

Russia's Decisive Role in the Kyoto Protocol*

William Chandler

Pacific Northwest National Laboratory
Washington, D.C.

Ilya Popov

Center for Nuclear Ecology and Energy Policy
International Socio-Ecological Union
Moscow, Russia

Summary

This paper assesses the prospects for Russia's ratification and implementation of the Kyoto Protocol. The Kyoto Protocol can enter into force only when countries responsible for 55 per cent of developed nations' 1990 carbon dioxide emissions ratify the agreement. With countries representing 44 percent of that total having already ratified Kyoto, and with Russia and the United States representing 17 and 36 percent of that amount, respectively, approval by either nation would bring Kyoto into force. No other nation or combination of nations can bring Kyoto into force. The current U.S. administration of President George Bush and the leadership of the Congress oppose Kyoto, leaving the future of that climate treaty to Russia's President Vladimir Putin and its parliament.

Putin's government, despite official statements that it will ratify Kyoto, appears ambivalent about doing so. America's withdrawal from the pact greatly reduces Russia's incentive to participate by reducing demand for emissions credits that Russia could sell to other nations. The value of emissions trading to Russia could have been \$10-20 billion per year with U.S. participation, but probably amounts to no more than \$1-2 billion per year without it, and in any case has no value before Kyoto would take effect in 2008 (Baron 2001). Russia's ability to comply with the Kyoto requirements also remains in doubt because the government currently lacks the institutional capacity to participate in emissions trading under the protocol.

Market and geopolitical factors weigh in the direction of Russian approval of Kyoto. First, ratification would probably lead to greater European demand for natural gas, and as one of the largest suppliers to Europe, Russia has much to gain. Second and less tangibly, Russian officials may sense that their nation's strategic and economic future is more closely tied to Europe than to the United States, a feeling that is no doubt strengthened by disagreement over war in Iraq and economic considerations. Finally, Russia should not have a problem with compliance because Russia's greenhouse gas emissions have already dropped by more than 30 percent since 1990. It is unlikely that emissions will exceed the 1990 level in 2008-2012. Ratification, therefore, carries little downside risk. The policy

balance probably tips toward Russian ratification, but not so much so that the government feels compelled to act quickly or aggressively, at least until the time of this writing.

Russia's Requirements under Kyoto

When Kyoto was adopted in 1997, the principal industrial country sources of greenhouse gas emissions agreed to reduce carbon dioxide emissions during the years 2008-2012. The United States, Europe, and Japan agreed that—if they later ratified the treaty—they would reduce their emissions in 2008-2012 by 7, 8 percent, and 6 percent, respectively, compared to benchmarks set equal to 1990 emission levels. Russia's agreed-upon goal was equal to but not more than the 1990 level. Under Kyoto rules, Russia could sell credits, which are the right to emit a certain amount of greenhouse gases, up to the amount its 2008-2012 emissions fell below its 1990 level.

Participation in Kyoto's "flexible mechanisms," such as emission credit trading, requires countries to carefully estimate their greenhouse gas emissions and provide this information to the UNFCCC Secretariat. Countries willing to participate in emission credit trading have to set up a national system to estimate emissions of all six gases regulated by Kyoto no later than one year before the first budget period, by 2007 (KP 1997, Articles 5.1, 7.1, 7.2; Marrakech Accords 2001). Inventories must be created in accordance with guidelines established by the Intergovernmental Panel on Climate Change (IPCC). "Joint implementation" projects must be monitored to verify that emission reductions are over and above what is likely to happen without a project, which requires substantial monitoring at the facility level or in one component of a sector before and after a project. This process requires a project baseline that considers what would happen without the project (Popov 1999).

Under the Convention and the Kyoto Protocol Russia has several commitments which are clearly defined in Russian official documents (Interagency Commission on Climate Change of the Russian Federation 2002):

Develop and implement climate change mitigation and adaptation policies to stabilize anthropogenic emissions at the baseline level of 1990 by the budget period 2008-2012 and regularly provide the UNFCCC Secretariat with information about these policies;

Create a national monitoring system for greenhouse gas sources and sinks no later than one year before the first budget period, and create inventories of greenhouse gases for all sectors of the economy following IPCC rules and recommendations;

Participate in international research programs on climate change.

Russian Greenhouse Gas Emissions

Russia remains the world's fourth largest source of anthropogenic greenhouse gases. Its global share, however, has declined from 10 percent to under 6 percent since 1990 because

the Russian economy collapsed dramatically in the 1990s due to political upheavals, and oil and coal consumption fell by 41 and 31 percent, respectively (Gritsevich and Kolesov 2001). Total emissions of carbon dioxide dropped from about 650 million tons of carbon per year to about 400 million tons. Fuel combustion for energy needs in all sectors is responsible for 70 per cent of the country's greenhouse gas emissions. Of that overall total, fossil fuel combustion generates 98 and 70 percent, respectively, of Russia's carbon dioxide and methane emissions (see Table 1). The largest share of energy-sector methane comes from leaks in the natural gas production and transmission system.

The Russian economy recently resumed strong economic growth, with 1999 and 2000 GDP growth at 5.4 percent and 8.3 percent (IEA/OECD 2002). In 2002, the rate was 4.3, down from 5.0 in 2001 (Reuters 2003). The Russian government predicts steady GDP growth, averaging 4.5 percent a year for years to come (Interagency Commission on Climate Change of the Russian Federation 2002). Russian carbon dioxide emissions from fuel combustion for energy needs will nevertheless remain below the 1990 level until 2015, even with higher economic growth (see Tables 2 and 3).

Much of Russia's energy supply and energy-using capital stock needs replacement or repair (Chandler 2000). The energy sector remains inefficient and energy intensive. Energy intensity in Russia has grown by 15 per cent since 1990 for two specific reasons. First, energy consumption declined more slowly than the GDP. Second, structural changes in the Russian economy, such as the increase of production in energy intensive industries like steel production and oil refining, and the decrease of production in less energy intensive industries such as the agriculture and textile industries, did not occur as rapidly as in other formerly planned economies (Ministry for Energy of the Russian Federation 2001). Restructuring of industrial sectors through increasing energy efficiency and therefore reducing energy intensities would substantially improve

Table 1 Anthropogenic Carbon Dioxide and Methane Emissions, Russia

Million Tons of Carbon Dioxide or Percent

| | | 1990 | 1999 | Decrease, 1999 vs. 1990 (%) |
|-----------------------|-------------------|-------------|-------------|------------------------------------|
| Carbon Dioxide | Total | 2,360 | 1,510 | 36 |
| | Total (%) | 77 | 80 | |
| | Energy Sector | 2,320 | 1,470 | |
| | Energy Sector (%) | 98 | 98 | |
| Methane | Total | 550 | 290 | 41 |
| | Total (%) | 18 | 15 | |
| | Energy Sector | 401.1 | 199 | |

| | | | | |
|--|----------------------|----|----|--|
| | Energy Sector (%) | 73 | 68 | |
|--|----------------------|----|----|--|

Source: compiled by authors from **Interagency Commission on Climate Change of the Russian Federation 2002**.

Note: Total greenhouse gas emissions were 3,050 and 1,880 million metric tons of carbon dioxide in 1990 and 1999, respectively.

the Russian economy by making it more efficient and competitive (Popov 2001). For example, IPCC claims that “hundreds of technologies and practices for end-use energy efficiency in buildings, transport and manufacturing industries account for more than half of this [emission reduction] potential” (IPCC 2002). The Russian government recognizes the importance of energy measures. The Russian Energy Strategy suggests that it is possible to reduce energy consumption by 40-50 per cent or 360-430 Mtoe through implementing organizational and technological energy saving measures. Approximately one third of this energy-saving potential is in the energy sector, and another third is in the industrial and construction sectors. More than one fourth is in the residential sector, 6-7 percent comes from the transportation sector, and 3 per cent originates from the agricultural sector (Ministry for Energy of the Russian Federation 2001). Indeed, the only real difference among official Russian climate scenarios, other than the GDP assumption, is the assumption for the rate of energy intensity reduction, at -2.0, -2.5, and -3.7 percent per year. These relatively high rates of change are made plausible by the remaining inefficiencies in the Russian economy, held over, as noted above, from years of central planning.

Table 2 Description of Scenarios

| Parameters | Scenario I (Optimistic) | Scenario II (Pessimistic) | Scenario III (Probable) |
|----------------------------|----------------------------|------------------------------|----------------------------|
| GDP | +5.2%/year | +3.3%/year | +4.5%/year |
| Energy Intensity of GDP | -3.7%/year | -2.5%/year | -2.0%/year |
| Energy Consumption | +1.5%/year | +0.8%/year | +2.5%/year |
| CO ₂ Emissions | +1.5%/year | +0.8%/year | +2.5% |

Source: **Interagency Commission on Climate Change of the Russian Federation 2002**

Russia’s fossil energy mix has become a little less carbon intensive since the collapse of the Soviet Union. Natural gas produces less carbon dioxide per unit of energy use than coal or oil, and oil produces less than coal. Oil consumption fell from the 1990 level by 52 percent and coal consumption dropped by 37 percent. Natural gas use fell only 11 percent over the same period (BP 2002).

The Russian government at first promoted natural gas as a more environmentally friendly fuel and in its first energy strategy adopted in 1995 claimed a continuation of the so-called “gas pause” announced 25-30 years ago. In contrast, Russia’s new energy strategy, promulgated in 2000 but not yet approved by the government, would promote the use of coal and reduce gas consumption in favor of exporting that premium fuel.

Table 3 Projections of Carbon Dioxide Emissions from the Energy Sector

1990 emissions = 2,370 million tons of carbon dioxide = 100%

| | Scenario I | Scenario II | Scenario III |
|------|------------|-------------|--------------|
| 2008 | 78.0% | 73.8% | 84.5% |
| 2012 | 82.8% | 76.2% | 93.4% |
| 2015 | 86.7% | 78.0% | 100.7% |
| 2020 | 93.4% | 81.2% | 114.1% |

Source: **Interagency Commission of the Russian Federation on Climate Change of the Russian Federation 2002**

Emission estimates remain very uncertain, especially for greenhouse gases other than carbon dioxide. Russia has, as required, submitted three national communications to the UNFCCC Secretariat, with all information being prepared by a small group of experts from the Institute for Global Climate and Ecology (IGCE) with cooperation from different agencies. This work was performed under the Federal Target Program “Prevention of Dangerous Climate Changes and Their Consequences.” The background information was prepared in the framework of the Russian Federation Climate Change Country Study in 1996-1997 with the assistance from the United States. The Federal Target Program was inadequately funded and as a result estimated emissions on a very aggregated level. No standard forms from the IPCC Guidelines were filled out except two summary and overview tables (Ministry for Fuel and Energy of the Russian Federation). In addition, there were no national communications that provided detailed assessments of emissions on a regional, sectoral, or enterprise level. Only the First National Communication was reviewed by an independent team of experts from the International Energy Agency in 1997. The team confirmed the data about carbon dioxide emissions from fossil fuel combustion in 1990 and suggested that, for other greenhouse gas emissions, including methane, Russia should more carefully conduct studies to estimate emissions levels (IEA/OECD 1997). Russia has not followed these recommendations and has not translated the last two national communications into English.

Attempts to improve this process include a 1999 effort to translate IPCC Guidelines into the Russian language. The Russian power company Unified Electric Power Systems of Russia (RAO EES) has also conducted an inventory of carbon dioxide emissions from all large- and medium- sized plants for the electric power sector. These efforts, however, provides little information about methane emissions. For Russia to participate in Kyoto’s flexible mechanisms it would have to improve its inventory capabilities substantially.

Russia's Institutions for Implementing Climate Policy

The Russian Government in 1994 established the Interagency Commission of the Russian Federation on Climate Change Problems to coordinate all activities related to the development of climate change policies. The Commission's decisions are not legally binding, and it cannot mandate that ministries implement any climate change policies (PNNL 1999). The Commission advises the administration of President Putin, which makes final decisions about climate change policies.

The government issued a decree in 1999 revising the composition of the Commission. It now has 32 members from various ministries, research institutes, as well as two representatives from Russia's biggest natural monopolies – Gazprom and the Unified Electric Power Systems of Russia (RAO EES) that dominate the Russian energy sector. The Commission is now led by the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Hydromet). The federal agencies that play the largest role in the Commission and in implementing climate change policies are the Ministry of Economy, the Ministry of Energy, and Hydromet. The Russian State Committee for Environmental Protection, Goscomecologia, participated in the Commission until it was disbanded by a presidential decree. Because Goscomecologia was actively involved in the mitigation of climate change, the shift of responsibility to the Ministry of Natural Resources weakened the Commission.

The interagency status of the commission limits its role to designing climate change mitigation programs and coordinating work among the participating agencies. For example, several ministries simultaneously work on programs such as joint implementation and monitoring. The commission made suggestions about dividing work on the UNFCCC and the Kyoto Protocol, but a formal decision about this has not yet been made. Jurisdictional issues occasionally arise about which agency is responsible for implementing flexible mechanisms; for example, representatives from the Ministry for Energy and the Ministry for Economics consider their agencies to be responsible for issuing permits (PNNL 1999).

The Commission has not formally met for several years, even though all international climate change documents require its approval and bear its stamp. The Commission really functions as a part of Hydromet, which is ineffective because Hydromet has no responsibility for the economy or for the energy sector. It would be beneficial to either raise the status of the Commission or to create a new presidential/governmental Commission that could improve coordination between agencies. Leadership would, at a minimum, be required to deal with the following tasks:

Develop programs to mitigate the consequences of climate change;
Conduct greenhouse gas inventories in Russia. Inventories are a key point for Russia's compliance with the Convention and Kyoto protocol obligations. Without inventories Russia can not participate in any flexible mechanisms. Russia still lacks high quality

national inventories, especially for gases other than carbon dioxide. The exception is only an inventory conducted by RAO EES. Russia has already produced several regional inventories but they will not be sufficient for fulfilling Russia's commitments. Sectoral inventories do not exist in Russia (PNNL 2001).

Develop rules for emission credit trading in Russia and register joint implementation projects. Such projects have not worked well in Russia. Of more than a dozen suggested, only 2 or 3 have been successfully developed. By comparison, Latvia, a relatively small country, has 18 such projects (Evans et al. 2001).

- Update existing legislation. Currently, all greenhouse gases with the exception of carbon dioxide are covered by environmental laws as harmful pollutants, not as greenhouse gases. Environmental laws do not also employ market mechanisms for reducing emissions in as many cases as possible. Currently, the only economic mechanism is payments for excess discharges of pollutants. The Ecological Committee of the Russian Parliament suggested updating the Law on Atmospheric Air Protection and defining greenhouse gas emissions and property rights for the purposes of emissions reductions (Kosarikov 2002). The Ministry for Economic Development suggests updating legislation before ratification of the Kyoto Protocol. Probably, these tasks should be implemented simultaneously. The Russian government will be responsible for emission reductions as a party to the UNFCCC but companies and regions would like to get emission reduction credits because they hope to participate in emission trading programs.

One practical result of the lack of coordination among ministries has been the inability of potential investors to engage in joint implementation projects in Russia. For instance, a Russian-Dutch Memorandum of Understanding on joint implementation projects has not been signed despite the Netherlands' willingness to invest in such projects. At the seventh conference of parties of the UNFCCC in Marrakech, the Dutch delegation referred to Russia as a "problematic country" because it lacks institutions responsible for climate change policy. In 2003 a couple of projects were chosen for the Dutch ERUPT program as joint implementation projects, but could not get approval from the Russian government because of the lack of a single Russian institution responsible for their implementation.

Outlook for Russian Ratification of the Kyoto Protocol

Russian top officials have publicly committed three times to ratifying the Kyoto Protocol, but it remains unclear when and if that will happen. President Putin initially made that commitment prior to the seventh conference of parties to the framework convention, held in Marrakech in 2001. Putin reasserted this position in the spring of 2002 at a European Union-Russia meeting in Moscow. At the World Summit on Sustainable Development in Johannesburg, Russian prime minister Mikhail Kasyanov said, "Russia has signed the Kyoto Protocol and is currently preparing for its ratification which we hope would happen

in the near future.”

On the other hand, Deputy Minister of Economy Muhamed Tsikanov on March 25, 2003, told reporters that there would be political value in ratification, but “no sense in it” from an economic point of view (Vedomosti 2003). Earlier, at the World Summit on Sustainable Development, Prime Minister Kasyanov mentioned an important issue that might delay ratification. Russia, he claimed, is an “environmental donor” and would play a “leading role in supporting global environmental balance...Russia holds one fourth of the planet’s virgin forests and 20 percent of the world’s fresh water...Russia has reduced greenhouse gas emissions by one third.” Some observers suggested that this might mean that Russia wanted compensation for being a donor, which would be a condition for Russian ratification. In his presentation at a seminar on the Kyoto Protocol and the Russian oil and gas sector which was held in October 2002 in Moscow, deputy chairman of the Environmental Committee of the State Duma Alexander Kosarikov also said that Russia is an environmental donor and wants money for such services. He asserted these ideas again at a seminar during the eighth conference of parties to the framework convention in Delhi in 2002. He and other members of the Russian delegation described the process of ratification and explained that the Duma would like to see some kind of compensation for the environmental services Russia provides, mentioning the figure of \$2 billion per year.

This type of bargaining has continued around the Protocol, notably in conjunction with a number of bilateral discussions between Russia and Canadian, Japanese, and European delegations. A National Report on Climate Change, commissioned in April of 2002 and prepared by several agencies under the leadership of the Ministry of Economy, was released in December. The document states that Russia will benefit from participating in climate change negotiations and implementing the Kyoto Protocol, which bring investments through flexible mechanisms. Many observers expected that in mid-December the Putin government would issue papers for the Duma to start preparing a law on ratification, but action was postponed. Ratification in Russia requires several steps. First, the government must prepare documents for ratification and send them to the Duma. After the Duma receives the documents, it prepares a law on ratification and usually considers it in three separate “readings,” though it is possible to hold these readings simultaneously. But rather than accept the report and initiate the parliamentary approval process, Victor Kristenko, the deputy prime minister responsible for the energy sector, expressed dissatisfaction with the report, and in particular with the Ministry of Economy’s role in preparing it, and asked Hydromet to improve it. Leading Hydromet figures are known to oppose Kyoto and even to have concluded that climate change would be beneficial to Russia. Nevertheless, the head of Hydromet, Alexander Bedritsky, was quoted in January 2003 as saying that Russia intends to ratify Kyoto (Pravda.ru 2003).

Russia’s participation in the Kyoto Protocol remains uncertain. Russia would probably need foreign assistance to create solid institutions and conduct inventories. Internal funding is insufficient to sustain existing climate institutions, and therefore creating new ones would

be out of the question. International organizations and other countries have already provided some assistance and have offered more help. The First and Second National Communications were partially financed under the United States-Russia co-operation in the framework of the U.S. Country Studies (Ministry for Fuel and energy of the Russian Federation 1999). The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) financed regional inventories. The United Nations Development Program (UNDP) plans a project to build institutions for conducting inventories and promoting joint implementation projects in 2003 (UNDP 2003). Nevertheless, many emissions-related projects financed by international institutions collapsed because of poor coordination among Russian agencies. In 1995, the Global Environmental Facility offered Russia \$3.2 million to estimate emissions of methane from the natural gas sector and to propose control measures. Conflicts among different Russian players led to project failure (Popov 2001). The European Union has stated its readiness to channel money to Russia to create infrastructure responsible for climate change, but it would like Russia first to ratify the Kyoto Protocol.

It is not clear whether Kyoto offers enough direct economic benefit to Russia to ensure its ratification. The Russian Ministry of Energy estimates that the energy sector requires \$40-70 billion dollars of foreign investments through 2020 (Institute for Energy Strategies 2001). Many studies have suggested that participation in the Kyoto Protocol would bring up to \$10 billion in investments to Russia's energy sector. Kyoto provides flexible mechanisms—emissions credit trading, specifically—which could earn money for developers of carbon and methane supply-saving and energy efficiency projects. Significantly, this conclusion depends on the assumption that funds earned from emissions trading could somehow be allocated to energy users or producers.

Saving Kyoto would strengthen Russia's relationship with Europe, but conversely might further strain U.S.-Russian relations. The risk of the latter is diminished by the fact that official U.S. policy states that the United States does not object to others ratifying and implementing the Kyoto Protocol, and the United States also may not want further to strain relations damaged by the Iraqi war. At the same time, the likelihood that the United States could offer bilateral cooperation sufficient to compensate for Russia's likely losses from rejecting Kyoto is not high, given the relatively low priority placed on climate change in the face of war-related budgetary pressures and growing competition for funding of homeland security, education, and unemployment compensation.

It is also important to mention that Russian interests are not in contradiction with Russia's commitments under the Kyoto Protocol. Russia needs to improve energy efficiency and the Kyoto Protocol can help do this through attracting investments because of the sale of emission credits. Increasing energy efficiency will also increase competitiveness of Russian industries.

Implications for Global Climate Policy

Russia still offers the world's largest and cheapest greenhouse gas emissions mitigation opportunities. The key question is how best to cooperate to reduce emissions and prevent regional emissions from returning to previously high levels, and how to make this effort serve both the global environmental needs and Russian economic developmental interests. While critics of the Kyoto Protocol are right that the legislation is not aggressive enough to reduce the risk of serious climatic change, its true value is in early action to establish mechanisms for cost-effective mitigation.

For European leaders, there is the real possibility that their support for Kyoto in the absence of U.S. involvement could end in failure. The result would be protracted uncertainty in global climate policy and the necessity of starting global climate change mitigation negotiations from scratch. While some stakeholders would welcome an opportunity to revisit global climate policy, the global business community is by no means monolithic. Some companies support the flexible mechanisms that Kyoto offers and that are attractive to Russia. These groups, along with many in the environmental community, believe that Kyoto is a vital first step, one that would establish the types of flexible mechanisms needed to make affordable the inevitable tightening of emissions constraints necessary to reduce the effects of climate change (IPCC 2002). But European leaders have not been particularly successful in communicating to Russia their case for quick ratification of Kyoto. A recent European Union delegation of Environment Ministers to Russia seeking to hasten Russian ratification even failed to meet with the Ministry of Economics.

Improved co-operation on climate change issues between Russia and the West is necessary if Russia is to both develop economically and simultaneously reduce the risk of climate change. Serious obstacles hinder the further development of environmental protection programs in Russia and its government places little priority on the global climate. The most useful immediate form of cooperation would come in the form of finance and infrastructure development. Financial backing is needed to capture low-cost emissions reductions in investments that have high paybacks but high risk due to lack of credit history, collateral, and stability. Kyoto's flexible mechanisms envisioned providing such support, and may still do so in a few years time. Shorter-term intervention will probably be necessary to make mitigation real for Russia, however. Most importantly, assistance can reduce the risk of useless but expensive project preparation. That is, investors are wary—and increasingly so—of incurring up-front costs for projects that may not have good returns because of political, economic, financial, or even technical risks. Further, if emissions credit trading is to be implemented, infrastructure will be needed to ensure that baselines for emissions credit trading on a project basis are developed fairly and honestly, and that verification and monitoring ensures that emissions reductions are real. The funding required to build Russian institutional capacity to overcome these challenges would run into millions of dollars per year, and it is highly unlikely that the Russian government would provide such funding with so many compelling needs for government spending in pensions, utility sector reform, health care, education, local environmental issues, and the conflict in Chechnya.

And though there has been much talk from European, Canadian, and Japanese governments about providing such technical assistance, the money has yet to materialize. Such assistance is usually not available for Russian expertise, in any case, but for citizens of the donor governments themselves.

Whether the Kyoto targets are met, additional measures beyond what today is cost effective are likely to be needed. Priority might be placed on sharing fundamental research for the development of new technologies to meet the climate challenge. Cooperation in developing fuel cells, advanced turbines, and renewable technologies could be very useful in the long term. Scientific collaboration could also help satisfy short-term security needs to support ex-Soviet science, and to improve international relations that have been strained by economic hardships. But for Russia, Kyoto on balance represents the best deal currently on the table. Whether it remains so will depend on the value other nations place on salvaging the Kyoto process.

References

Baron, R. (2001). *International Emission Trading: From Concept to Reality*. International Energy Agency, Paris.

BP (British Petroleum) (2002). *Statistical Review of World Energy*. 18 June 2002. (Available on the Internet: HYPERLINK "http://www.bp.com/centres/energy2002/" <http://www.bp.com/centres/energy2002/>).

Chandler, W. (2000). *Energy and Environment in the Transition Economies*. Westview Press, Boulder.

Evans, M., Legro, S. and Popov, I. (2001). *The Climate for Joint Implementation: Case Studies from Russia, Ukraine and Poland*. Mitigation and Adaptation Strategies for Global Climate Change 5(4): 319-336. (Also available on the Internet: HYPERLINK "http://www.pnl.gov/aisu/pubs/" <http://www.pnl.gov/aisu/pubs/>).

Gritsevich, I. and Kolesov, A. (2001). *Introduction to Conducting Greenhouse Gas Inventories for Industrial Facilities, Companies, And Sectors*. Center for Energy Efficiency, Moscow. In Russian.

IEA (International Energy Agency)/ OECD (Organization for Economic Cooperation and Development) (1997). *Report on the in-depth review of the national communication of the Russian Federation*. FCCC/IDR.1/RUS, UNFCCC Secretariat, Bonn. (Also available on the Internet: HYPERLINK <http://www.unfccc.de/resource/docs/idr/rus01.htm>).

IEA/OECD (2002). *Energy Policies of the Russian Federation. 2002 Survey*. Paris.

Institute for Energy Strategies (2001). *The Energy Dialog "European Union-Russia."* Moscow. In Russian.

Interagency Commission on Climate Change of the Russian Federation (2002). *Third National Communication of the Russian Federation under the United Nations Framework Convention on Climate Change*. Moscow. In Russian. (Also available on the Internet: HYPERLINK "http://www.unfccc.de/resource/docs/natc/rusnce3.pdf" <http://www.unfccc.de/resource/docs/natc/rusnce3.pdf>).

IPCC (Intergovernmental Panel on Climate Change) (2002). *The Third Assessment Report*. Geneva.

Kosarikov, A. (2002). *The Kyoto Protocol in the State Duma. Interview. Toward Sustainable Development in Russia*, N 20, 2002. Center for Environmental Policy, Moscow. In Russian.

KP (Kyoto Protocol) (1997). *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. UNFCCC, Geneva. (Also available on the Internet: www.unfccc.de/resource/docs/convkp/kpeng.html).

Marrakech Accords (2001). *The Marrakech Accords and the Marrakech Declaration*. UNFCCC, Geneva. (Also available on the Internet: [HYPERLINK "http://www.unfccc.int/cop7/documents/accords_draft.pdf"](http://www.unfccc.int/cop7/documents/accords_draft.pdf) http://www.unfccc.int/cop7/documents/accords_draft.pdf).

Ministry for Energy of the Russian Federation (2001). *Energy Strategy of the Russian Federation Till 2020*. Moscow. In Russian.

Ministry for Fuel and Energy of the Russian Federation (1999). *Kyoto Protocol and Russian Energy*. Institute of Energy Strategy, Moscow. In Russian.

PNNL (Pacific Northwest National Laboratory) (1999). *Climate Change Policy and Programs in Russia: An Institutional Assessment*. Richland, WA, Washington, DC. (Also available on the Internet [HYPERLINK "http://www.pnl.gov/aisu/pubs/"](http://www.pnl.gov/aisu/pubs/) <http://www.pnl.gov/aisu/pubs/>).

PNNL (Pacific Northwest National Laboratory) (2001). *The Multi-Regional Pilot Project to Develop Monitoring and Reporting Capacity for Greenhouse Gases in Russia*. Russian Center for Energy Efficiency (CENEf), and World Wide Fund for Nature (WWF) Russian Programme Office, Richland, WA, Washington, DC. (Also available on the Internet [HYPERLINK "http://www.pnl.gov/aisu/pubs/"](http://www.pnl.gov/aisu/pubs/) <http://www.pnl.gov/aisu/pubs/>).

Popov, I. (1999). *Monitoring Greenhouse Gas Emissions in Russia: A Foundation for Climate Change Accountability*. Pacific Northwest National Laboratory, Richland, WA, Washington, DC. (Also available on the Internet: [HYPERLINK "http://www.pnl.gov/aisu/pubs/"](http://www.pnl.gov/aisu/pubs/) www.pnl.gov/aisu/pubs/).

Popov, I. (2001). *Estimating Methane Emissions from the Russian Natural Gas Sector*. Pacific Northwest National Laboratory, Richland, WA, Washington, DC. (Also available on the Internet: [HYPERLINK "http://www.pnl.gov/aisu/pubs/"](http://www.pnl.gov/aisu/pubs/) <http://www.pnl.gov/aisu/pubs/>).

Pravda.ru (2003). *Russia to Ratify Kyoto Protocol*. 20 January 2003. (Available on the Internet: english.pravda.ru/main/2003/01/20/42258.html).

Reuters (2003). *Russian preliminary GDP '02 growth slips to 4.3 pct.* February 6, 2003. (Available on the Internet: [HYPERLINK "http://asia.news.yahoo.com/030206/3/r6dz.html"](http://asia.news.yahoo.com/030206/3/r6dz.html) <http://asia.news.yahoo.com/030206/3/r6dz.html>).

UNDP (United Nations Development Program) (2003). *Building Capacity for Green House Gases (GHG) Emission Reduction in Russia.* (Available on the Internet: [HYPERLINK "http://www.undp.ru/programmes.php?id=7"](http://www.undp.ru/programmes.php?id=7) <http://www.undp.ru/programmes.php?id=7>).

UNFCCC (1992). *United Nations Framework Convention on Climate Change.* Geneva. (Also available on the Internet: [HYPERLINK "http://www.unfccc.de/resource/docs/conv/index.html"](http://www.unfccc.de/resource/docs/conv/index.html) <http://www.unfccc.de/resource/docs/conv/index.html>).

Vedomosti (2003). *Russia will not line its pockets from global warming.* 24 March 2003. In Russian

*The paper was first published at <http://www.pnl.gov/aisu/pubs/russkyoto.pdf>

The United Framework Convention on Climate Change (UNFCCC) was adopted on May 9, 1992, and entered into force in March 1994. Developed countries and countries with economies in transition made a commitment to stabilize their greenhouse gas emissions in 2000 on a 1990 “base” level (UNFCCC 1992). Russia and some Eastern European nations were able to fulfill this commitment due to a combination of economic decline and economic reform. (UNFCCC 1992).

In 1997, the third Conference of the Parties (COP-3) to the UNFCCC adopted the Kyoto Protocol. Its main goal is to extend commitments of the parties and make them more stringent. The Kyoto Protocol requires developed countries to stabilize or reduce their emissions by 6-8 percent (depending on a region) by 2008-2012 in comparison with 1990 baseline emissions. The Protocol establishes several mechanisms that allow countries to reduce emissions jointly. These mechanisms are Joint Implementation (JI), a combined target for two or more countries (bubbling), the Clean Development Mechanism (CDM) and international emission trading.(KP 1997).

Article 25 of the Kyoto Protocol states, “This Protocol shall enter into force on the ninetieth day after the date on which not less than 55 Parties to the Convention, incorporating Parties included in Annex I which accounted in total for at least 55 per cent of the total carbon dioxide emissions for 1990 of the Parties included in Annex I, have deposited their instruments of ratification, acceptance, approval or accession”

The Kyoto Protocol requires countries to reduce emissions of six greenhouse gases— carbon dioxide, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs),

perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

The Ministry for Energy was renamed in 2000 from the Ministry for Fuel and Energy
Lower house of the Russian parliament.

PAGE \# "Page: '#'

" I don't understand where this comes from.

PAGE \# "Page: '#'

" Are you allowed to put this in without a full explanation of what it is in the main body of the paper (as opposed to in a footnote)?

PAGE \# "Page: '#'

" Why is that in quotes?

PAGE \# "Page: '#'

" Is this where the quote ends???

PAGE \# "Page: '#'

" Measurement, or enacting new policies?

PAGE \# "Page: '#'

" IS this a real unit of measure?

PAGE \# "Page: '#'

" Where did russian climate scenerios come from? You need to introduce the relevance of that here. We're not talking about climate change scenerios, we're talking about economic indicators.

PAGE \# "Page: '#'

" Next it talks about translating into russian...which is it?

PAGE \# "Page: '#'

" Shouldn't this be preventative policies against the possibility of future climate change?

PAGE \# "Page: '#'

" Citation?

PAGE \# "Page: '#'

" Citation?

PAGE \# "Page: '#'

" We don't care about unemployment compensation. That should be deleted.

PAGE \# "Page: '#'

" Investments or industries?

PAGE \# "Page: '#'

" Is this a pot-shot at aid in general? Probably better without.

PAGE \# "Page: '#'

" Other policy options, maybe?