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POLICY OUTLOOK

A Climate Vision for Russia

From Rhetoric to Action

August 2012

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Regardless of many benefits available to Russia from adopting a more practical approach to climate mitigation, the country remains on the outskirts of the international climate policy debate—an important element of foreign policy in this decade. Russian leaders tend to point to the post-Soviet decline of Russia's greenhouse gas emissions as a major contribution to global climate mitigation efforts. Yet, because the country's carbon intensity remains very high, that stance undermines Russia's role as a serious global climate actor.

Recognizing its limited progress with climate mitigation policies and its responsibility to contribute more would create a better foundation for Russia's strategic role. A number of "no-regrets" policy steps are available:

- Domestically adopting the mitigation pledge announced at the Copenhagen climate conference
- Implementing a domestic offsetting or emissions trading scheme that could act as a bridge to international carbon trading activities
- Further developing the "Russian Proposal," which seeks to encourage a wider group of countries to make climate commitments

Russia's stance on the Kyoto Protocol and allocating the potential burdens in climate mitigation is similar to many other industrialized countries' approaches. This provides Moscow a good platform to create a cooperative role for itself in global climate diplomacy. Moreover, Russia's current mitigation policies—regardless of the delays in their implementation—are slowly changing the country's previous image of being just a potential seller of carbon credits to a more serious player in mitigation.

However, making the most of its opportunity to develop a strategic role requires Moscow to take climate policy much more seriously. The Kremlin's climate change path boils down to political will—and whether climate change is considered important enough—as well as its ability to engage in serious strategic thinking and policy preparation.

Why Russia's Climate Policy Matters

Global temperatures have to be kept from rising beyond 2 degrees Celsius above pre-industrial levels, a potentially dangerous level of warming according to international consensus among climate scientists. Achieving that target requires taking action to cut greenhouse gas emissions worldwide. Understandably, China and the United States, the world's two largest emitters, have attracted most of the attention in international climate negotiations. Yet, Russia, the world's fourth-largest greenhouse gas emitter, following India, has a vastly important role to play. In 2010, it emitted 2,202 million tons of carbon dioxide equivalent, which does not take into account the amount of carbon dioxide taken out of the atmosphere by Russia's carbon sinks. Its emissions from fuel combustion alone were greater than all of the emissions by Central and South America.

Regardless of the heavy decline during the country's economic restructuring phase, Russia's recent carbon emissions have been on an upward trend. In 1998–2010, Russia's total greenhouse gas emissions went up by 10.7 percent.[1] The International Energy Agency predicts 11.2 percent growth in Russia's energy-related carbon dioxide emissions between 2009 and 2020. In comparison, carbon dioxide emissions in China and India are projected to grow by 41.4 percent and 47.7 percent, respectively. By contrast, emissions in the United States and the European Union are expected to decline by 0.2 percent and 4.5 percent, respectively.[2]

Russia's emissions from fuel combustion alone were greater than all of the emissions by Central and South America.

Russia also possesses the largest carbon sequestration capacity in the world. Its boreal forests, the largest forested region on earth, store large amounts of carbon. Additionally, about half of the Northern Hemisphere's terrestrial carbon is locked in Russia, predominantly in its permafrost regions.[3] Deforestation and the melting of permafrost as well as a growing amount of black carbon in snow-covered territories could have considerable implications for global efforts to effectively mitigate climate change.[4]

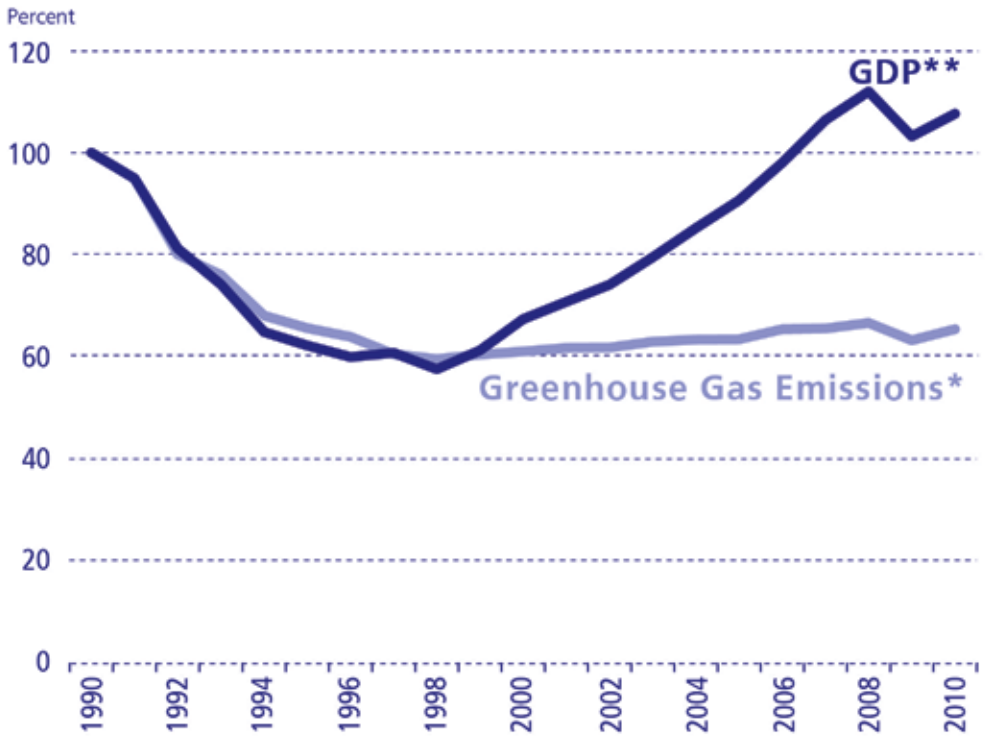
Russia's Emissions

Since 1990, the world's total emissions have gone up by 43 percent and OECD member countries' emissions by 10 percent. By comparison, in 2010, Russia's carbon emissions stood at 34.2 percent below their 1990 level[5]—a notable track record.[6] Russian officials have presented this as strong evidence of Russia's leading role as a contributor to climate change mitigation efforts.[7] The international climate community, however, has generally remained unimpressed by Russia's performance.

First, Russia's reductions were not the outcome of focused policies to cut emissions. The decrease was principally the result of the economic decline that followed Russia's transition to a market economy after the collapse of the Soviet system. By 1998, when the Russian economy hit bottom, energy use was about a

third lower than it was in 1990, resulting in major decline in emissions.[8] (Figure 1 shows Russia's greenhouse gas emissions and GDP since 1990.)

Figure 1. RUSSIA'S GREENHOUSE GAS EMISSIONS AND GDP SINCE 1990



*Greenhouse gas emissions in carbon dioxide equivalent
Source: www.unfccc.int
**GDP, purchasing power parity in constant 2005 dollars
Source: World Bank database

As Russia has recovered, economic growth—which was rapid in the 2000s—has driven the country's emissions up, though at a significantly slower pace than in developing countries. A number of factors have allowed the Russian economy to grow quickly while greenhouse gas emissions have increased at a relatively slow rate: economic restructuring that has favored services instead of heavy industry, improved capacity utilization at facilities that were largely left idle during the 1990s, and, most of all, high oil prices during this period. The European Bank for Reconstruction and Development has described this as relative decoupling of emissions from GDP growth.[9]

Second, the "historical responsibility" argument that calls for countries to be held accountable for their cumulative emissions is not in Russia's favor. According to that argument, Russia would have a significant global responsibility. The USSR was the second-largest carbon emitter not only during its last days but almost throughout its entire history. When the USSR collapsed, the Russian Federation was already locked in with an economy that had a level

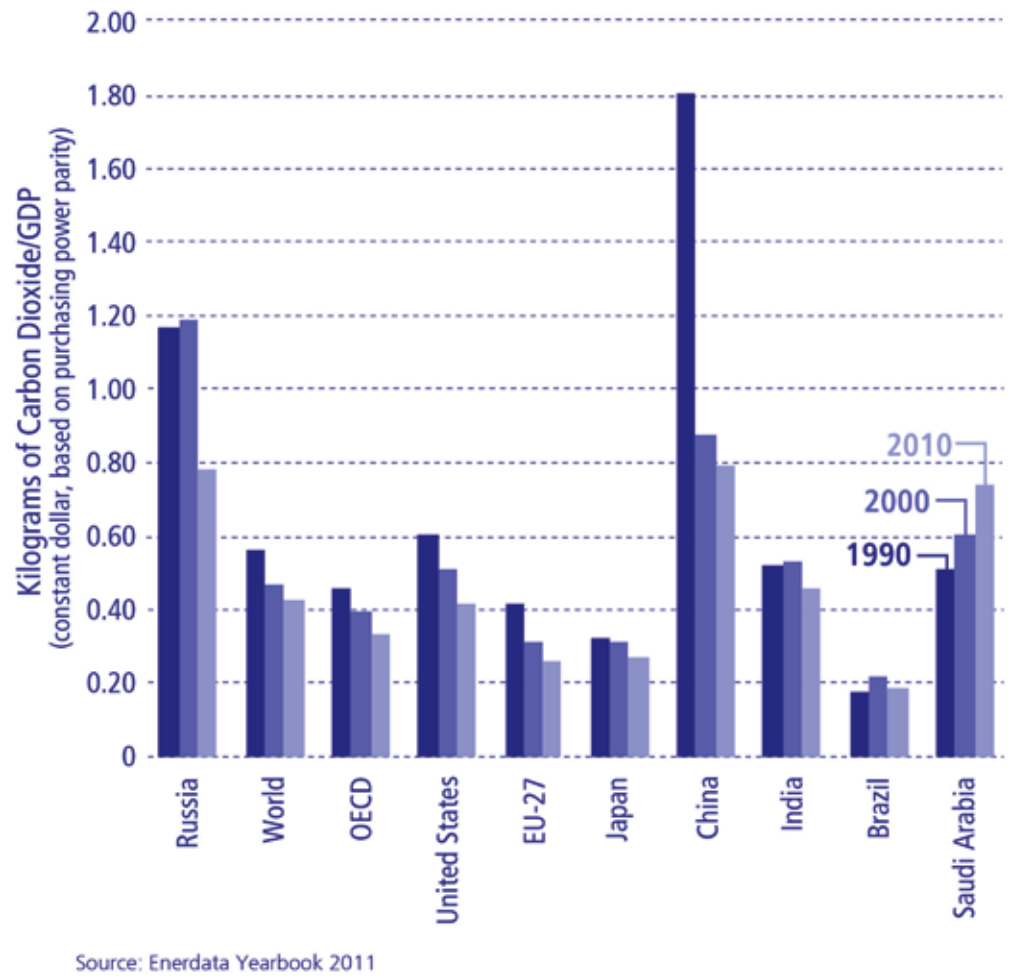
of carbon intensity that could no longer be justified in an increasingly carbon-constrained world.[10] Today, in terms of its cumulative carbon dioxide emissions, Russia stands behind the United States and China.[11]

However, Russia's official position does not recognize this "historical responsibility" argument because Russia claims that the damaging nature of greenhouse gas emissions was unknown for much of the twentieth century. Russia's counterargument—shared by most industrialized and some developing countries—is that emissions cannot be cut sufficiently without the participation of the major emerging economies due to their increasing share of global emissions.

Third, even though Russia's emissions are still below their 1990 level and are growing relatively slowly, the country's carbon intensity remains high—it was 81 percent above the global average in 2010 (see figure 2).[12] Per capita carbon emissions, with about twelve tons of carbon dioxide per person, are nearly three times the world average (see figure 3).[13] Likewise, the Russian economy remains the most energy intensive among the G20 countries, with an intensity level about three times higher than the European Union average.[14]

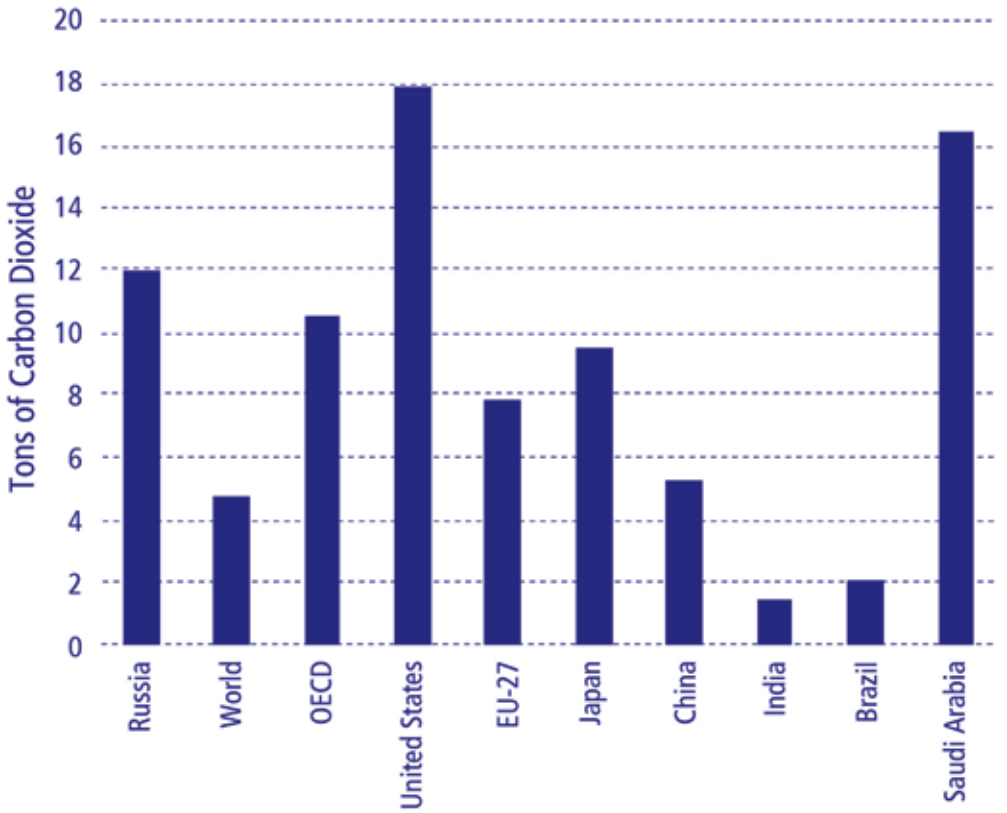
Even though Russia's emissions are still below their 1990 level and are growing relatively slowly, the country's carbon intensity remains high.

Figure 2. CARBON INTENSITY, 1990–2010



Source: Enerdata Yearbook 2011

Figure 3. CARBON DIOXIDE EMISSIONS PER CAPITA IN 2008



Source: World Bank

The Impact of Climate Change

Despite Russia's contribution to climate change, Russian policymakers feel little need to take steps domestically to mitigate it, and public pressure for tackling the issue is nearly absent. Skepticism persists about the anthropogenic causes of climate change. The potential benefits of climate change are also widely present in public discourse, which has further prevented Russia from taking a more proactive stance.

Climate change could in fact benefit the Russian Federation in various ways. Higher temperatures in the winter could reduce heating costs. Increased precipitation could potentially expand agricultural output in some parts of the country. The melting of sea ice in the Arctic could benefit oil and gas exploration and create new opportunities for navigation. Shipping activity has already increased in recent years in the Russian Arctic.

Climate change could have some dire consequences as well. The speed at which temperatures are changing matters a great deal. Russia's average temperature

is rising particularly fast—almost twice as fast as the global average and nearly three times as fast in parts of Siberia, according to the Federal Service for Hydrometeorology and Environmental Monitoring.[15] This presents Russia with greater weather unpredictability and shorter time horizons in which to adapt.

While they may benefit some areas of the country, rising summer temperatures are also expected to increase droughts, particularly in the areas that currently constitute the core of Russia's agriculture.[16] Rising floods and increased river runoff could cause additional damage to agriculture. Forest fires, as witnessed near Moscow during the summer heat waves of 2010, could be a growing cause of deforestation and health hazards. Melting permafrost is weakening the bearing capacity of the ground. This has consequences for settlements and infrastructure in Russia's north, and it could have a huge impact on the Russian economy, as it may complicate energy development projects in the region. There are already reports about an increase in accidents related to pipeline networks in permafrost regions.[17]

The Kyoto Protocol

The Kyoto Protocol to the United Nations Framework Convention on Climate Change adopted in 1997 was the first worldwide attempt to set quantitative, legally binding emission commitments for developed countries and several economies in transition, including Russia. By the end of the protocol's first commitment period, which began in 2008 and will expire at the end of 2012, Russia's initial responsibility was to maintain its emissions at the 1990 level. Agreeing to comply with the protocol's target posed no challenge for Russia, since its emissions were well below the 1990 level at the time. Even so, it was not until November 2004 when Russian leaders decided to ratify it.

Many explanations for Russia's delayed ratification have been provided. They can be summed up in four arguments. First is the fact that climate change has never been high on Russia's policy agenda for a number of societal and scientific reasons already discussed.

Second, some worried about the limits the Kyoto Protocol put on economic growth. Despite the protocol's loose target that allowed for some emissions growth, the voices of the doubtful were quite loud in the Russian debate in the early 2000s, not least due to Putin's goal to double the country's GDP within a decade.

Third, Russia was concerned about the equity of the agreement. The Kyoto Protocol required no emission reduction commitments from developing countries, while the then largest emitter, the United States, opted not to join. Many in Russia considered these issues significant shortcomings in the global effort to effectively avert climate change.

And fourth, Russia hoped to secure diplomatic gains by delaying the ratification of the Kyoto Protocol. In order for the protocol to enter into force, at least 55 parties had to ratify the treaty, accounting for at least 55 percent of global emissions. When the United States rejected the protocol in 2001, Moscow was left in a decisive position to reach the threshold. As part of its negotiations with the European Union on the Kyoto Protocol, Russia's consent was linked to progress on its bid to join the World Trade Organization.

Eventually, Moscow did sign on, and it expected to be able to benefit financially from the agreement. As the Kyoto Protocol took effect in 2005, each signatory had an emission target based on 1990 levels expressed in assigned amount units (AAUs), with each unit equal to one ton of carbon dioxide. Due to the collapse of emissions in the 1990s, Russia received the largest surplus of AAUs with the right to trade them in international carbon markets. This potential benefit preoccupied the climate debate in Russia. The United States had been expected to account for the majority of the demand for the Russian surplus. Its withdrawal from the protocol removed the majority of the demand for the Russian AAUs, and Russia thus had to turn to the more complicated Joint Implementation mechanism to benefit from the international carbon market.[18]

In the absence of pressure by a stringent international climate commitment, the implementation of Russia's climate mitigation policy efforts lags behind most other countries, though many key mitigation policies, mostly driven by economic interests, have been successfully developed and adopted. Establishing a functional legislative and administrative framework to approve Joint Implementation projects took many years. At the end of 2010, the Russian government set a target to reduce the energy intensity of the Russian economy by 40 percent by 2020. The major legislative package to improve energy efficiency that followed that announcement is perhaps the most substantial effort to date to promote Russia's low carbon future. However, it remains largely unimplemented. Further, a Climate Doctrine was adopted in 2009 and established the official basis for policies and measures to mitigate climate change and adapt to it. Yet, the action plan that followed provided no new concrete measures to do so. It has remained as a political declaration rather than a practical policy document. Finally, a legal limit on gas flaring—set as 5 percent of associated petroleum gas produced from 2012—has a large potential to cut emissions; the implementation is under way but estimated to be delayed by two to three years.[19]

Negotiating With Russia

Beyond the episode of the ratification of the Kyoto Protocol, Russia's role in international climate diplomacy is best described as peripheral. Moscow has continued to expect credit for the substantial decline in its emissions compared to the 1990 Kyoto baseline. International negotiators have been well aware that this decline was not the result of focused emission reduction policies

and measures. Moscow's stance has been seen as unfair by many countries, particularly given Russia's continuing waste of energy resources—and hence unnecessary greenhouse gas emissions. Further complicating Russia's role in climate negotiations has been its strong insistence on the full accounting of its forest carbon sinks—a factor key to the national pride of the country—without politically set caps.[20] As typical of the negotiation positions of forested countries, Russia's interpretation of the accounting rules would boost its own carbon sink.

In addition to the delays in the implementation of some of Russia's mitigation policies, their timing has given rise to the impression that Russia is principally after diplomatic gains instead of a constructive solution to climate problems. For instance, the goal of a 40 percent reduction in the energy intensity of the economy was announced just one month prior to the climate-focused G8 meeting in Japan in 2008, and the Climate Doctrine was adopted shortly before the Copenhagen climate conference in 2009. In the case of the energy-intensity target, the government has developed a legislative framework but implementation has remained slow. The action plan to implement the Climate Doctrine mainly consists of existing rather than new policies.

Moreover, it has become obvious that the Kyoto Protocol was never part of the Russian climate vision, though Russia is not alone in this. Due to the limited international participation in the protocol and the low impact it will have on global atmospheric conditions, Russian leaders considered Kyoto deficient during the initial debate leading to its ratification. Delays in establishing a framework for Joint Implementation projects have forestalled Russia's ability to reap economic benefits, further weakening its interest in extending its participation in the Kyoto Protocol.

Thus at the end of 2011, Russia gave notice it would not enter into the second commitment period of the Kyoto Protocol. Moscow's preference, shared by many other countries, is for a new global agreement that obliges all major emitters to participate. That preference could be interpreted as yet another illustration of rhetoric that is not backed up with action. It provides Russia a convenient way to postpone future climate commitments—maybe indefinitely. However, presenting a clear vision of how Russia aims to contribute to global climate action would ease such interpretations.

Presenting a clear vision how Russia aims to contribute to global climate action would ease doubts that Moscow rejects Kyoto and emphasizes wider participation to escape its commitments.

Why Should Russia Reconsider?

There are many reasons, both domestic and international, why Russia should reevaluate its climate policy. In order to live up to its aspiration as a leading and contributing player on key international issues, as envisaged by the leadership in Moscow, Russia cannot afford to be seen as ignoring the common task of tackling climate change—a key issue on the international policy agenda. The current starting point of claiming that Russia has already overwhelmingly

contributed to the objective of meeting global climate targets is simply no longer credible in the eyes of the G8 and G20. This is further underlined by the agreement made at the 2011 United Nations Climate Change Conference in Durban to negotiate a new global climate pact by 2015. That pact will have to contain more ambitious emission reduction commitments for all countries if it is to work.

Russia also has compelling reasons to take the threat of climate change seriously. Temperatures in Russia are rising relatively quickly with some potentially negative consequences. This is hardly surprising as temperatures in the Arctic, where a large part of Russian territories lie, have been rising faster than in the rest of the world. This underlines the risk Russia runs if it continues to treat climate change as somebody else's problem—or even worse, a Western conspiracy to force Russia to buy foreign green technologies. Other industrialized countries, for instance those in the European Union, are acting on climate because they recognize the economic and human risks involved.

Moscow has the opportunity to gain significant benefits by shifting toward more active and genuine participation in global efforts to address climate change.

Furthermore, low-carbon policies could provide incentives for policy implementation. As part of a wider package of policies, the price of carbon could support existing policies that are facing difficulties with implementation, for instance to improve energy efficiency or reduce associated gas flaring. Charging for methane emissions as part of a wider policy package could push some associated petroleum gas utilization projects over the threshold of economic viability. Further, the promotion of a domestic green-technology market and the production of such technologies could be a potential path to diversify the economy, which is also recognized in Russia's modernization program. Growing emphasis on climate policy worldwide provides future international markets for such technologies and renewable energy.

Russia can also strengthen its climate policy without much trouble or cost. In Copenhagen, then-president Dmitri Medvedev announced Moscow's willingness to commit to limiting emissions growth to 25 percent below the 1990 level by 2020.[21] This commitment is widely recognized as free of economic risks for Russia since present emissions are 34 percent below the 1990 level.[22] In addition, Russia has already set up a package of policies that has the potential to start turning the country toward a low(er) carbon path. Even though the problems with policy implementation that plague the political system are seriously threatening these policies, the measures are a good starting point for a climate mitigation portfolio.

Based on all this, Moscow has the opportunity to gain significant benefits by shifting toward more active and genuine participation in global efforts to address climate change.

A Climate Vision for Russia

In order to truly tackle the problem of climate change, gain influence in building the international climate regime, and reap economic benefits domestically, the Russian climate vision must be more comprehensive. Moscow should move from rhetoric to action in terms of climate commitments.

Even though Russia has stated that it will stay outside Kyoto's second commitment period, Russia has the opportunity to demonstrate its role as a serious climate protection partner by legally adopting a domestic emission limitation target—as proposed at the Copenhagen conference in 2009. This would signal to the world community that Moscow has moved on from its legacy of post-Soviet emission decline and would add credibility to Russia's focus on negotiating a new global climate agreement instead of joining Kyoto's second phase.

Moscow should move from rhetoric to action in terms of climate commitments.

Russia could also aim to become a genuinely substantive contributor to the negotiation process. The Russian Proposal made a first step at the Durban Climate Change Conference by officially proposing the establishment of a periodic review of country groups under the United Nations Framework Convention on Climate Change. A point of reference for the Kyoto Protocol, these groups divide countries in terms of climate commitments required from them based on the development levels of 1990. Their revision would provide an update of who needs to commit and to what type of emission reduction or limitation based on the current level of development. If also used as a point of reference by the future climate pact, this could oblige better-off developing countries to accept emission reduction targets based on the level of their economic development. The Russian Proposal was welcomed by many parties at Durban who also believe the current system to be inequitable. For instance, many countries seem to agree that allowing countries like South Korea, Singapore, and Qatar to escape mitigation commitments is unfair while, for instance, Ukraine and Belarus, with significantly lower standards of living, are making commitments.

The major shortcoming of the Russian initiative is that it is substantively hollow. To identify a solution to the challenge of future burden sharing of climate commitments, the issue requires much more attention, regardless of the opposition by the developing country group G77 on undertaking mitigation commitments. To make a contribution and influence the design of the future climate regime as also outlined in Russia's foreign policy doctrine, Moscow must have a more substantial suggestion to offer. For instance, the proposal could be amended to include indicators for judging which countries are developed enough to make emission limitation and reduction commitments under the next climate pact. In the absence of substance, this very reasonable initiative is easy for a powerful developing country lobby to discredit and ignore.

An Emissions Trading Scheme?

Russia's decision to drop out of the Kyoto Protocol's second commitment period has also stirred domestic discussions about the future of carbon market mechanisms in the country. Immediate concerns have been raised about the future of Joint Implementation projects.

Even though the process to set up the domestic approval system for Joint Implementation was prolonged, the mechanism is delivering results quickly. In May 2012, the Russian government had officially approved 108 projects that cumulatively account for 311.6 million tons of emission reductions; half of these projects were approved in the spring of 2012.[23] Russian stakeholders in Joint Implementation projects are eager to see their country join Kyoto's second commitment period in order to tap into the hundreds of tradable megatons of emissions allowances waiting in the Russian pipeline. However, potential benefits related to Joint Implementation alone are unlikely to prompt the Russian leaders to change their minds for a number of reasons. First, the opposition of the Russian leadership and many experts is linked to the fundamental question of the protocol's insignificant contribution to limiting climate change. Second, the demand for credits generated by Joint Implementation is likely to dry up after the so called true-up period of the Kyoto first commitment phase, in 2013–2014, due to the loose emission reduction targets set by a limited number of participants in Kyoto's second phase.

The European Union's focus on Clean Development Mechanism projects in the least-developed countries to satisfy its limited demand for external credits is a cause for additional concern in Russia since this reduces demand for credits generated by Joint Implementation.[24] Even if Russia would reconsider joining Kyoto's second commitment period, the absence of other major players—such as the United States, Japan, and Canada—means that benefits will be limited to extending investment flows through Joint Implementation a bit longer.

Establishing a domestic emissions trading scheme (ETS) has recently become part of Russia's climate policy discourse mostly pushed by the carbon market experts currently engaged in Joint Implementation projects. Some industries, represented by the union Delovaya Rossiya (which does not act for Russia's main emitters), have supported the idea of having a domestic ETS. A working group, with backing from the Ministry of Economic Development, has been formed to discuss carbon regulation issues that could also involve an ETS.

Yet, there is no indication that the Russian leadership will support setting up a domestic ETS. It is difficult to see the top leadership imposing carbon emission caps on industries upon which the economy heavily depends. Furthermore, setting up a full-scale ETS is likely to be problematic, not least because the Russian actors are used to selling emission quotas instead of buying them. The risk of failure with this complicated task is high given the limited

administrative capacity available in Russia and the opportunities it can provide for corruption on various levels. Here, the lessons from both setting up the Joint Implementation approval scheme within Russia as well as the European Union's ETS should be kept in mind: the political struggles such institutional arrangements can cause between ministries and agencies in Russia, and the opposition that industrial actors expressed to allocating limited emission rights in the European Union. Thus, a carbon tax could be a less complicated instrument with fewer such stumbling blocks but similar impact on emissions.

Even if an ETS is not a feasible solution, some kind of carbon-pricing tools may be useful options for Russia. A domestic offsetting scheme, for instance, based on the existing Joint Implementation mechanism may be a less risky option to maintain capacity to participate in the international carbon market in the future. Even though it may not be obvious in the absence of domestic emission caps in Russia, some limited domestic demand can be identified.

For instance, some Russians have raised objections about the requirement that foreign aviation participate in the European Union's ETS. That requirement has been labeled "green protectionism" by many in Russia. Domestic offsets could provide a more acceptable alternative so that companies do not have to purchase emission permits from the EU. Other Russian industries could also use domestic carbon allowances to offset their emissions in order to market their products as carbon neutral.[25] Likewise, the Sochi Olympic Games have been labeled a zero-emission games and may need domestic credits.

Conclusion

Russia will remain on the outskirts of the international climate policy debate—an important element of foreign policy in this decade—unless the Kremlin decides to change its attitude on climate change diplomacy as outlined in the Russian Federation's foreign policy doctrine. A domestically adopted emission limitation target would be a good start—perhaps with an extension of the country's participation in the international carbon market through a domestic offsetting scheme or ETS. At the same time it must be recognized that policy implementation—not just on climate but in general—tends to run into systemic difficulties in Russia. So, even the announced mitigation policies cannot be taken for granted.

The Russian Proposal at the Durban climate conference contains an important and widely recognized idea of establishing criteria for developing countries to graduate step-by-step toward emission mitigation targets based on their level of economic development. To maximize the foreign policy as well as global mitigation benefits of this initiative, Russia should develop a more substantial proposal as a contribution to the Durban platform. Adopting a domestic mitigation target would show developing countries that Moscow practices what it preaches.

Russia will remain on the outskirts of the international climate policy debate unless the Kremlin decides to change its attitude on climate change diplomacy as outlined in the Russian Federation's foreign policy doctrine.

Even though Russia's role is less decisive in the current climate negotiations than during the Kyoto ratification process, the fact that Russia's approach to future burden sharing is in line with other industrialized countries provides Moscow a better platform to create a cooperative role for itself. Given Russia's transition-economy status, the expectations of the country's mitigation target are probably limited, and thus fairly easy to fulfill. Regardless of its systemic problems with implementation, Russia has already gained credibility in terms of launching mitigation policies. This is slowly changing Russia's previous image of being just a potential seller of assigned amount units in international carbon markets.

None of the steps suggested would compromise Russia's principles when it comes to the participation of all major emitters and staying outside of the Kyoto second phase; rather, it would put them in practice. However, making the most of this opportunity to develop a strategic role in the design of the new regime requires Moscow to take climate policy much more seriously. In order to enhance its role and credibility in the global efforts to avert climate change, Moscow should depart from its traditional starting point: instead of presenting itself as a global leader in emission reductions, it should recognize its limited progress with climate mitigation policies and its responsibility to contribute more. The Kremlin's choice boils down to political will—and whether climate change is considered important enough—and to its ability to engage in serious strategic thinking and policy preparation. That would be something new from Russia in the field of climate policy.

Instead of presenting itself as a global leader in emission reductions, Moscow should recognize its limited progress with climate mitigation policies and its responsibility to contribute more.

Notes

1 The referenced greenhouse gas emissions exclude carbon sinks (LULUCF). National Inventory Submission 2010 by the Russian Federation to the UNFCCC. Available at http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/6598.php.

2 This is based on IEA's Current Policies Scenario. Under its New Policies Scenario, energy-related carbon emissions will grow by 11 percent. See *World Energy Outlook 2011.*

3 Goodale, Christine, Michael Apps, Richard Birdsey, Christopher Field, Linda Heath, Richard Houghton, Jennifer Jenkins, Gundolf Kohlmaier, Werner Kurz, Shirong Liu, Gert-Jan Nabuurs, Sten Nilsson, Anatoly Shvidenko, "Forest carbon sinks in the Northern Hemispere," *Ecological Applications*, 12 (3), 2002, 891–99.

4 Black carbon is a pollutant produced through incomplete combustion of biomass and fossil fuels. When it settles on ice or snow, it increases its heat absorption capacity, accelerating thawing. In Russia's snow-covered regions, it is brought mainly with air currents from Russia's nearby regions.

5 National Inventory Submission 2010 by the Russian Federation to the UNFCCC. Available at http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/6598.php.

6 See Enerdata energy database at www.enerdata.net.

7 See energy database of Enerdata at www.enerdata.net, Alexander Bedritsky's statement at the Cancun climate conference December 9, 2010.

8 Total primary energy supply dropped from 868 million tons of oil equivalent to 581 million tons of oil equivalent. (Russian Energy Survey, International Energy Agency, 2002.)

9 European Bank for Reconstruction and Development, "The Low Carbon Transition," 2011.

10 Carbon intensity is the amount of carbon dioxide emitted to generate one unit of GDP. In 1990, the USSR's carbon intensity was twice the global average—it stood at 1.17 kilograms of carbon dioxide per dollar of GDP (measured in purchasing power parity). See Enerdata.

11 See World Resources Institute database at www.wri.org.

12 Russia's carbon intensity in 2010 stood at 0.43 kg of carbon dioxide per unit of GDP. See Enerdata.

13 See World Bank database at data.worldbank.org.

14 See energy database of Enerdata at www.enerdata.net.

15 "Doklad ob Osobennostiakh Klimata na territorii Rossiiskoi Federatsii za 2008 God," Federal Service for Hydrometeorology and Environmental Monitoring, Moscow, 2009.

16 Elena Liubimtseva, "Global Food Security and Grain Production Trends in Central Eurasia: Do Models Predict a New Window of Opportunity?" *National Social Science Journal*, 41 (1), 2010, 154–65.

17 O. Anisimov, A. Velichko, P. Demchenko, A. Eliseev, I. Mokhov, V. Nechaev, "Effect of Climate Change on Permafrost in the Past, Present and Future," *Atmospheric and Oceanic Physics*, 38 (1), 2002. s25–s39.

18 At the moment countries are divided into industrialized Annex I countries which are obliged to take quantitative emission limitation or reduction targets, and developing non-Annex I countries without such commitments. Set forth in Article 6 of the Kyoto Protocol, Joint Implementation projects are mechanisms by which countries that have binding emission targets, the so-called Annex 1 countries, can meet their obligations not domestically but in other Annex 1 countries.

19 Vast amounts of associated gas released during production of crude oil continue to be flared instead of utilized productively. The exact amount of gas flared in Russia is unclear. Estimates for 2010 vary between 16 and 35 billion cubic meters. (*World Energy Outlook*, 311.)

20 Russia has insisted on an accounting method that would allow it to factor in a significant increase of harvesting forest before accounting for losses due to declining forest sinks. In addition, the uncertainty of data and the broad interpretation of "managed" forests (that is, forests that are subject to active policy measures) add headroom to the accounting. See for instance Anna Korppoo and Thomas Spencer. "The Dead Souls: How to Deal with the Russia Surplus?" FIIA Briefing Paper 39, Finnish Institute of International Affairs, September 4, 2009.

21 With the condition of including forest carbon sinks in the accounting.

22 Most Russian and foreign analysts agree that Russia's emissions are likely stay somewhere between 15 and 20 percent below the 1990 emission level. This is sufficient, as the Russian pledge contains 10 percentage points from the forest carbon sinks. On emission levels, see for instance: Igor Bashmakov, Nizkouglerodnaya Rossiya: until 2050, Center for Energy Efficiency (Russian 2009); Vladimir Malakhov, Economic Perspectives on Low-Carbon Development in Russia, "*International Journal of Low-Carbon Development 5* (4); 298–302; McKinsey & Company, (2009). Pathways to an Energy and Carbon Efficient Russia."

23 Projects approved with a decree of the Ministry of Economic Development as listed at the carbon unit operator Sberbank's list, May 29, 2012, www.sbrf.ru/moscow/ru/legal/cfinans/sozip.

24 Clean Development Mechanisms were established by the Kyoto Protocol for Annex I countries to meet their emission reduction commitments by investing in developing countries. Russia is not eligible to participate in Clean Development Mechanisms.

25 Anton Galenovich, "Carbon Protectionism vs. Carbon Leakage: Issues and Solutions," Presentation at the Ministry of Economic Development, March 15, 2012. Available at www.vavt.ru/main/site/LSP806C80/$file/10_Anton_Galenovich.pdf.

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