co2e.com/CarbonBriefing/carbonbriefingview.asp?categoryid=202>

¹⁷ TFrom materials of the Environmental Protection Agency (EPA), <http://www.epa.gov/ttn/chief/net/index.html>

Since the states implement their own emission reduction programs, they independently chose the way to verify the cuts attained. To meet the targets, companies may acquire extra emission allowances or offset credits.

The existing Russian legal framework allows Russia to effectively implement provisions of the Kyoto Protocol. Having ratified the United Nations Framework Convention on Climate Change and the Kyoto Protocol, the Russian Federation made these international legislative instruments part of the country's legal system.

The United Nations Framework Convention on Climate Change and the Kyoto Protocol lay down certain obligations for the Russian Federation as a party thereto and offer certain opportunities for international cooperation (the so-called "flexibility mechanisms"). Supplementing national arrangements with the latter may ensure meeting the obligations assumed. The tenor of obligations is stated directly in the Framework Convention and the Kyoto Protocol and is basically reduced to a description of necessary steps taken at the national level and aimed to reduce greenhouse gases emissions and increase their removals. Some obligations for the parties to the Framework Convention and the Kyoto Protocol provide for creation of a special information resource and an appropriate infrastructure (a national report, a cadastre, a system for assessment of greenhouse gases emissions and removals, and so on).

Commitments of member countries

The most essential obligation for a group of countries – parties to the Kyoto Protocol (the so-called United Nations Framework Convention on Climate Change Annex 1 countries) is to stabilize total greenhouse gases emissions from all sources of certain type (the types of sources are listed in Annex 1 to the Kyoto Protocol) at the level, which:

- Is individual for each country from Annex 1 to the United Nations Framework Convention on Climate Change;
- Is calculated by the formula given in the Kyoto Protocol: the volume of national emissions in 2008–2012 must not exceed that of 1990 multiplied by 5 and then by the level of individual commitment of each country specified in Annex B to the Kyoto Protocol (for Russia, this level is 100%; for Canada, 93 %, and for European Union countries, 92 %). The estimated emissions level is called in the Kyoto Protocol an "assigned quantity" for each country.

To support meeting this fundamental quantified commitment, the Kyoto Protocol provides for an additional measure – a possibility to "acquire" part of such assigned quantity from another Party to the Kyoto Protocol through using "flexibility mechanisms": joint implementation projects (JI projects), a clean development mechanism (very similar to joint implementation projects), and emissions trading. Any part of an assigned amount, which a party transfers to another party, are subtracted from the assigned amount for that party thus altering the level of commitments thereof.

The Kyoto Protocol is a unique international instrument in that a sovereign's quantitative commitments of an obvious ecological legal nature may become the object of bargain between member countries.

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LEGAL ASPECTS OF THE KYOTO PROTOCOL: PROPOSALS FOR RUSSIA

The innovation of the Kyoto Protocol, from the point of view of Russian environmental legislation, is that climate and nonrenewable energy resources have become subjects of regulation. Moreover, for the first time in international public environmental law, market mechanisms for regulation of the level of anthropogenic impact on the environment have been laid down, and a new commodity – “excess reduction of anthropogenic impact on the environment” has appeared. This step is indicative of a new fundamental stage in the development of commodity-money relations – involvement of the environmental component of productive relations in the commodity-money turnover.

We would like to emphasize the aspects of self-regulation and market approaches when establishing a system of legal relationship in the environmental sphere. Market relations represent a self-regulated system. In the conditions of large information flows, control actions, a huge number of interaction participants, and volatility of premises, it is possible to achieve sustainability only in self-regulated system. A market is the best self-regulated economic system. Self-regulation is assured by availability of proper legislation, market infrastructure, and social activity and responsibility of participants in market relations.

In the existing situation, it is vital for the Russian Federation not only to comply with new international standards but also to occupy a fitting place in the vanguard of builders of a new global system, which is impossible without building an environment-oriented society.

Assessment of regulation completeness in respect of relations in the area of greenhouse gas emission limitation by existing legislation of the Russian Federation

The United Nations Framework Convention on Climate Change and the Kyoto Protocol as part the Russian legal system establish in corpore the substance of obligations. The procedure for fulfillment of these obligations during the first period (2008-2012) may be ensured by applying operative rules of Russian legislation as follows:

A. Basic obligations envisaged by Article 2 of United Nations Framework Convention on Climate Change and Articles 5, 7, and 10 of the Kyoto Protocol foresee implementation at the national level of a policy and measures to ensure greenhouse gases emission reduction and increase in their removal by sinks to meet quantified targets under Article 3 of the Kyoto Protocol. Such policy and measures are already embodied in the Russian laws and implemented both in pursuance of Russian laws and legal and administrative acts of the Russian government and federal executive bodies concerned. It should be noted that statements of national policy and arrangements takes are regularly given in National Communications, which, after estimation of their correctness in compliance with United Nations Framework Convention on Climate Change procedures, are approved by United Nations Framework Convention on Climate Change executive bodies. Since 1994, the Russian Federation has not received any fundamental remarks regarding these documents.

As a result of the structural economic reforms of the 1990s, the reduction in the overall Russian greenhouse gases emissions has become so considerable that this “reserve of development” relative to the level of national commitments under the Kyoto Protocol (Article 3) will not exhaust by 2012. However, total lack of regulation in this area may be a hindrance to the development of the position of the Russian Federation for discussion of the level of obligations to be assumed after 2012 and the manageability of emission of the major greenhouse gas – CO₂.

B. Part of commitments foreseen by the above-mentioned United Nations Framework Convention on Climate Change articles and defined concretely in Articles 5, 7, and 10 of the Kyoto Protocol may be executed under legal acts of the Russian government and appropriate acts of federal bodies of executive power in compliance with their authority. The content of such acts and their adoption procedure are given in Annex 2.

It may be concluded from the above that the Russian legal system is in principle sufficient for meeting Russia's commitments under the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

On the efficiency of activity related to the fulfillment of obligations under the United Nations Framework Convention on Climate change and the Kyoto Protocol within the framework of the existing laws

The United Nations Framework Convention on Climate Change and the Kyoto Protocol, which constitute part of the Russian legal system, fail to define relations in the regulation area in full.

Formally, this does not hinder meeting United Nations Framework Convention on Climate Change and Kyoto commitments by the Russian Federation. However, without adoption of special legislative instruments, meeting commitments would just lead to budget expenses and loss of profit of both the budget system and private investors due to the impossibility to use flexibility mechanisms. We would remind that among the countries of Annex I to United Nations Framework Convention on Climate Change, Russia is a major resource of capped greenhouse gases emissions.

The desirability, expediency, and economic necessity of special legal regulation of greenhouse gases emission and removal by sinks is motivated by the following factors.

First, federal laws do not regulate issues of emission of the main greenhouse gases – carbon dioxide (CO₂). Environmental legislation regulates emissions of the other five greenhouse gases (fluorides, nitrous oxide, and methane), but their share in the aggregate emission volume at the national level is maximum 12% while the greater portion (about 88 %) is carbon dioxide generated by combustion of fossil fuel. As a result of the structural economic reforms of the 1990s, the reduction in the overall Russian greenhouse gases emissions has become so considerable that this "reserve of development" relative to the level of national commitments under the Kyoto Protocol (Article 3) will not exhaust by 2012. However, total lack of regulation in this area may be a hindrance to the development of the position of the Russian Federation for discussion of the level of obligations to be assumed after 2012 and the manageability of emission of the major greenhouse

gas – CO₂. This obstacle may significantly hamper the use of flexibility mechanisms under the Kyoto Protocol.

Second, the United Nations Framework Convention on Climate Change and the Kyoto Protocol as well as relevant Russian legislative instruments fail to lay down the powers of public authorities, including the Russian government, in respect of the use of flexibility mechanisms (joint implementation projects and emissions trading). Neither the Framework Convention nor the Kyoto Protocol contain direct indications regarding the authority of the governments of member countries; consequently, in compliance with Article 31 of the Federal Constitutional Law on the Government of the Russian Federation, the Russian government does not have statute-instituted powers to use flexibility mechanisms, because the use of such mechanisms alters the level of obligations of the sovereign. Our review of other powers of the Russian government under the Federal Constitutional Law on the Government of the Russian Federation demonstrates their inadequacy for using flexibility mechanisms "on default."

Third, to extend the Kyoto Protocol, the international community has made agreements on the procedure for implementation of a number of its rules including flexibility mechanisms. Some provisions of such agreements have no direct analogs in Russian legislation (for example, a register of assigned amounts, validation of projects, and so on) and require definition.

The aim of regulation in the area of limitation of greenhouse gases emission and increase of their removal by sinks is to establish legislatively a system of jural relations among the state, business and scientific communities, public organizations, and the population to achieve the goals of the Convention on Climate Change and the Kyoto Protocol, while ensuring a sustainable economic growth, and to make the best use of mechanisms for international scientific and economic cooperation.

To meet the challenge, the legislative support should solve the following tasks:

- to define the area of legal regulation so that this would encourage energy efficiency and energy saving in the country and create conditions for mutually advantageous cooperation with both aligned and non-aligned to the Kyoto Protocol countries;
- to establish transparent and effective regulation mechanisms ensuring minimum risks of administrative barriers;
- to orient to the predominant use of civil mechanisms.

Relations associated with regulation of greenhouse gases emission and removal by sinks include

- Identification of the object of regulation (object of relations) proposed to be defined as greenhouse

gases resulted from human activity (activity associated with greenhouse gas emission and removal). The individualization of the object of regulation is quite simple, and, as was mentioned above, five out of six greenhouse gases are already accounted by the state. The emissions of carbon dioxide are estimated by calculation of fuel combustion volumes or other computation methods oriented to technologies for production of stocks of materials and capital equipment. The greenhouse gases removal is a special activity aimed to grow vegetation (forest) – no other methods of removal have been so far considered in international agreements.

- Identification of the subjects of relations, which should be public authorities, legal persons, citizens, and nongovernmental organizations.
- Methods to control greenhouse gases emissions and removals by sinks.

When devising a scheme of legal regulation, it is necessary to make decisions on several fundamental scenarios.

Scenario 1. Carbon dioxide becomes an object of environmental regulation, i.e., plant carbon dioxide emissions are regulated individually pursuant to existing legislation, which lays down a measure of responsibility for excess emissions, including financial sanctions.

Scenario 2. For all the six greenhouse gases, specific features of legal regulation will be established by law.

In view of the fact that the Kyoto Protocol is international public law, which lays down Russia's quantified commitments and which came into effect in the territory of the Russian Federation through ratification, any alteration of the level of commitments must proceed from provisions of the Kyoto Protocol itself and Russian Law. Since the law on the ratification of the Kyoto Protocol does not foresee such powers for any of Russian government bodies, the risk of invalidation of the acts of government bodies on altering the level of commitments under the Kyoto Protocol pursuant to Articles 6, 17, and even 12 by court is run. The lack of intergovernmental agreements and a United Nations and Russian procedures in respect of joint implementation projects puts buyers at risk. This leads to significant underestimation of prices, complication of transaction execution procedures, and increase in transaction costs.

The unavailability in Russian private law of a direct description or an analog of the object of legal regulation of the Kyoto Protocol incurs risks of all sorts of complaints from taxation or other fiscal authorities to economic entities in connection with greenhouse gases emission reduction bargains, on the one hand, and as an instrument in unfair competition.

Concept for a law regulating emissions of greenhouse energy gases:

The Federal Law should foresee as follows:

1. Regulation of relations arising in the course of activity related to energy production, transportation, storage, and consumption and aimed to create economic and organizational conditions for effective use of energy, limitation of greenhouse gas emissions, and encouragement of greenhouse gases removals during the process of production, transportation, storage, and consumption and other anthropogenic and natural processes.

2. Definition of basic concepts and objects and subjects of regulation.

3. Description of the area of application of the Federal Law.

4. Determination of

4.1. Basic principles of the state's energy-efficiency policy;

4.2. Organization principles used to comply with international agreements on promotion of effective use of energy and reduction of greenhouse gases emissions;

4.3. Authorities and warrants of government bodies;

4.4. Authorities and warrants of economic entities;

4.5. Principles of self-regulation;

4.6. Principles of international cooperation in the field of energy efficiency and reduction of greenhouse gases emissions.

5. Definition of

5.1. Standardization, certification, and metrology in the area of energy saving and greenhouse gases emission control;

5.2. Economic and financial mechanisms of energy efficiency;

5.3. Basics of the market of efficient energy use and that of indicators of energy efficiency – greenhouse gas emissions;

5.4. Procedure for fulfillment of Articles 3, 4, 6, 12, and 17 of the Kyoto Protocol.

6. Assurance of Russia's interests:

6.1. Any activity of Russian public authorities or economic entities aimed to fulfill emission reduction international agreements should comply with the general principles of organization of economic relations and the fundamental principles of state policy in the sphere of anthropogenic environmental impact regulation and ensure fulfillment of obligations assumed by the Russian Federation under international agreements.

6.2. The warranty of assurance of Russia's interests is financial indemnity in the case of partial or complete

default on greenhouse gases emission limitation obligations by a greenhouse gases emission reduction market entity

Concept for technological regulations of greenhouse gases emission monitoring organization at greenhouse gases emitting facilities

In compliance with Article 6 of Federal Law on Technological Regulation No 184-FZ of December 27, 2002, to defend state property, protect the environment, prevent actions misleading purchasers, general technical regulations are necessary to provide uniformity of measurements of greenhouse gases emissions, the degree of energy use efficiency during the process of production, transportation, and consumption as well as extraction and use of energy resources.

These technical regulations are intended for relations arising in the course of development, adoption, use, and fulfillment, on a mandatory or voluntary basis, of requirements to the execution of work and rendering of services on automated measurement, storage, and transfer of greenhouse gases emission information, observance of energy consumption rates, and fulfillment of obligations by participants in the reduced greenhouse gases emissions market by automated environmental impact accounting and control systems.

Demands to Automated Environmental Impact Accounting and Control Systems (Automated Environmental Impact Accounting and Control Systems should have a facility for collection of measurements for anthropogenic emission accounting, information about the state of measuring devices, and information about the state of the source of anthropogenic emissions):

1.1. Requirements to the set of functions and tasks solved in Automated Environmental Impact Accounting and Control Systems.

1.2. Requirements to the structure of Automated Environmental Impact Accounting and Control Systems.

1.3. Requirements to the set of Automated Environmental Impact Accounting and Control Systems components.

1.4. System-wide requirements to Automated Environmental Impact Accounting and Control Systems components.

1.5. Requirements to the data measuring network.

1.6. Requirements to the data controlling subsystem.

1.7. Requirements to the communications and telecommunications subsystem.

1.8. Reliability requirements.

1.9. Organizational solutions.

1.10. Protectability requirements.

1.11. Functional completeness requirements.

1.12. Requirements to Automated Environmental Impact Accounting and Control Systems metrological support.

1.13. Procedure for Automated Environmental Impact Accounting and Control Systems development, construction, acceptance, commissioning, and registration.

1.14. General recommendations regarding measurement instrumentation.

2. Requirements to legal persons – suppliers of commercial information and accreditation procedure.

3. Energy efficiency marking on process equipment and domestic appliances and their components.

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THE KYOTO PROTOCOL: A YEAR AFTER THE RATIFICATION

Immediately following the Kyoto Protocol's coming into effect in February 2005, the Russian government adopted an Integrated Action Plan for the Implementation of the Kyoto Protocol. The plan provides for five major areas of the government's activity to meet the Kyoto commitments. It designates responsible ministries and departments, quantitative indices of the efficiency and the timeframe of actions performance.

The above-mentioned areas of activity are as follows:

1. Policy and measures

- The energy sector: reduction of GDP power intensity, increase of the proportion of renewable energy sources in the overall energy balance, and reduction of nonproductive natural gas loss.
- Increase in carbon removals in the forestry and agricultural sectors.
- Market reforms, grant reforms, and liberalization of energy markets.

2. Research

- Analysis of climate change implications, economic damage, and possible prevention.
- Expansion of high technologies.
- Innovation mechanisms for raising the energy efficiency and using alternative energy sources.

3. Greenhouse gases emissions inventory and cadastre

- Creation of a national greenhouse gases emissions inventory and reporting system.
- Creation of a national emissions cadastre and computation of assigned amount units.
- Prediction of greenhouse gases emissions.
- Preparation of National Communications in compliance with the UN Framework Convention on Climate Change and the Kyoto Protocol.

4. Participation in Flexibility Mechanisms

- Review of the legal framework.
- Development of a legal framework for approval, registration, and monitoring of Joint Implementation projects.
- Creation of an emission reduction units transfer register.
- Cooperation with foreign and international organizations on JI projects and emissions allowance trading.
- Annual reporting to the government about the progress in implementing mechanisms under the Kyoto Protocol.

5. International activities

- Participation in conferences and meetings of the Parties to the United Nations Framework Convention on Climate Change and the Kyoto Protocol.
- International consultations on scientific and technological issues.

On September 30, 2004, a "historic" meeting of Vladimir Putin with members of the Russian Security Council took place in Novoogarevo. In the course of the meeting, the President expressed a wish for soonest possible ratification by Russia of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. Following the meeting, Russia proved again the well-known proverb that the Russians "harness long but then drive fast." Already a month later, the Russian Federation ratified the Protocol and, in actual fact, rescued it by allowing this environmental instrument to come into force on February 16, 2005.

- Preparation of proposals for post-Kyoto commitments.

Of course, the availability of the Plan is, in itself, better than its absence. Yet, it is more important to perform concrete work. With this, however, matters do not always stand well. The deadline for many items of the plan was the summer of 2005 – but where are the results?

The unavailability of a procedure for development and approval of JI projects has become an obvious hindrance to extensive attraction of carbon investments into Russia. At the same time, the very few JI agreements with foreign partners are on the verge of failure because of the uncertainty of relevant procedures. Today, two contracts of the Energy Carbon Fund of RAO UES with the Danish Environmental protection Agency aimed to cut carbon dioxide emissions at the Khabarovskenergo and Orenburgenergo facilities. The lack of necessary procedures impedes not only projects already developed but, to an even greater degree, the search for new project proposals and arrival in Russia of foreign investors interested in carbon projects.

The development of a national emissions register and the execution of national inventory are two vital conditions that would enable Russia to take part in the Flexibility Mechanisms. The delayed preparation of these instruments is another substantial obstacle on the way to Russia's adequate participation in Kyoto activities.

What is, then, the reason for the existing situation? Why is the fate of the Kyoto Protocol so hard in Russia – inadmissibly protracted, extremely heated debates about ratification followed by the present-day delay of implementation?

The chief systemic cause is a lack of a national strategy for greenhouse gases emission regulation as a basic element for building internal and external climate policies. This is the prime source of delays and procrastinations with the adoption of documents, laws, statutory acts, and so on. Could that be different with neither the government nor civil society knowing how to address the problem? It is not clear what particularly should be done at the national level to limit human-induced effects on the climatic system. Lacking this insight is a consequence of a deeper, extensive problem – total lack of a national environmental policy as such. The consistent, targeted destruction of the system of environmental protection as an economic sector over recent five years has brought it to such a miserable state that struggling with owners of summer cottages (dachas) is posed as a large-scale environmental action. At the same time, there are there are subjective, purely Russian difficulties on the path of implementation of Kyoto provisions. These are primarily related to high politicization of Russia's participation in any emissions transfer deals,

especially, greenhouse gases emissions trading. Among other difficulties, we would emphasize the unwillingness of ministries and departments to assume responsibility for the implementation of the Kyoto Protocol, passive expectation of offers from potential investors, targeted activities of some groups to prevent Russia's taking part in the Kyoto Protocol, and simple unawareness of issues related to climate change and Kyoto provisions. Another matter of concern is the fact that one can hear progressively more often statements pronounced at different levels to the effect that there is no urgency about the Kyoto Protocol.

What criteria should be laid down in the national strategy for greenhouse gases emission management? The key criterion should be a sustainable economic growth. Primary importance should be assigned to comprehending that it would be impossible to succeed in controlling greenhouse gases emissions without national economic wellbeing. This does not mean that economic progress may be achieved at any cost. Economic expansion should be based on advanced energy- and resource-saving technologies. Furthermore, the strategy should build capacity for meeting the Russian Federation's commitments under the UN Framework Convention on Climate Change and the Kyoto Protocol to it. In addition, the policy and measures foreseen in the strategy must ensure gaining associated environmental benefits and, in the end, improving the state of human health and the environment. Finally, the implementation of the strategy should provide an extensive groundwork for future environmentally sound development of the country.

What could civil society do to get things moving? As usual, it should purposefully and methodically raise public awareness of climate change and Kyoto provisions; energetically carry out explanatory activity with ministerial and departmental officers in charge of implementation of the Kyoto Protocol; take part in developing proper instruments at an expert, professional level; and in every possible way support actions aimed to revive an efficient environmental policy in the Russian Federation.

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THE KYOTO PROTOCOL ONE YEAR AFTER THE RATIFICATION: ACCOMPLISHMENTS AND PROBLEMS

More than a year has elapsed since the Kyoto Protocol came into effect. We all remember that Russia dotted the "i's" in the argument "to be or not to be" for the Protocol, having made a difficult decision to ratify it in the autumn of 2004. Neither Russian nor foreign experts had been absolutely sure this would happen, especially, considering that a powerful anti-Kyoto drive, which was conducted in Russia not without foreign "sponsors" assistance, was "pouring oil on the flames."

What has changed over this period of time? Has the world community been able to advance on the way to establishment of a global market system for greenhouse gas emission management? What is Russia's role in this process? What future trends could we expect? Today, the answers to these and many other questions worry those people who are not indifferent to the problem of climate change. A review of the most essential aspects related to the initial period of the Kyoto Protocol's function is presented in this paper.

Early Accomplishments

One major practical step has been the adoption of the Marrakech Agreement that defines all technical aspects of using investment mechanisms for carbon emission reduction, takes care of emissions accountability issues, and so on. Now, the Parties to the Protocol have formal grounds for commencing extensive activity on implementation of its mechanisms.

Another critical event in the world arena has been a successful start of the EU carbon market, in which more than 12000 businesses are involved. The European emissions trading system provides for a pilot phase from 2005 to 2007 and the Kyoto phase from 2008 to 2012. There has been a statement of EU leaders to the effect that they will under no circumstances give up the carbon market idea. Consequently, all the talking about the Kyoto mechanisms not working and, therefore, will have to be rejected together with the Protocol are no more than speculations of the same anti-Kyoto forces.

Among other accomplishment is the establishment of a series of governmental and private carbon markets that have accumulated more than US\$2.5 billion. Yet, this is not the ceiling! According to some estimates, by 2012 the total volume of carbon market may total \$100 billion. Carbon investors are already now prepared to invest in major projects both in exchange of emission reduction units (like the World Bank, the Carbon Fund of Japan, and others) and as co-financing of investment projects (for example, the European Bank for Reconstruction and Development).

Businesses have apparently become more active. In the market today there are both small companies ready to finance risk operations on project design and implementation and wholesale emissions buyers interested in portfolios of projects worth tens and hundreds of millions of tons of CO₂.

It would be safe to say that in Russia, too, the business community is showing more interest in carbon business as a new source of investment attraction. In contrast to the common opinion that business groups just want to "grab" a piece of the Russian emission allowance and sell it, the

Probably, we can make a cautious conclusion that the first year of existence of the Kyoto Protocol was not in vain. It yielded certain achievements, including fundamental ones that laid down the groundwork for long-term policies regarding the climate change issue. However, some crucial problems related to the major goal of United Nations Framework Convention on Climate Change – prevention of dangerous anthropogenic effects on climate – remained to be addressed. The year 2006 must show to what extent the world community is able to overcome political, economic, and other antagonisms and begin moving to a new, climate-friendly economy.

real situation is different: virtually all serious speculators in the market realize that allowances may be obtained for emissions actually reduced and, consequently, they should deal exactly with investment projects and carbon emission reduction arrangements.

Painful Points

Nevertheless, there are actual doubts and fears regarding the fate of the Kyoto Protocol. First of all, they are associated with the position of the US federal administration. It is known from reliable sources that the US negotiators were instructed to do their utmost to hinder the expansion of the Kyoto process. It looks like some transnational oil and energy companies dislike it very much.

Unfortunately, the team of Bush, Jr., has enough political and financial resources, and as regards their methods of controlling, we all have had chances to make sure that they are not going to restrict themselves. This means that at the 11th Conference of the Parties to United Nations Framework Convention on Climate Change one could expect not only backstage games against the Kyoto protocol but also open opposition.

There remains just a faint hope that developing country Parties will undertake commitments on carbon emission reduction. A series of interesting proposals are available to engage them into this process. However, if the developing countries resolved to undertake quantified commitments, the United States would lose a crucial argument against joining the Kyoto process. It is hardly possible the United States would tolerate it.

Of no less importance is another "painful point" – the talks on post-Kyoto commitments officially scheduled for 2005. There are various proposals regarding the formula to define commitments for advanced countries, the commitment period, the long-term goals, and so on. Yet, it is obvious that the decision-making about new commitments is going to be hard. Especially, in the absence of the United States and lacking active participation of the developing country Parties.

The Great Eight might be able to solve the above-mentioned problems, at least, in part. Thus, Great Britain made every effort to this end while being its chair in 2005. Sadly, there is practically no hope that these efforts will continue in 2006, when Russia will for the first time head the G8. The fact is we do not have any goal, or strategy, or intelligible policy on climate change. How, then, are we supposed to coordinate the activities of the whole G8 Club!

The Situation with the Kyoto Protocol in Russia

In Russia, the assertion once made by Lenin in respect of the impotence of the upper crust sounds timely again. The upper crust is still impotent but in certain areas there seems to be some progress.

1. Greenhouse gases Emission Monitoring and Inventory System. The Federal Service for Hydrometeorology

and Monitoring of the Environment (Roshydromet) reports that a lot has been done on the preparation of a national inventory in a new for Russia but generally adopted Common Reporting Format (CRF).

2. Emission Register. The Ministry for Natural Resources undertook to prepare the Emission Register by April 2006. To this end, experts have studied a large body of materials and got acquainted with foreign registers. It just remains to choose one of the three effective systems – British, French, or Austrian – and adapt it to the Russian conditions.

3. Climate Project Implementation Procedure. The Ministry for Economic Development has not been able to complete its work on the Procedure. Although several versions of this document have been developed, the potential participants in project activity are not happy with all of them. Nevertheless, at a meeting of the Interagency Commission for Climate in the middle of November 2005 a draft Procedure was adopted as the basis and had to be submitted to the government for approval. Obviously, such instrument is vital for the attraction of carbon investment into Russia. The only embarrassing thing is that the preparation process is much too nontransparent and, consequently, it may in the end embody the interests of certain groups rather than represent a consensus of the authorities, the business community, and the public.

We should emphasize the fact that project-oriented companies have intensified their activity. According to some data, more than 100 investment projects related to carbon emission reduction are available in Russia. These projects, which are in different phases of completeness, cover most diverse sectors: power engineering, public utilities, metallurgy, gas and chemical industries, forestry, etc.

Probably, we can make a cautious conclusion that the first year of existence of the Kyoto Protocol was not in vain. It yielded certain achievements, including fundamental ones that laid down the groundwork for long-term policies regarding the climate change issue. However, some crucial problems related to the major goal of United Nations Framework Convention on Climate Change – prevention of dangerous anthropogenic effects on climate – remained to be addressed. The year 2006 must show to what extent the world community is able to overcome political, economic, and other antagonisms and begin moving to a new, climate-friendly economy.

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ONCE MORE ON THE CLIMATE AND THE KYOTO PROTOCOL

If there were no problem of climate change, it would be a good idea to invent it! Because nothing can best unite any nation (and, it appears, nations) than a common threat. Even if the threat is somewhat abstract, it compels both the mighty of this world and common citizens to think how to neutralize this common threat. Meanwhile, one necessary condition for solving one or another problem is a wish to solve it. The problem of climate change with a diversity of catastrophic natural phenomena associated with (or ascribed to) it that have occurred in recent decades embodies in a concentrated form all potential environmental threats invariably resulting from humanity's activity and has demonstrated our virtually absolute defenselessness. One demonstrative example is the humiliation of the most economically and democratically "advanced" country, the United States, which suffered from hurricane Catherine – another proof of the boring truism that nature spares nobody. However, the same problem has given us a great chance to learn to combine efforts in withstanding the common threat, to develop optimal mechanisms for the coexistence with each other and with nature, to negotiate and jointly work out and implement progressive technologies, to improve legislation, and so on.

In fact, the problem of climate change concerns primarily human beings. For hundreds of millions of years, the biosphere has had even more serious shocks. Under the burden of external and internal crises, it got rid of poorly adaptable species and "put forward" new, more progressive ones. So, we should not think that life will stop with the disappearance of Homo sapiens – not at all, but it will continue without us. Therefore, climate change and related possible consequences is primarily our, human problem, because especially imperiled will be things "gained by uphill work" and adapted to very stable, definite environmental conditions. This concerns Russia as well, especially, taking into consideration the fact that the permafrost, the habitual change of seasons, the frosty winter, etc. have in recent decades appeared to be not so permanent, habitual, or frosty, respectively. What is becoming habitual, but the way, is a second vegetation of bushes and trees in autumn, which many of us were able to observe in 2005. The human-made economy is not as stable as the biosphere; that is why, even such external changes as the contemporary warming (far from being the most dramatic ordeal for nature in the history of the globe) may be a very severe trial for it. The next after the economy – our favorite creation – is the social sphere and the problem of survival of humanity in its habitual environment.

Unfortunately, the Kyoto Protocol aimed to materialize good intentions of humanity's progressive part to limit imprudent economic activity of the remaining part and thus attempt at least to stabilize the fast approaching global ecological crisis is being gradually "set aside." It looks like Russian officials believe they have fulfilled their historic mission by giving it the go-ahead. It took long to convince them that it would cost Russia nothing, at least, at the first stage, because no matter what scenario of economic development was chosen, Russia would

The problem of climate change with a diversity of catastrophic natural phenomena associated with (or ascribed to) it that have occurred in recent decades embodies in a concentrated form all potential environmental threats invariably resulting from humanity's activity and has demonstrated our virtually absolute defenselessness.

never be able to reach the 1990 emissions level, especially, considering that nobody was going to put a special effort in developing the national economy. Meanwhile, Russia may gain certain benefits, for example, some facilitation for the World Trade Organization joining and other thanks from "civilized" countries. Incidentally, it is impossible to understand what sense it makes to seek after entering this organization for a country that, like a billiard-ball in the pocket, has firmly nestled down in the niche of raw materials (primarily, energy resources) exporters. Oil and gas would be welcomed without meeting the World Trade Organization requirements, since the quality of these resources needs not be taken care of... However, the logic of our officials is not always clear, so we have what we have. In return to our "gift" to the world community – the ratification of the Kyoto Protocol – we expect thanks and nothing more. It seemed it was in no way projected to do something to meet the Kyoto Protocol's provisions. At the same time, the somewhat scandalous character of the Protocol's discussion procedure in Russia and abroad as well as the specific position of the United States and some other countries to some extent constitute moral justification for the inactivity of responsible officials in our country. Hopefully, forthcoming world forums may tackle some international aspects of the Kyoto Protocol.

Another "unfortunately" is the fact that the majority of Russian society has a neutral attitude to the Protocol. "Neutral" is exactly the word meaning neither positive nor negative. People just do not realize what it is and why they should need it. It is quite clear why: on the background of a really disastrous economic and social situation of the greater part of Russia's population, the wise debates on climate warming (almost by one degree!) and the necessity to combat it for some reason are taken in cold Russia, to put it mildly, as strange. However, such attitude is, in many respects, the result of organized "discussion" that contained an abundance of contradictory information and high-flown declarations on the part of people concerned. Another reason is a relatively high level of complexity of the problem. Besides, society was unprepared to adequately perceive this sophisticated problem in the form it was presented.

In my opinion, the position of civil society in this situation should be quite definite. On the one hand, it is necessary to fill the huge gap of misunderstanding the crux of the climate change problem and provisions of the Kyoto Protocol (and all subsequent meetings and summits) in society. To this end, popular publications should be provided, especially in the regional mass media, since it is precisely at the regional level that a deep insight into the outlook of our prospective existence, to which the Kyoto Protocol bears direct relation, should mature and take shape.

Besides, it is necessary to exert influence on executive agencies in order to spur them to conscientious, energetic actions aimed at implementing provisions of the Protocol and subsequent meetings. Of course, it would be tempting to act via the guarantor of the Constitution. In this respect, the meeting of the Big Eight shows much promise. At the meeting, it is necessary, again, to focus attention on the Protocol and the necessity to raise the role of Russia in its implementation.

To this end, it is needed to formulate several concrete proposals, which, in all probability, will not be included on the agenda (because the main subject of the meeting is energy safety), but civil society has full authority to present them as a subject of concern at around-the-summit events. These proposals are quite plain and have been many times pronounced at various meetings of working groups and forums of civil society. It is probably worth preparing a sort of register of today's priority "concerns" of civil society. It would not be unreasonable to emphasize the problem of climate change and implementation of the Kyoto Protocol in a separate block. Obviously, decisions of the Montreal Forum will also contribute to a more successful promotion of Kyoto ideas in Russia.

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THE ROLE OF CIVIL SOCIETY IN THE KYOTO PROCESS

Further work of the Social Forum on Climate will most likely depend on the policy and actions (or inactions) of federal authorities on implementation of the Kyoto mechanisms.

Since the main problem currently faced by civil society is total neglect by authorities of its needs and expectations, the chief task of the Social Forum may be defined as searching for or developing an instrument for exerting influence on the federal government to make it reckon with the public opinion.

In the existing conditions, we may rely on an advantageous political situation at hand rather than on constructive partnership with the federal government. True, we have some contacts in the ministry but these are predominantly "lobby talks." As a consequence, lobbying of Kyoto issues by certain influential structures is not effective either. For example, Federal Network Company "United Energy Systems" was promised by the Russian Ministry for Economic Development to get United Energy Systems contracts with the Danish Environmental Agency approved as an exception. However, the individual letter of approval has been never forwarded to the Agency by the Russian government.

In view of the fact that for the stakeholders, everything now depends on the federal government's ability to fulfill the obligations under the Kyoto Protocol on time and approve all necessary documents, we think it expedient to combine and focus our efforts on enabling the government to do this job in good time (or, at least, not too late). Although Russian authorities have made the deadline for adopting expected documents public, there are few people who trust to these promises. That is why it is necessary to intensify civil society's work with the Russian government. Otherwise, very soon there will be no chance of success.

Today, we may just provoke the authorities to give a Kyoto progress report and force them to explain the reasons for their delays and protractions. However, to gain effect from this offensive activity, it is necessary to promptly suggest clear, coordinated solutions to each complaint of government officers about difficulties they encounter. Moreover, proposals of civil society should be publicized as much as possible bringing them to the attention of all stakeholders, including international structures. To this end, civil society should consolidate efforts and coordinate its operations. Also, this is essential because the organization of oversight over the function of the federal government demands enormous energy and yet does not guarantee success. Meanwhile, it is necessary to undertake all expert and elucidative work, which should be done ahead of governmental schedules, because we must at any point be ready to render the ministry consulting services on any issues arising in the course of implementation of mechanisms under the Kyoto Protocol and do this without delay.

Coordination of our forces necessitates maintaining contacts with representatives of business, industry, and regional administrations. We should recognize their problems and demands related to Kyoto

One of the tasks of the Social Forum could be organizing a certain core of experts and representatives of various public, industrial, and administrative structures in order to consolidate the forces of civil society to address Kyoto issues. Combining and coordinating efforts would provide a better chance for the public to influence government structures and do not allow Russia to be an outsider.

arrangements, respond opportunely to their inquiries through raising public awareness, and search for acceptable solutions to problems they face or, perhaps, even solve them before the ministry receives this information.

Take, for example, businesses. Having not yet gained any benefits from Kyoto arrangements, they have already confronted with difficulties of the "transient period." With directions from the upper strata to account their emissions but no clarification how to set this process going, industrialists are beginning to show signs of concern and discredit.

Departmental agents, from their part, explain the delay in developing appropriate guides and legal framework by their acting in the interests of Russian business groups. Their argument is that haste in Kyoto matters may place domestic producers in a difficult position. At the same time, no major documents will be approved until key issues, for instance, emission rates, are agreed upon with them.

On the one hand, such concern for business and industry is justified. Only, one cannot agree that the coordination work is so serious and difficult that may take more than a year. As regards experts, they are not surprised at such state of things explaining this protracted process by insufficient competence of government officers in the best case. Also, there is fear that the officials may whittle the Kyoto-related efforts referring to the growing discontent at the grassroots.

To prevent such situation and keep the process under control, civil society should organize coordination work better than the government.

Grave hindrance in the coordination of action may be controversy inside the civil society itself (as was demonstrated at the Social Forum) preventing from elaboration of a unified strategy. Thus, some people are sure that no funds will be allocated to support Russian projects, while others doubt if the Kyoto Protocol is practicable at all.

Perhaps, to remove the most serious differences, it is worth paying more attention to these matters through organization of public talks, such as round tables and seminars, using diverse forms of communication with people who express similar concerns. To this end, it is necessary to present convincing, easy to understand arguments.

Another essential task is taking part in expert development of documents needed to implement the Kyoto Protocol. This work is complicated, in the first turn, by the necessity to collaborate with all responsible departments at every stage. The problem is that the government believes it does not need this kind of assistance. Nevertheless, we should try to be abreast of all problems and questions the government

faces in connection with the Kyoto protocol and diligently demonstrate our readiness to relieve at any moment or, to put it more precisely, to help the Kyoto process.

In addition, it would be inadmissible today to allow the contract process within the framework of joint implementation projects to decline. It is imperative to maintain society's high interest in this process due to the fact that potential investors are starting to lose enthusiasm regarding contracts because of the slackness of the Russian government. Therefore, it is necessary to intensify our efforts on rendering assistance to interested structures in searching for Western investors. Information about the arrangements of such deals should be made public and accessible. Plants and regional administrations must know where and from whom they may receive advisory help on issues related to joint implementation projects and emissions trading if they should need this information.

Of course, work along this line is already carried out by various foundations, organizations, and confederations, which makes us really happy. However, these are, as a rule, local or corporative efforts. There is no center that would unite the whole process. The need in such center is especially pronounced when reference is to the elaboration by various structures of recommendations to the federal government. The point is that the abundance of contradictory proposals from the public will not have a necessary effect on the ministries but will rather give them cause for concluding that civil society does not have clear ideas regarding the implementation of the Kyoto mechanisms.

One of the tasks of the Social Forum could be organizing a certain core of experts and representatives of various public, industrial, and administrative structures in order to consolidate the forces of civil society to address Kyoto issues. Combining and coordinating efforts would provide a better chance for the public to influence government structures and do not allow Russia to be an outsider.

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THE ENVIRONMENTAL IMPORTANCE OF ENERGY SAVING

To get adequate ideas of the environmental importance of energy saving in Russia, it is necessary, first, to estimate the impact of the entire economic “energy cycle” – generation and transportation of energy carriers and transformation and consumption of energy – and, second, to determine the real potential for energy saving and the indirect implications of taking adequate measures for the national economy and the environment. Only collating such estimates and potentialities may provide the groundwork for both developing predictive energy-saving scenarios and decision-making on expedient arrangements in this sphere. Energy saving is of vital importance both for the modernization of the Russian economy and as a key line of the ecological enhancement of the country.

The energy sector is the basis of the modern national economic system and, at the same time, the major polluter and, what is more, depredator of the environment. The production, transportation, and use of oil, natural gas, and coal on today’s scale are invariably associated with a colossal (in terms of volume, severity, and the extent of consequences) adverse effect on the environment.

The debates regarding the acceptability in principle of nuclear-power-related risk are still going on. Virtually all hydropower projects provoke environment-related objections. Even renewable-source-based lines of development of the energy sector are sometimes criticized due to one or another adverse impact on the environment.

The impact of the fuel and energy complex on the environment: Atmospheric emissions

The fuel industry, especially, oil production, is the absolute leader in adverse environmental effects among the power-engineering branches. Moreover, in 2004 came first in the volume of atmospheric pollutant emissions among 12 industries identified by the standard classification of the Russian Agency for Statistics. In 2004, the fuel, power-engineering, and oil-refining industries accounted for more than 54% industrial pollutant emissions in the atmosphere in comparison with 48% in 1996 or 2000.

In the 1990s, the Russian atmospheric emissions produced by the national economy as a whole and by industrial polluters were coming down, with none of the branches of national economy or industry demonstrating any significant increase in emissions.

However, the situation has changed since 2000 towards their annual growth determined, predominantly, by the fuel industry, especially, oil production. A 31.7% oil production increase over 2000–2004 in itself cannot be the reason for an unprecedented leap of emissions – more than three times. Initially (in 2000–2001), attempts were made to explain the leap by the improvement of the accounting system, which looked strange on the background of actual destruction of the Russian environmental control system in those years and nearly complete stoppage of environmental monitoring of polluters, which had been previously conducted by territorial agencies of the Russian State Committee for

**Energy saving is of vital importance both
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abatement activity.**

Environmental Protection. However, already in 2002 it became quite obvious that the enhancement of the adverse effect of oil production on the environment is determined primarily by progressively growing volumes of oil gas burned, which, in turn, is a consequence of neglecting environmental problems by the majority of oil companies.

The impact of the fuel and energy complex on the environment: Wastewater discharge and solid waste formation

The volumes of wastewater and solid waste are insignificant at oil and gas production enterprises but very significant, especially, those of solid waste, in coal industry. Unfortunately, the official statistics in this area is incomplete and inconsistent.

This, the National Report on the State of the Environment in the Russian Federation in 2000 contains information on the generation of industrial toxic waste, which is classified by hazards rather than polluters, but lacks data on the generation of production and consumption waste (over a five-year period from 1996 to 2000), while the 2004 National Report, vice versa (over a three-year period from 2002 to 2004).

The coal industry is responsible for the largest amount of solid waste, which continues to grow at the rate of 16–18 %. This significant growth cannot be explained by an output expansion, the rate of which is about 2%, or a degradation of the resource quality, which accounts for 1–2% at most.

The impact of the fuel and energy complex on the environment: Land degradation and oil spill

Undoubtedly, the huge tracts of land disturbed by oil producers might have been diminished without reducing the output volume mainly through a more efficient well spacing and operation and optimization of reservoir systems.

In the mid-1990s, in Khanty-Mansi National District alone, there were about 100 thousand wells, a considerable part of which had not justified the expenditure due to operational mistakes or wrong placing. The fuel industry, oil-and-gas pipeline construction, and oil and gas geological prospecting taken together accounted for 60% of the Russian lands disturbed in 2004. It should be noted that the fuel complex, which is the wealthiest sector in the national economy and the major “getter” of currency, accounted for less than 53% lands reclaimed the same year. The area resoiled by the oil industry in 2004 accounts for just 74% of lands disturbed and that resoiled by gas industry, less than 57%. This is another proof of the above-mentioned disregard of environmental problems by the majority of fuel companies.

The coal and electric power engineering industries fulfill their land reclamation commitments; here, the active involvement of public environmental organizations, local authorities, and the population plays a significant role, since these industries, as distinct from most of oil and gas producers, are located in densely populated areas.

In the Russian system of adverse environmental impact accounting, the oil-producing industry appears to be in an exceptionally preferred position. The point is that Russia practically lacks official statistics on oil spills due to breaking or other accidents in oil-trunk pipelines and reservoir systems in oil-producing areas. It is paradoxical that there is even no mentioning of such words as spill, leaking, breaking, seal failure, etc. in the 2004 National Environmental Report. Meanwhile, the action of such occurrences on the environment is really enormous and the loss of oil is exceptionally large.

We may judge about the extent of oil spills from fragmentary information in the press media. Thus, the *Neft Rossii* (Russian Oil) journal reported 545 accidents at trunk pipeline facilities within 1992–2001. The average annual level of 50–60 accidents shows no stable trend towards reduction. In 2001, there were 42000 rapid depressurizations in field pipelines, with at least 65000 m³ of oil and formation water flown out.

The seal-failure-related oil spillage is virtually disregarded when accounting the disturbed lands. The main reason for neglecting this problem is, probably, the fact that most of the leaks occur in “undeveloped” areas that are economically unused or little used. Besides, the local consequences are infrequently eliminated (although incompletely) by floods within one or a few years without any interference of the pipeline owner or emergency or environmental services. The fact that nearly every spill of oil or oil products entails contamination of water bodies is not taken into account by the official statistics on adverse impacts of economic or other activities, since it does not come within any of the statistical headings: atmospheric pollutant emissions, waste water discharge, waste formation, land disturbance, radiation contamination, electromagnetic radiation, noise, and vibration.

The hydroecological subsystem of environmental monitoring shows that the oil contamination of water bodies ranks third in volumetric parameters after suspended matter and total phosphorus. This sort of contamination has become prevalent for many anthropogenically polluted rivers and lakes (especially, reservoirs)¹. However, it is only in rare occasions that the specific polluters (hence,

¹ For example, in the water of the Okhinka River (Sakhalin), the annual 2000 oil product content was 368 MACs, with the maximum recorded concentration being 640 MACs as evidenced from the Russian National Environmental Report for 2000. Moscow: State Center for Environmental Programs, 2001, 562 pp.

offenders) are identified. The insignificant leaks of underwater pipelines — the consequence of a high wear rate typical of the majority of Russian trunk pipelines — are continuously contributing to the water contamination. One example is an underwater pipeline in the Sura River flowing into the Cheboksary reservoir, where the leaking was recorded by accident in the course of field exploration.

Consequently, the fuel and energy complex leads today among all economic complexes in the acreage of disturbed lands. Although there is no official data on the oil spills and related environmental damage to soil, terrestrial and ecotonic ecosystems, and water bodies, there is no doubt that this damage is really sizeable.

The impact of the fuel and energy complex on the environment: Concluding remarks

In the sections above, we discussed the main aspects of the impact of power industries (basically, fuel industry and, to a lesser degree, electric power engineering and power projects) on the environment; however, the problem extends further.

It is impossible to dwell upon various — and sometimes very dangerous — violations that occur when producing and dressing uranium ores, manufacturing fuel elements for nuclear power plants or the ecological aspects of the operation of NPPs themselves. Also, we have to omit analysis of the environmental implications of the oil and gas sea-shelf production, the construction and operation of oil and gas pipelines laid on the sea-bead, consideration of environmental problems related to geenergy based on renewable energy sources, and so on. No doubt, the set of these problems demands a fundamental monographic study.

In spite of the fact that the above-mentioned data are incomplete and just briefly analyzed, we think it would be quite justified to make a conclusion about the grave environmental impact of Russian fuel and energy producers and converters. No doubt, the problem has two aspects: the great scope of this impact and its continuous increase on the part of the fuel and energy complex in general, although it is decreasing in the power and oil processing industries and, in some relatively insignificant measures, in major fuel producers — oil, gas, and coal industries. Therefore, it is beyond question that cutting down fuel and energy production would have positive environmental effects.

The question is whether it is possible to ensure such cutting down without a setback in production using economical means. To answer this question, it is necessary to briefly review how the FEC-generated energy is used in the Russian economy.

Power consumption in the Russian economy

In an industrially advanced economy, nearly all energy is consumed through the use of special equipment ranging from domestic electric appliances and cars to giant production systems, for instance in metallurgy, that demand megawatt capacities for their power supply.

Following the 1973–1974 energy crisis, all developed European countries and Japan began replacing power-consuming equipment by energy-efficient one and develop and implement energy-saving measures in all branches of economy. However, this process virtually bypassed the Soviet Union: at the time when the price of oil was high (during the crisis and several years later), it seemed there was no point to spend money on energy saving in a country so rich in energy resources and, besides, with the low prices (which ruined the Soviet economy), there were no funds to address issues that were considered more urgent. In addition, the extreme sluggishness of the centrally administered economy, which, in fact, had lost responsiveness even to economically efficient innovations in the lack of market incentives for business activity, played its role too.

The 1990s setback in production, which had been predetermined by the structural imbalance and noncompetitiveness of the economy inherited from the Soviet time, was accompanied by an unprecedented for the late 20th century phenomenon — a 16% growth in the Russian gross domestic product power intensity while all other countries that had achieved some visible success in that decade were purposefully decreasing this index.

Attempts to overcome the highly negative tendency were not crowned with any appreciable success (such intentions were recorded in the 1980–1995 and 1985–2005 Integrated Scientific and Technological Advance Programs as well as in many other documents back in the Soviet time). Thus, the 1998–2005 Energy Saving Russian Federal Targeted Program (approved by Decree of the Government of the Russian Federation No 80 of January 24, 1998) provided for a 5.3% decrease in the gross domestic product power intensity in 1998–2000; however, this task, like all the previous ones, was not met. Actually, it could not have been met without modernizing the engineering resources of the whole Russian economy. Today, the most part of equipment in Russian production facilities is depreciated and obsolete, with an actual operation life of more than 25 years.

Admittedly, the power intensity of Russian housing and communal services has to be regarded as catastrophic. This situation is a result of a careless, irresponsible attitude rather than Russia's severe climate.

No wonder that the heat rates used for heating residential buildings in Russia (500–600 kWh/m²

per year) are several times higher than in Sweden or Finland (135 kWh/m² per year), where climatic conditions are similar to Russia's average (of course, the estimates should not be averaged just over the area, as is often the case, but corrected for the density of population).

The severity of Russian climate entailing higher power intensity is much discussed. Surely, Russia is a northern country and we will have to heat a lot even with the best possible system of housing and communal services. The question is to what extent the climate is responsible for higher power consumption and to what extent other, directly irrelevant circumstances are. Estimation has shown that the climatic factor may account for no more than a 25% increase in the Russian gross domestic product energy intensity in comparison with that in Western Europe (even if the need in air conditioning is neglected²).

In the early 21st century, the Russian gross domestic product power intensity was 3.1 times higher than in the European Union prior to the admission of "new members," i.e. with 15 member countries. It is only the large-scale export of oil and natural gas at currently exorbitant prices prevailing in the world market that allows Russia to maintain a relatively acceptable economic situation. However, this makes the Russian economy extremely unstable and inadmissibly strongly dependent on the world's fuel market conditions. With that high power intensity of manufacture, the products cannot be competitive in the world market. Only industries manufacturing low-processed products from domestic raw stock, such as first-stage-process metallurgy, mineral fertilizers, or timber industry, may keep "afloat" owing to the disproportion between the global and domestic prices of energy.

All these factors appear negative in the long-term outlook, and only an efficient command of resources gained owing to the extremely favorable market environment may help address long-term economic problems. However, the dynamics of gross domestic product power intensity shows that the available potential is being used inadequately. Thus, some reduction in this index shown since 2000 is insufficient and noticeably slower than the process occurred in the West after 1974.

These generally known verities are given here to emphasize that Russia's long-term economic interests by no means conflict with its environmental ones – both necessitate reducing the gross domestic product power intensity, i.e. energy saving and energy efficiency increasing.

Modernization needed for energy saving would simultaneously yield considerable economic

benefits, because the new equipment is not just better in energy efficiency but is more economical in all spending types and more reliable in operation, allows one to manufacture better quality products, creates better conditions of work, and makes greater demands of the professional skills of the staff.

The latter aspect is essential for us, since the educational attainment of industrial employees falls behind the technological level of production, which not merely means an inefficient use of labor resources but also leads to negative social consequences.

Energoecological ill-being and ways to overcome this situation

The existing situation in the sphere of energy production, which is characterized by unacceptably high and progressively growing adverse impacts of the fuel and energy complex on the environment combined with inadmissible energy squandering, should be qualified as energoecological ill-being. The main reasons for this situation have already been mentioned; yet, there are a few more important aspects to be pointed out.

The "easy" oil money is a critical aspect of the lack of long-range interests among business groups, especially those dealing with oil. Their drive for maximum gainings while the market conditions are highly favorable is psychologically plain: it would demand considerably more effort to gain even a many times smaller profit (in per unit calculation) at more adequate world prices of fuel. Why not take the occasion? However, this sort of approach implies disregard for environmental protection, sustainable use of mineral resources, technological innovations, and energy and resource saving. On the background of super-profits derived from currently high global prices, these aspects are nothing but trifles on which it is unnecessary to waste time and effort.

As a result, the individual and clannish interests of oil magnates radically diverge with the long-range state ones. Finally, the depressed internal energy-carrier prices, which essentially result from the exorbitant world oil prices, destimulate energy saving in power-consuming industries.

The state regulation of oil production (just as the use of mineral resources in general) is ineffective – the operation of the State Commission for Mineral Resources, which approves the reserves of newly-discovered fields, has dramatically degraded.

The State Pool of Minerals has, in fact, lost its state-controlling status having turned into an information system with vaguely specified functions and objects. In actual practice, mineral use licenses fail to be serious legal documents defining mutual obligations of the user of mineral resources and their owner – the state. Even with the token nature of license commitments, the way their fulfillment

² The United States is spending more energy on air conditioning than Russia on heating. This is partly a waste of energy and partly a climate-related necessity.

is controlled is absolutely insufficient. Besides, some taxation issues need to be dealt with – the distribution of environmental charges meets neither the state's long-term interests nor even those of fuel industries themselves while searching for "direct" methods of environmental payment exemption lead are at a deadlock.

It is hard to expect solving environmental problems if there is no government environmental policy. Meanwhile, following the abolishment of the Russian State Committee for Environmental Protection in 2000, no attempts have been virtually made to define and commence consistent implementation of this policy. The approval by the government in 2002 of the Russian Environmental Doctrine – the only document related to environmental policy after 1999 – has had no practical consequences.

The economic mechanism of environmental protection is practically inactive, and even the polluter pays principle declared in all international environmental documents is not adequately embodied in the laws after the adoption of a new federal law on environmental protection (2003).

The state environmental impact assessment and environmental oversight have been profaned. It is impracticable to exercise environmental control functions in a country with the area of more than 17 million sq. km by less than 200 federal environmental inspectors who are in some regions assisted and in others hindered by the same insignificant number of constituent inspectors. Moreover, there are constituents where such inspectors are unavailable yet.

From the above-mentioned reasons of Russia's energoecological ill-being it is clear what government activities should be undertaken to overcome it; therefore, there is no need to indulge in this matter here.

Measures to improve energy saving and energy efficiency should embrace all levels of the national economy. At the national level in general, this means changing the sectoral structure with prior expansion of low-power-intensive industries. This process has been actually underway since the 1990s, but it is quite slow and lop-sided, because out of all these industries, there is just the service-producing business that is in progress. At the sectoral level, this implies a transfer to the output of new products, the production or consumption of which involves low power inputs (for example, energy-efficient light bulbs instead of conventional incandescent lamps), a deeper processing of raw materials, especially in oil refining, metallurgy, woodworking industry, etc. This approach generally implies a radical reconstruction of operating plants and construction of new ones.

For oil industry, the sectoral-level challenge should be minimizing the volume of popping of oil-well gas

to meet the standards of the world's best companies. Enterprise-level steps normally mean replacements of energy-intensive equipment by energy-saving for manufacturing the same or related products (for example, replacement of open-hearth furnaces by oxygen steel-making converters or electric furnaces).

At the "executive" level, it is possible to produce a tremendous effect by getting things put in order both at production facilities and in private life as well as observing labor discipline and elementary rules of energy saving.

Experience of all advanced countries brings out clearly that Russia has huge energy saving reserves. Our analysis demonstrates that the use of this potential will renovate the national economy and build capacity for radical reduction in adverse economic effects on the environment.

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RENEWABLE ENERGY SOURCES: A REALISTIC CAPACITY FOR MITIGATION OF GLOBAL CLIMATE WARMING IMPLICATIONS

The reason for climate changes is explained, on the one hand, by natural phenomena themselves and, on the other hand, by anthropogenic factors leading to greenhouse gas emission. According to data provided by the Intergovernmental Panel for Climate Change (IPCC), the average temperature near the Earth's surface increased in the 10th century by 0.6°C. It looks like the 20th century was the warmest century in the past millennium and the 1990s, the warmest decade in it. Satellite data testify to the fact that starting with the late 1960s the snow cover area has reduced by about 10%. The duration of ice cover on rivers and lakes in medium and high altitudes of the Northern Hemisphere has decreased by about 2 weeks. Waning mountain ices have been observed throughout the nonpolar regions. In the Northern Hemisphere, the area of sea ice in spring and autumn has decreased by about 10–15%. The thickness of sea ice in the period from the late summer to early autumn has decreased by 40%. During the 20th century, the mean sea level rose by 0.1–0.2 m. According to research data, the growth of the level of the world ocean has doubled over the last 150 years as compared to the previous centuries and now is 2 mm a year. In the majority of high- and medium-altitude areas of the Northern Hemisphere, the atmospheric precipitations have increased by 0.5–1%. In the last decade, the frequency and intensity of droughts in some Asian and African regions have grown. Since the 1950s, such phenomena as El Nino have become more frequent, stable, and intensive.

Humans Continue to Change the Earth's Climate

The change of climate may be largely attributed to increased emissions of greenhouse gases. The present-day greenhouse gases concentration in the Earth's atmosphere is the highest over the last 650000 years as demonstrated by research carried out within the framework of the European Epica project. Fossil fuel combustion accounts for about 3/4 of anthropogenic CO₂ emission in the last two decades. The rest of the emission is associated with industrial processes, changes in land use practices, and, especially, reduction of the forest acreage. Scientists assert that if no measures are taken to reduce the emission of CO₂ and other greenhouse gases, the temperature near the ground surface will rise by 1.5–1.8°C from 1990 to 2100, while the increase in continental temperature north of the equator will be considerably higher.

Implications of Climate Change May Be Irreversible

According to data reported by the second IPCC Working Group, certain ecosystems are especially vulnerable to climate exposure. Some of them are running the risk of being destroyed completely. These include coral reefs, boreal and tropical forests, steppe bogs, and natural meadows. The report reveals considerably more precipitations as rain than snow in the vast areas of Eastern Europe, the European part of Russia, and the central part of Canada and California. In recent decade, the ices in the Himalayan and Tien Shan mountains have decreased by 67%. Half of Alpine ice is endangered.

Global climate change entails considerable, even catastrophic consequences for nature and man and constitutes a really worldwide problem affecting all countries and regions. Will the use of renewable energy sources be able to make an essential contribution to the activity aimed to mitigate anthropogenic impacts on climate change? How do the experts appraise Russia's potential for expanding the use of renewable energy? This article is an attempt to answer these questions.

Similar trends will proceed throughout the 21st century and onwards. Also, climate change will lead to grave consequences for human activity. Decreased crop capacity in most of tropical, subtropical, and temperate areas, growth of floods, scarcity of drinking water, and higher morbidity, including cholera and malaria – these are the implications of global warming.

Technological Innovations: A Realistic Potentiality for Greenhouse Gases Emission Reduction

It is believed that the most essential measures to mitigate climate change implications are raising energy efficiency, using more effectively natural gas, and using low-carbon energy sources, for example, biomass or other renewable energy sources. The experts consider that the combining of these measures would by 2020 lead to annual greenhouse gases emission reduction totaling 3.6–5 billion tons of carbon equivalent (about 43–60% of current emissions). According to IPCC experts, more than half emissions may be potentially reduced through applying several hundred energy-efficient technologies and practical arrangements in the construction and transport sectors and in the sphere of industrial production. One promising area of novel technological solutions is the use of renewable energy sources as an alternative to combustion of fossil fuel for generation of electric and thermal energy. In the IPCC report, the long-term potential of renewable energy resources is evaluated as 515–2737 EJ/yr. The contributions of various sources are as follows:

- Hydropower engineering > 50 EJ/yr;
- Geothermal > 20 EJ/yr;
- Wind > 630 EJ/yr;
- Marine energy > 20 EJ/yr;
- Solar > 1600 EJ/yr;
- Biomass > 440 EJ/yr.

The Outlook for Expansion of Renewable Sources Worldwide

Many countries give much consideration to the capability of renewable energy sources. For instance, Great Britain has announced the allocation of six million pounds for a renewable energy and energy efficiency cooperation program for two years. The awareness raising drive on sustainable energy issues began on July 18, 2005 to be finished in 2008. It was initiated by the European Commission, which regards the drive as a chance to contribute to the achievement of EU energy policy goals, namely, to increase by 2010 the proportion of renewable energy by 12% and by 2020, to gain a 20% energy saving growth. The campaign is aimed to raise the awareness of decision-makers at the local, regional, and national levels; to

disseminate information about successful practices; to assure understanding and receive backing from the public; and to encourage investing in the expansion of technologies in the field of sustainable power engineering. The drive involves holding conferences and presenting with awards for the promotion of renewable energy.

Recently, a regional secretariat of the Renewable Energy and Energy Efficiency Program (REEEP) has been established in Moscow to deal with issues of information exchange between Russia and other countries and to promote REEEPs in the region of the former Soviet Union.

The Use of Renewable Energy Sources in Russia: Benefits and the Outlook

Russia's potential for renewable energy sources of various kinds is one of the greatest in the world. At the same time, the portion of renewable energy in the national energy balance is just about 1%. In December 2003, the International Energy Agency under the Organization for Economic Cooperation and Development issued a report "Renewable Energy Sources in Russia: From Opportunities to Reality" revealing Russia's capacity for promotion of the use of biomass, water resources, wind and solar energies, and geothermal resources. According to the International Energy Agency study, the potential volume of renewable energy may account for 30% of Russia's energy consumption. The intensification of the use of renewable energy sources would bring down the unemployment rate, improve the living standards, and cope with the negative trend of depopulation in rural, northern, and eastern regions. In addition, replacement of conventional energy sources by renewable energy technologies would make it possible to bring down the level of environmental degradation and improve people's health and wellbeing. The report emphasizes that if Russia is going to achieve the goal declared by the Russian president – GDP doubling for 10 years, then the Russian energy sector will face growing internal needs. Renewable energy may help meet these needs, especially, in the regions where conventional sources of energy are deficient. For many isolated settlements, renewable energy sources are the most economical and sometimes the only way to provide the consumer with electricity and heat.

Biomass Replacing Oil, Gas, and Coal Is not a Utopia

According to Swedish NUTEK, the biomass resources in the Russian European part alone are more than 400 TWh/yr:

- 265 TWh/yr – untapped wood that could be picked up and used for heating;

- 109 TWh/yr – firewood being utilized;
- 58 TWh/yr – agricultural remains, including straw and remains being utilized for energy generation;
- 37 TWh/yr – excess wood refuse of woodworking industry.

Estimation of the potential of the north-eastern part of Russia shows that the wastes of saw- and pulp-and-paper mills in the oblasts of Murmansk, Arkhangelsk, Vologda, Pskov, Novgorod, and Leningrad plus in the Republics of Komi and Karelia run up to 45–50 TWh/yr. Combustion of these remains at heat and power plants would yield 13000 MW. Biomass may be used for heating in community facilities and industry or for electric energy generation and combined heat and energy production. An essential aspect is that biomass may replace gas, oil, and coal in heat stations as well as in many other applications, with necessary investment repaid within 2 to 5 years. Existing biomass consumers use clean, effective technologies. Considering the expanding utilization of biomass, it is expected that its potentiality will considerably increase. Besides, using biomass would abate local pollution problems.

The Russian Wind-Energetic Potential: The Rates Fail to Handle the National Needs

The Russian technical wind-energetic potential is about 10 times higher than the 1997 energy consumption in the country. In 2000, the Russian Ministry of Energy issued, jointly with the Russian – Danish Energy Efficiency Institute, issued *The Atlas of Russian Winds*. It appears that the most promising regions for using wind energy are Archangelsk, Astrakhan, Volgograd, Kaliningrad, Kamchatka, Leningrad, Magadan, Murmansk, Novosibirsk, Perm, Rostov, Sakhalin, and Tyumen Oblasts; Krasnodar, Primorsk, and Khabarovsk Krai; the Republics of Dagestan, Kalmykia, Karelia, Komi, Khakasia, Chukotka, and Sakha (Yakutia); and Nenets and Yamalo-Nenets Autonomous Districts. Russia has just begun using its wind-energetic potential, and, unfortunately, it has to be admitted that the rates of development are far from being fit with the national needs. Now, the aggregate output of operating wind-energetic stations in Russia is 2.8 MW.

Will Russia Be Able to Make up for Its Neighbors' Energy Deficiency?

No doubt that Russia should head the list of countries that possess the highest renewable energy potential. The International Energy Agency report details the diversity of potential renewable energy sources and provides concrete examples of feasible applications of renewable energy in the market at

very low initial investment inputs. Also, it dwells upon legislative measures, information distribution, and awareness building to make this area expand progressively. According to the International Energy Agency assessment, if Russia were able to establish, based on its colossal scientific and technological experience, a viable domestic market of renewable energy technologies, it would be able to become internationally competitive in the course of time. Russia is situated near a host of "energy-poor" neighbors that, in addition, are looking for a chance to improve the environment and strengthen their energetic security. The International Energy Agency experts believe that if Russia were able to introduce commercial approaches to the renewable energy market, then in subsequent decades Russian renewable sources would supply energy to houses and industrial facilities not only in Russia but also in Europe and China. Promoting renewable energy technologies means a possibility to gain benefits in economic, environmental, and social spheres. Nothing could embody achievements in the field of sustainable development better than the expansion of the use of unconventional power sources. Hopefully, Russia will make a right choice.

O.A. Speranskaya

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THE ROLL – MODEL COMMUNITIES PROGRAM

In Russia, both major players – corporations and whole industries – and small businesses in the regions are preparing to implement mechanisms under the Kyoto Protocol. The latter essentially represent housing and communal service businesses, which are embarking on the path of cardinal reforms. The country is gaining invaluable experience in energy saving at the level of single houses, apartments, municipal educational institutions, boiler houses, and school and hospital boiler rooms. Projects under the ROLL Program implemented in Russia since 1996 have been substantially contributing to the obtaining of practical results in cutting the heat and energy consumption.

The Sustainable Development of Model Communities at the Municipal Level in Russia, or the so-called ROLL – Model Communities initiative, is being implemented by the Institute for Sustainable Communities (Vermont, USA) and the Sustainable Development Foundation (Moscow) with financial support of the US Agency for International Development. The program is scheduled for 2005–2006 and represents a unique mechanism for launching effective, low-cost environmental projects and technologies and consolidating the interaction among various Russian organizations and regions.

The ROLL – Model Communities initiative aims to build efficient partnerships among all societal sectors – local and regional authorities, Russian business structures, and NGOs in small municipal entities. Each stage of the ROLL Program helps the Model Communities – grant winners identify the most acute problems in their municipal entities and design and implement a set of diverse projects aimed at mobilizing the communities' resources to address their environmental, economic, and social issues in the best way. The purpose of the initiative is to demonstrate practices of spending the resources saved through the implementation in the social sphere of energy-saving technologies for tackling environmental, economic, and social problems at the local level and then to disseminate the positive experience obtained throughout the Russian territory.

Energy saving is the key line of the ROLL – Model Communities initiative.

That is why the core of the set of projects launched in a municipal entity is one on implementing energy-saving technologies aimed to save local budgetary funds intended for utility payments. These resources will be accumulated in the local budget using various mechanisms, such as Local Community Funds, administrative decrees, and others, and spent for further balanced social development of the territories. The set also comprises projects to address socioecological problems and contribute to the territory's sustainable development – improve human health through sanitation of the environment, promotion of ecotourism, domestic waste management, education, and awareness building.

The underlying principles of the ROLL – Model Communities initiative are as follows:

- The Consortium of Grantees, which is represented by the administration of the municipal entity, nongovernmental nonprofit organizations, business structures, and the social sphere, namely, education and pub-

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lic health, is in charge of the implementation of the project.

- The implementation of the set of projects provides for participation of the general public, especially, young people, in particular arrangements.
- The projects that constitute part of the set are result-oriented and include practical arrangements aimed at sustainable development of the territory.
- Reinvesting in the future – all the Model Communities must demonstrate their readiness to reinvest the funds saved through launching energy-saving projects in the development of their communities and the implementation of new socially significant projects.

The ROLL– Model Communities projects provide for appraisal of management mechanisms for the funds saved using energy-saving projects through joint decision-making by all stakeholders based on the principles of collective leadership and transparency.

The main anticipated outcomes:

- Reinvestment of the funds saved through launching energy-saving projects in social, environmental, or economic projects or further energy-saving projects.
- Development joint financing by the local administration, noncommercial organizations, businesses, and the public of mechanisms for joint financing of development of their municipal entities based on the principles of consolidation of funds and transparency of decision-making.
- Active involvement of the general public, especially, young people, in the decision-making process regarding the planning of their municipal entity development and the distribution of resources.
- Integration of a comprehensive approach to decision-making at the local level to further the sustainability of Model Communities in the long term and the addressing of such issues as energy saving, nature management, public health, environmental education, responsible business development, job creation, and others.
- Establishment at the municipal level of a network of model communities, which will serve as a sustainable development model for other Russian territories.

The ROLL– Model Communities program is receiving powerful backing from Regional Centers for ROLL Program Support located in Moscow, Nizhni Novgorod, Novokuznetsk, Ulan–Ude, Yekaterinburg, and Khabarovsk. These centers help maintain efficient cooperation at the municipal level and represent sources of practical ideas and information about regional priorities.

The ROLL– Model Communities program is based on the outcomes of successful projects under the Environmental Policy and Technology Program (1993–1996), ROLL–1 (1996–2000), and ROLL–2000 (2000–2005), which were financially supported by USAID, and other social and environmental projects financed by various Russian and foreign organizations. Since 1996, more than 470 projects totaling about \$10 million have been financed within the framework of the ROLL Program. These projects were implemented in 85 out of 88 constituents of the Russian Federation.

One good example demonstrating the efficiency of such projects is offered by the Energiya enterprise, the Nevianskii District municipal entity, which got a ROLL grant under the Town Care project within the framework of the Neviansk Is My Favorite Town Consortium. The enterprise modernized its boiler house and thus saved 580,412 rubles in the 3rd–4th quarters 2005. These funds were used to cover the heating mains of the town in 2006. Energiya developed and submitted to the municipal Coordination Council and administration a program named Heating Main Reconstruction on Funds Saved through Implementing Energy-Saving Technologies under the ROLL Program. The program was approved. The enterprise has started to comply with people's requests to provide thermal covering on concrete heating mains, especially ones in the immediate proximity to apartment houses, within the framework of the program for reinvestment of saved resources. It was resolved to publish a monthly progress report on this program in the local press media.

More detail on ongoing projects under the ROLL – Model Communities program may be obtained at the site of the Institute for Sustainable Communities: www.iscmoscow.ru

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