

Russia's Role In The Post-2012 Climate Change Policy: Key Contradictions And Uncertainties

Elena Lioubimtseva, Associate Professor, Geography and Planning Department and Director, Environmental Studies Program, Grand Valley State University

Abstract

As climate policies of China, India, and the United States appeared to be in the center of attention of the international community before and after the Copenhagen Climate Conference 2009, Russia's role in the post-Kyoto climate "architecture" has been generally overlooked by politicians, academics, and the media. As a major player in the Kyoto protocol, the third largest CO₂ emitter, and the largest national terrestrial carbon sink, Russia has a huge potential to play a much more prominent role in the future international climate policy. In this paper I argue that, in post-Copenhagen outlook, Russia's commitment would be essential for any future international agreement with binding emission targets.

Introduction

Ask your colleague, neighbor, relative or friend today what country's position would determine the future of the international climate policy and chances are high that the answer would be China. Depending on the context, the answer could be also the United States or India. But what about those countries who have already committed to binding their emissions through Kyoto Protocol, e.g. the EU27 members? Should their future commitments to carbon emission reduction be considered guaranteed? Would they scale up or down their targets in the future negotiations? And what about the so-called "transitional economies," such as countries of the former USSR and Eastern Europe? Is it still appropriate to consider them "transitional," and which of them can be now considered as "developed" or "developing?" What would be their role in the post-Kyoto climate architecture and post-Copenhagen negotiations? What is the role of Russia in the global architecture now, eight years since it has ratified the Kyoto Treaty, and what would be its role in the post-Kyoto agreement?

With the eyes of the world's media, politicians, and even academic community being focused entirely on China, India, and the United States (the Oxford Round Table on the Copenhagen Protocol held in March 21-26, 2010 not being an exception), it is surprising that the role of Russia has been overlooked. Preparing for the meeting in Copenhagen in 2009, the Russian government was aiming for a 25% cut of the national GHG (Green-House Gases) emissions below the 1990 level by 2020 ("Russia sets conditions for considering emissions cut" 2009). However, the offer was scaled back to 10-15% as the Copenhagen Accord has failed to define legally binding emissions reduction targets (Nature Editorial 2009; "Medvedev calls for green overhaul of Russian economy" 2010). Russia's position is not an exception: the European Union offered to cut its emissions by 30% by 2020 but made it clear that the offer is conditional to similar commitments from other countries. In January 2010, the Council of the European Union made a statement that "as a contribution to a global and comprehensive agreement, the EU maintains its conditional offer of a 30% reduction, if other developed countries commit to comparable emissions reductions and developing countries contribute adequately according to

their responsibilities and capabilities" (Council of the European Union 2010). This is a condition that is unlikely to be met under the Copenhagen Accord.

While many areas of uncertainty surround the future of global climate policy in general, and particularly since the Copenhagen Meeting, this paper focuses on the key uncertainties and contradictions of Russia's climate policy and the role it plays in the global climate architecture in the context of the on-going international climate negotiations. The paper consists of three sections. Section one examines a number of environmental, historical, political, and economic reasons why Russia's commitment to meaningful climate change mitigation is essential for the success of any future treaty on climate change and GHG emission reduction. Section two provides a discussion of the key uncertainties about Russia's domestic and international stand on climate change. Section three provides concluding comments on the key questions that are likely to define Russia's role and position in the post-Copenhagen climate negotiations.

1. Why is Russia a key player?

Russia has been a party to the UN Climate Convention since 1994 and became essential for the Kyoto Protocol to become legally binding in 2004 (Grubb 2004; Buchner and Dall'Olio 2005) and ever since has been playing an important role in shaping the multilateral framework on climate change policy (Henry and McIntosh Sundstrom 2007). For the Kyoto Protocol to enter into force, it had to be ratified by Annex B Parties accounting for 55% of 1990 carbon emissions (UNFCCC 2010). The Russian Federation accounted for 16.4% of 1990 carbon emissions. Thus, with the United States indicating it will not ratify the protocol, and alone responsible for almost 34% of 1990 global carbon emissions, and the EU, Japan, and other smaller countries having already ratified it, Russian ratification was deciding (Nikitina 2001; Bernard et al. 2003).

With its sheer size of 17,075,400 square kilometers, Russia is by far the largest country in the world. It remains the world's third largest emitter of green-houses gases after China and the USA (UNFCCC 2010), with one of the highest per capita energy-related CO₂ emissions in the world (EEA 2009), despite the severe economic downturn of the 1990s. Its per capita GHG emissions are almost four times higher than those of China (IEA 2010). Russia is an energy superpower: it is the world's largest producer of natural gas (20.9% of world production), the second largest producer of crude oil (12.3% of world production) and the world's sixth largest producer of coal (IEA 2010). It is the number one exporter of natural gas, accounting for more than 14% of the world's gas export (EIA 2010), and the second top oil exporter after Saudi Arabia (EIA 2010). It is thus expected to remain an energy superpower in the years to come.

1.1 Russia GHG emission trends before and since Kyoto

The collapse of the Soviet Union in 1991 and the economic downturn of its member-states brought up significant reduction of GHG emissions from this region. Russia's carbon emissions bottomed out at 1.98 billion metric tons in 1998, compared to 1990 emissions of 3.32 billion (IEA 2010). The coincidence of the collapse of the USSR's heavy industry in early 1990s with

the benchmark year in the Kyoto Protocol (1990) had a huge impact on interpretation of GHG emission trends of Russia and other transitional economies and might be misleading, as they mask the longer-term trends. According to estimations by CDIAC (Carbon Dioxide Information Analysis Center), the Oaks Ridge National Laboratory-based climate-change data and information analysis center of the U.S. Department of Energy, carbon emissions from the USSR grew from 10,881 thousand tons of carbon (KtC) in 1918 to 1,127,936 KtC in 1988 (Boden et al. 2009). For comparison, carbon emissions from the United States grew during the same period from 455,368 KtC to 1,332,323 KtC, and China's emissions from 5,743 KtC to 644,453 KtC (figure 1). From the beginning of the 20th century until its collapse, the USSR was the second largest emitter of carbon in the world, experiencing extremely fast emission growth due to its industrial development, closely approaching the United States by the end of 1980s and by far surpassing China and all other countries. Just two years before the baseline year of the Kyoto Protocol (1990), the USSR per capita emissions had peaked at 3.96 tC. For comparison, China's per capita emissions in 1988 were only 0.59 tC per capita. They have doubled since and reached 1.27 tC per capita in 2006 but are still much lower than in Russia. The USA's emissions also peaked in 1988 at 5.37 tC per capita and slightly declined to 5.18 tC in 2006 (Boden et al. 2009).

Although since 1992 total fossil-fuel CO₂ emissions from Russia have dropped 24.6% to 427 million tC, it is still the third largest emitting country in the world and the largest emitter of the republics comprising the former Soviet Union. Emissions from gas consumption represent the largest fraction (52.5%) of Russia's emissions and only recently have returned to the 1992 level. Emissions from coal consumption have dropped 30.1% since 1992 and presently account for 22.0% of Russia's emissions. Russia has the largest population of any eastern European country, near 142 million people in 2008 (World Bank 2008). From a per capita standpoint, Russia's 2006 per capita emissions rate of 2.99 tC per person exceeds the global average and represents the fourth highest rate of the region behind Estonia (3.56), Kazakhstan (3.45), and the Czech Republic (3.05) (Boden et al. 2009).

1.2 Russia's carbon credits

Paradoxically, Russia and other countries of the former USSR have been also the main recipients of carbon credits under the mechanisms of Kyoto Protocol (Victor and House 2004; Williams et al. 2005). The Kyoto Protocol called for industrialized countries and economies in transition (Annex B countries¹) to limit their emissions by 2012 (UNCCCF 2010). On average, these countries have committed themselves to reduce carbon emissions by 4% from 1990 levels in the period 2008-2012, or 12% below the commitment period projections (Paltsev 2000). The Protocol allows creation of different systems for emission reduction trading. Most countries have increased their emissions in the commitment period since 1990 and had to invest in significant mitigation efforts to keep growth of their carbon emission under control. However, as a result of decline in economic activity, carbon emissions in the transitional economies of Eastern Europe

¹ Industrialized countries and economies in transition are often referred as "Annex B countries" because they are listed in the protocol in Annex B (UNFCCC 2010).

(EE) and the former Soviet Union (FSU) decreased by 34% between 1990 and 1997 (Paltsev 2000; Boden et al. 2009). Although the economic recovery has been accompanied by the growth of GHG emissions, Russia and other economies in transition will remain in over-compliance with Kyoto targets without any mitigation measures, as their carbon emissions are still lower than in 1990. The result is that Russia and the Eastern European countries are not subject to any real caps or incentives to reduce their emissions because their caps are calculated from a high base of the USSR peak emissions. Russia would easily meet emission reduction requirements based on the 1990 base date during the second commitment period from 2008 to 2012 despite the increase of its emissions in the past years. Currently Russian emissions are approximately 37% below 1990 levels (EIA 2009). As Russia's Kyoto target was to stabilize emissions at 1990-levels it has now accumulated a great surplus of carbon credits. In the Kyoto period, this surplus is expected to be 7.2 billion tons (Point Carbon 2009). These excess emission permits can be sold to other Annex B parties. The situation in which a party can sell emission permits virtually at no cost to itself is often referred to as "hot air" (Paltsev 2000; Klepper and Peterson 2005). Hot air is defined as the difference between projected baseline emissions and the Kyoto target, in the case where the former turn out to be smaller than the latter. Estimates for the overall amount of hot-air available in 2010 by different authors range from 100 to 500 MtC (Paltsev 2000; Victor et al 2001; Bernard et al 2003; Klepper and Petterson 2005). The IEA (2010) estimates that 2010 emissions from Russia and other countries of the former USSR are about 745 MtC, while emissions of the USSR in 1990 were 1,036 MtC. In addition, the Kyoto Protocol also allows the former FSU countries to credit another 46 MtC for carbon sinks. Klepper and Petterson (2005) estimate that the amount of hot-air from the former USSR and Eastern Europe altogether around 410 MtC with Russia accounting for about 140 MtC. This estimate is quite close to other projections of the total "carbon bubble" of 344 MtC accumulated by the countries of the former USSR and Europe, including 120-125 MtC as of Russia's share (Paltsev 2000; Victor et al 2001; Bernard et al 2003).

Countries with commitments under the Kyoto Protocol to limit or reduce greenhouse gas emissions must meet their targets primarily through national measures. As an additional means of meeting these targets, the Kyoto Protocol introduced three market-based mechanisms: a) emission trading, b) the Clean Development Mechanism (CDM) and c) Joint Implementation. Emission trading assumes a trade of emission allowances with each other. The clean development mechanism (CDM) is obtaining credits for emissions from projects in developing countries that also contribute to their sustainable development. The joint implementation (JI) is obtaining credits for emissions avoided by investment in projects in other Annex B countries (UNFCCC 2010).

According to various estimates, the total value for Russian carbon credits available for sale could be currently between \$US 40 billion to \$US 60 billion (Point Carbon 2010). In addition, Russia holds about 58% of the global JI (Joint Implementation) market with the total GHG reduction potential over 150 Mt CO₂ (Yulkin 2007). The recent Copenhagen Accord has not addressed the mechanisms for the future of carbon trading after 2012. However, this question is

likely to become crucial for development of any future global climate deal. Very large amounts of carbon credits accumulated by Russia (and Ukraine) create lots of anxiety and fears in the European Union (EurActive, 2009; Harrison 2010) and the U.S. (Kanter 2009; Higgins 2009) that Russia would control the future of cap-and trade system. Russia is demanding that it be able to retain its massive surplus of emissions permits after they expire in 2012. Yet, critics argue that if Russia were to off-load these credits on international carbon markets, it would lead to a collapse in the price of carbon (Carbon Offsets Daily 2010).

1.3 Russia's carbon sequestration potential

The third reason why Russia is an extremely important country for any future global climate agreement is its very significant carbon sequestration capacity (Myneni et al. 2001; Schulze et al. 2001; Goodale et al. 2002). More than 25% of the national domestic emissions (RF Fourth National Communication 2006) is absorbed by Russia's natural and managed ecosystems including forest, wetlands, rangelands, and arable lands. The Russian boreal forests represent the largest forested region on Earth with more than 55% of the world's conifers, 21-22% of the world's growing stock, and 11% of the world's live forest biomass (Houghton et al 2007). Over 887 million hectares of forest and woodland remain, comprising 52% of the land area of Russia (Shvidenko and Nilsson 2003). Russian forests contain approximately 56.3 Pg (petagrams, or billion tonnes) of carbon in vegetation, and approximately 135.7 Pg C in soil organic matter (Houghton et al 2007). A considerable part of this carbon is locked in peat that is currently frozen within permafrost that occupies more than 60% of Russia's territory (Anisimov and Reneva 2006; Zhang et al. 2008). According to Goodale et al. (2002), Russia holds almost 50% of the Northern hemisphere's terrestrial carbon. Russia's natural forest resources play an integral role in global carbon cycling and climate change.

There is a danger that inadequate management of these resources (deforestation and adverse agricultural practices) and/or environmental processes associated with climate change (increasingly frequent draughts and forest fires, degradation of permafrost, wetlands, and soils) may turn these important carbon sinks to sources through a several positive feedbacks and would significantly accelerate the current warming trend. Estimates of the recent rates of deforestation are as high as 20,000 square kilometers annually, which is comparable to the annual rate of forest clearing in the Brazilian Amazon Basin (Houghton et al. 2007). As the demand for timber resources continues to rise in the markets of China and South East Asia, Russian forests will be increasingly threatened, and along with them the distinct and unique biodiversity that makes these forests invaluable.

Forest fires also represent a great danger to the boreal carbon pool. According to estimates by Zhang et al. (2003) based on remote sensing data, direct carbon emissions from Russian forest fires during summer months range between 39.3 and 55.4 MtC, five to eight times that from the 2001 North American boreal forest fires and around 11–17% of that year's Russian industrial carbon emissions. Another remote sensing study conducted by Shukhinin et al. (2004) suggested that an average of 7.7 million hectare per year of fire occurred in Eastern Russia between 1996

and 2002. The satellite-based burned-area estimates area were two to five times greater than those contained in official government burned-area statistics. The data shows that there is significant inter-annual variability in area burned, ranging between a low of 1.5 million hectare in 1997 to a high of 12.1 million hectare in 2002. This study also suggests that more 65% of the area burned occurred in boreal forests.

The threats to the boreal carbon pool, however, are not limited to forest fires and logging. With the continuing rise of global temperatures, localized melting of permafrost as well as the drying of the boreal micro-climates is likely release CO₂ and CH₄ to the atmosphere, turning current carbon sinks into sources of carbon, thereby creating a positive feedback to global warming. Results from numerical models indicate that by the mid-21st century, near-surface permafrost in the Northern Hemisphere may shrink by 15–30%, leading to complete thawing of the frozen ground in the upper few meters, while elsewhere the depth of seasonal thawing may increase on average by 15–25%, and by 50% or more in the northernmost locations (Anisimov and Reneva 2006). Such changes would cause dramatic emission of greenhouse gases from the carbon-rich wetlands of Siberia.

From this very brief overview of Russia's carbon pools, it is clear that the future of global climate would be largely influenced by Russia's land-use policies and management practices. Careful monitoring of boreal ecosystems, land-use and landcover, protection of forest resources, forest fire prevention measures, further development of carbon sequestration policies and practices in forestry and agriculture, and continuous research and assessment of carbon sinks and sources in arctic and boreal ecosystems are essential measures of future climate change mitigation and would require significant international collaboration.

2. Key uncertainties about Russia's climate policy

The Copenhagen Accord has failed to provide a foundation for a global legally binding treaty on climate change that would replace the Kyoto Protocol when its second commitment phase expires at the end of 2012 (Heffernan 2010). Since the Copenhagen summit simply extended all existing negotiating mandates, a lot of bilateral and multilateral activities are likely to unfold in the future climate negotiations. This section addresses a number of uncertainties about the future of Russia's national climate policy in the context of broader uncertainties and contradictions in the future global climate order.

2.1 Future emissions and carbon credits and questions about 1990 baseline

Merits and flaws of the Kyoto Protocol cap-and-trade mechanism have recently been heavily debated, particularly in the United States in connection with the climate and energy bill currently debated by the Congress (Samuelshn and Voorhees 2010). The European Union Emission Trading System (EU ETS), in operation since January 2005, is currently the most advanced scheme in which certain CO₂-emitting industries of the EU member states must comply with individual "emissions allowances" assigned via a national allocation plan. If a firm emits less

than its quota, it can sell surplus allowances; if it emits more than allowed, it has to buy allowances from other EU companies or may use credits from the Kyoto Protocol's Clean Development Mechanism or Joint Implementation schemes. As a result, the reduction targets of the Kyoto Protocol have given rise to a so-called "compliance market" (Schroeder 2010). Critics are concerned that emissions trading schemes may fail to achieve the goal of actually reducing emission reductions.

By selecting 1990 as a base year, the Kyoto system has set extremely easy emission reduction targets for Russia and Ukraine, as 0% change from 1990 to 2012. Russian emissions have been growing since 1998, and exceeded the 1998 level by some 15% in 2006 (Korppoo 2008). By 2008, they had reached 2.192 billion metric tons of CO₂-equivalent but were still 33.94% below emissions in 1990 (Doyle 2009). If the growth trend of the past few years is maintained, emissions in 2017 would be 12-15% below the baseline, and emissions would return to the 1990 level sometime around 2025. Thus, any 2017 reduction target for Russia less stringent than 15% below the baseline allows the country to continue business-as-usual. Russia and other transitional economies that have accumulated large amounts of carbon offsets see this as compensation for the costs of transition, especially since additional emission reduction requirements could constrain their future economic growth. However, if their excess of carbon credits is traded with no restrictions, they could simply be purchased by other countries, allowing their targets to be met without anyone actually reducing their GHG emissions. There are also concerns that Russia's fast economic growth may hinder future acceptance of emission reduction commitments as many Russian decision-makers fear that limiting the consumption of fossil fuels in order to cut emissions would reduce GDP growth (Korppoo 2008).

Russia's recent economic growth has been significantly outpacing the growth of emissions in the recent years (Russian Federation 2006; Doyle 2009). The GDP growth however, has been partly fuelled by the high oil and gas prices, which has no direct impact on Russian GHG emissions. There is also an increasing recognition by Russian government and companies that improving energy efficiency would have a positive overall impact on the economy and that GDP growth does not need to be necessarily associated with growing GHG emissions ("Medvedev calls for green overhaul of Russian economy" 2010). "Russia's economy needs fundamental reform to reduce greenhouse gas emissions," President Dmitry Medvedev said at the international meeting in Brasilia in April 2010, saying the country could then meet its target of a 25% cut by 2020 ("Medvedev threatens Russian withdrawal from Kyoto agreement" 2010).

While recently, the Russian government has repeatedly voiced its commitment to climate change mitigation, it is clear that the future of carbon credits and the baseline year for any new binding agreements would be extremely important in defining Russia's position on emission reduction and carbon trade mechanisms in further international climate negotiations.

2.2 Impacts of climate change on Russia's economy and environment

Russia's commitment to climate change mitigation would continue to be largely shaped by its national academic and business community's perception of the impacts of climate change on

Russian economy, its vulnerability, and adaptations. Climate Doctrine, signed by President Medvedev in 2009, reflects for the first time recognition of the Russian government that climate change represents a significant threat to Russia's economic development and security. "Climate change is one of the major international problems in the 21st^t century, which goes beyond the scope of a scientific problem and represents a complex interdisciplinary problem that covers environmental, economic, and social aspects of the sustainable development of the Russian Federation (Climate Doctrine of the Russian Federation 2009).

Impacts of climate change on Russia's economy and environment, however, are not necessarily all negative, and Climate Doctrine clearly recognizes scientific evidence of these. The IPCC AR4 also projects both positive and negative impacts of climate change on Russia's economy (IPCC, WG2 2007). Projected negative impacts of climate change include summer temperature increase that would cause more draughts, forest fires, and fires in the Siberian peat lands. This could lead to significant economic losses, cause pollution detrimental to human health, and potentially turn enormous carbon sinks associated with boreal forests and peatlands, into carbon sources (Anisimov and Reneva 2006). Another hazard for human health is the proliferation of disease as the natural habitats of vector-borne and water-borne diseases are likely to expand northwards (van Lieshout et al. 2004; Lioubimtseva and Henebry 2009a). Floods and the increased runoff of rivers due to the melting permafrost are already causing serious problems in Northern Siberia (Anisimov and Reneva 2006). Melting permafrost will also cause more landslides and the degeneration of boreal forest ecosystems as well as a change in the strength and bearing capacity of the ground, which will have negative consequences for settlements built on the permafrost. Russia has the longest coast line in the world and the sea-level-rise rise will threaten existing settlements and infrastructure. On a bright side, most of Russia's coasts of the Pacific and Arctic oceans have barely any population, with more than 78% of Russians living in the European part of Russia.

However, the projected climatic changes are also expected to have a significantly positive impact on many regions and sectors of Russian economy (IPCC WG2 2007). For example, winter temperature increase will lead to a decreased need for indoor heating, which will reduce energy consumption. The agricultural production potential could increase in higher latitudes, yet the conditions in the currently most fertile agricultural land in Russia's semi-arid grain belt are likely to result in more frequent droughts (Dronin and Kirilenko 2008; Lioubimtseva 2010; Lioubimtseva and Henebry, 2009b). The boreal forest will shift northwards, but in Russia's case there is enough space in the north for the forest to make this shift. Ice melting in the Arctic would provide new opportunities for gas and oil exploration and transportation (IPCC WG 2007).

Assessment of impacts of climate change, human vulnerability, and adaptations to climate change occupies a very important part in Russia's Climate Doctrine (Climate Doctrine of the Russian Federation 2009). The document recognizes that "climate change adaptation is necessary to reduce the losses and take advantage of the benefits of current and future climate change" and "in developing and planning measures to adapt to climate change the most important elements

are the assessments of: vulnerability to adverse effects of climate change and risk of related loses; possibilities of obtaining benefits connected with the favorable consequences of climate change; cost-effectiveness, efficiency (including economic) and feasibility of appropriate adaptation measures; adaptive capacity, including economical, social and other important factors for the State, sectors of economy, population and separate social groups" (Climate Doctrine of the Russian Federation 2009). The Russian government recognizes that the Climate Doctrine is a living document, just as the climate policy itself, and it is likely to continue to develop. "We need to see how the doctrine is adapted to the current situation. The doctrine should not be absolute, and if necessary we will introduce amendments," President Medvedev said in February 2010 (Medvedev calls for green overhaul of Russian economy 2010). Further research on impacts of climate change, vulnerabilities and adaptations in various sectors of economy will be important in defining Russia's role in the post-Kyoto climate negotiations.

2.3 Impacts of climate change on Russia's carbon pools.

Among many other uncertainties about projected impacts of climate change, perhaps nothing is more speculative and uncertain than scenarios of changes in atmosphere-ocean-soil-vegetation carbon fluxes due to the temperature increase. Scenarios driven by Atmosphere-Ocean General Circulation Models (AOGCMs) coupled with biogeochemistry models (such as CENTURY, BIOME-BCG, and TEM) and biogeography models (such as MAPPS, MP1 and LPJ), theoretical considerations, paleoecological reconstructions, as well as chamber and more recently open-air experiments (FACE- Free-Air CO₂ Enrichment) suggest existence of numerous strong positive feedbacks between climate and ecosystems (Melillo et al. 1993; Bachelet et al. 2001; Adams and Lioubimtseva 2002; Goodale et al. 2002; Lioubimtseva and Adams 2004; Houghton et al. 2007). Growing temperatures are likely to cause the release of significant amounts of carbon currently stored in boreal forests and tundra soils and peatlands into the atmosphere that would further accelerate the greenhouse effect turning existing carbon pools into sources of carbon.

Russia holds the largest terrestrial carbon pool associated with boreal forests that currently provides significant carbon-sequestration service to other countries. Quantification of carbon pools and sinks, however, is still one of the most uncertain aspects of climate change science, and not only in Russia. Land-cover and carbon budget assessments based on satellite imagery, land-use inventories, and extrapolation from in-situ carbon flux measurements all produce significantly different and sometimes contradicting results (Myneni et al. 2001; Goodale et al. 2002; Krankina et al. 2004; Houghton et al. 2007). Under the Kyoto provisions, Russia and other countries of the USSR were allocated a credit of 46 MtC for carbon sinks (Paltsev 2000). Russian politicians have recently expressed concerns that the Kyoto Protocol has failed to take the Russian forest sinks fully into account because countries that had already cut their forests and were replanting them got a better deal than those that had preserved their forests like Russia (Afionis and Chatzopoulos 2010). In domestic debate, Russia is seen as "over-performing" under the Kyoto Protocol, while the loose nature of carbon credits allocated based on the 1990 baseline is often ignored (Korppoo 2009). These issues are likely to be reopened in further climate

negotiations on post-Kyoto international agreement. Further quantification of carbon stores, sinks, and sources of carbon would be essential for reassessment of the Kyoto provisions on carbon credits.

2.4 Domestic stand on climate policy

Finally, another very important factor that is likely to influence Russia's role in the future climate negotiations is its domestic stand on the impacts of climate change. And there is large contradiction between international and domestic stands going back to the history of the USSR: Russia and its predecessor USSR have been actively involved in the UNFCCC negotiations process for many years. More recently, climate change has become an important part of Russia-European Union relations, yet domestically, there is very limited public awareness and population interest in climate change.

The internal debate in Russia is still limited and dominated by a few stakeholders; the private sector is not fully involved beyond pushing for Joint Implementation project approvals (Korppoo 2009) and the non-governmental sector has very a limited impact on the direction of the Russian climate policy (Nikitina 2001; Sabonis-Helf 2002; Henry and McIntosh Sundstrom 2007). In the international climate negotiations sphere, Russia has historically had an impact on the direction of negotiations and has been helped by its wealth of Soviet-era experience going back to environmental treaties on long-range trans-boundary air pollutants (LRTAP) and UNFCCC negotiations (Sabonis-Helf 2002). Russia is even more empowered now, since its large level of emissions and accumulated carbon credits gives it an important say over the future of any post-Kyoto climate architecture. Differently from most of other former USSR countries, Russia has always been in compliance with UNFCCC reporting obligations and submitted all four national communications on climate change on time (National Communication on Climate Change 1995²; 1998³; 2002⁴, 2006⁵). Involvement and visibility in the international climate negotiations has been long perceived as a question of the national pride and an important component of the status of superpower.

Domestically, however, Russia has experienced many challenges in this area, many of them also being inherited from the USSR (Nikitina 2001; Kotov and Nikitina 2004). These challenges include:

- a) Limited public awareness and interest of Russia's population in climate change policies;
- b) Long-standing competition between agencies for leadership control and funding;
- c) Limited participation of stakeholders in climate policy formulation.

² First National Communication of the Russian Federation on the Climate Change Problems, Interagency Commission of the Russian Federation on Climate Change Problems, Moscow 1995;

³ Second National Communication of the Russian Federation on the Climate Change Problems, Interagency Commission of the Russian Federation on Climate Change Problems, Moscow 1998;

⁴ Third National Communication of the Russian Federation on the Climate Change Problems, Interagency Commission of the Russian Federation on Climate Change Problems, Moscow 2002

⁵ Fourth National Communication of the Russian Federation on the Climate Change Problems, RosHydromet, Moscow 2006

Climate change is not regarded as an acute environmental problem by Russia's general public. Recent opinion polls indicate that a significant percentage of the Russian public does not see climate change as a very important issue and does not approve of spending taxpayers' money on climate change mitigation (Pugliese and Ray 2009). A Gullap survey conducted a year ago suggests that 85% of Russians are aware of climate change (compared to 97% of Americans and 62% of Chinese), but only 39% perceive it as a serious personal threat (compared to 63% and 21% respectively in the U.S. and China) (Pugliese and Ray 2009).

Russia's governmental institutional structures have not made public involvement much easier. Although an Inter-Agency Commission has existed in one form or another since 1994, with a mandate to coordinate on matters of climate in an interdisciplinary fashion, policy making has been hampered by on-going and acrimonious competition within the government for leadership of the issue (Nikitina 2001; Sabonis-Helf 2002). The Commission is not a State Committee, and therefore its recommendations do not carry the force of law. The current dominant government agency is Russian Hydrometeorological Service. The Inter-Agency Commission has traditionally been chaired by the head of RosHydromet. Another entity involved in climate change policy in the past was the Ministry of Environmental Protection inherited by Russia from the USSR. In the 1990s, however, it was first lowered to a status of a state committee and later dismantled with its functions being transferred to the Ministry of Natural Resources (Kotov and Nikitina 2002). Several years later, the latter was reorganized and renamed the Ministry of Natural Resources and Ecology. The Centre for Preparation and Implementation of International Projects on Technical Assistance is another quasi-independent entity, established as an entity of the Environmental Protection Agency as an institute empowered to work with international donors was later moved under supervision of the Ministry of Natural Resources, but is also answering to the Ministry of Economy and the Ministry of Finance. Another government force in climate policy is the Parliament Committee on Ecology. Complexity and numerous reorganizations of this institutional network have inevitably caused competition for resources and leadership control (Nikitina 2001; Kotov and Nikitina 2002).

Until recently, Russian corporations have been showing no or very little interest in climate change issues, but the growing opportunities for carbon trading and Joint Implementation projects have recently caused much stronger involvement of corporate sector in climate discussion. Center Telecom, Federal Grid Company of Unified Energy System, Gazprom, Irkutskenergo, Novatek and Tatneft were the Russian corporations leading efforts to understand and tackle climate change, according to this year's inaugural Carbon Disclosure Project (CDP) Russia 50 report (Carbon Disclosure Project 2010). The CDP is a global carbon reporting initiative of 534 institutional investors with approximately RUB 1,900 trillion of assets under management (US\$ 64 trillion). Investors worldwide work with CDP and factor climate change information into their investment decisions and asset allocations. In 2009, for the first time, CDP sent its request for information to Russia's top 50 companies based on the Russian Trading System stock exchange (RTS 50). Six companies answered the CDP questions around greenhouse gas emissions and climate change strategy, and an additional three companies

provided other information. CDP 2009 showed that Russian companies have started to investigate and address carbon issues: three of the responding companies provided detailed information on direct and indirect greenhouse gas emissions from their operations, and four companies reported having a GHG emissions or energy reduction plan in place. Risks from climate change were identified by 50% of the participating companies, while two thirds see opportunities arising from climate change (Carbon Disclosure Project 2010). This recent trend of the growing interest in the corporate world suggests one more time that the issue of carbon credits would be critical for retaining Russia's commitment to the post-Kyoto agreement.

3 Conclusions

Russia's position on the post-Kyoto global climate architecture in the current and future climate negotiations is very important, and Russia's influence on the climate politics is likely to increase. The Copenhagen Accord has not provided any framework for a global, legally binding treaty that would replace the Kyoto Protocol after 2012 and simply extended all existing negotiating mandates. A sequence of climate negotiations is likely to unfold in 2010-2012 in order to renegotiate the new global climate order.

Russia's role in this process is determined by the following factors:

- a) It is currently the third largest emitter of CO₂ after China and the U.S. Its per capita emissions were higher than in China, Japan, and the EU27 even at the time of deep economic depression of the 1990s and continue to grow. The U.S. rejection of the Kyoto Protocol offered Russia a "veto power" - since Russia was holding 16.4% of the world's GHG emissions in 1990, its ratification of the Kyoto Protocol in 2004 was deciding for the Protocol becoming legally binding. Russia is the largest GHG emitter among all Kyoto Annex B countries.
- b) Russia currently holds the largest portfolio of carbon credits worth US\$ 40-60 billion and more than 50% of the world's Joint Implementation projects market with the total GHG reduction potential over 150 MtC. Its position therefore is likely to have a significant impact on the future carbon exchange and renegotiation of carbon-trading mechanisms. Any future global climate agreement would require negotiations on the future of these carbon credits after 2012. If Russia is not allowed to roll its credits past 2012, it is likely to sell them abruptly and this would devalue carbon price and cause collapse of the global carbon market. Accumulation of Russia's huge portfolio of carbon credits is a result of the Kyoto 1990 baseline. Based on current trends, Russia will continue receiving "hot air" carbon credits at least until 2020 without any significant mitigation measures if the baseline year remains the same. This problem fundamentally undermines the integrity of carbon trading. Other key carbon emitters, such as Japan, China and the U.S. are likely to oppose to the choice of 1990 as baseline for emission assessment after 2012.
- c) Russia holds the largest national terrestrial carbon pool associated with boreal forest of Northern Eurasia. However, carbon budget estimations in boreal vegetation, soils, peat, and permafrost are still quite uncertain. Climate change and anthropogenic land-cover changes are

likely to cause further changes in the exchange of carbon between the terrestrial carbon pool and atmosphere. Fair allocation of the future carbon allowances would require significant international collaboration in assessment and monitoring of carbon stores, sinks, and sources, as well as coordination of land management measures and legislation.

Russia's position in the current and future climate negotiations is likely to be determined by the following questions:

- a) The future of carbon credits allocated by 2012 and possibilities to roll them into the future agreement;
- b) The baseline year for measuring future emission trends;
- c) Assessment and monitoring of carbon stores, sinks and source;
- d) Understanding of impacts of climate change on carbon budget;
- e) Further assessment of impacts of climate change on the Russian economy and environment, vulnerability, and adaptations to climate change;
- f) Participation of domestic stakeholders, particularly Russian corporate forces in formulation of national climate policies;
- g) Impact of climate-related questions on Russia's relations with its key trading partners, such as the EU and China.

References

Adams, Jonathan M., and Elena Lioubimtseva. 2002. Some key uncertainties in the global distribution of soil and peat carbon. In: J. M. Kimble, R. Lal, and R. F. Follett. Eds., *Agricultural Practices and Policies for Carbon Sequestration in Soil*. CRC Press Lewis Publishers, Boca Raton, Florida, 459–469.

Afionis, Stavros and Ioannis Chatzopoulos. 2010. Russia's role in UNFCCC negotiations since the exit of the United States in 2001. *International Environmental Agreements: Politics, Law and Economics* 10 (1): 45-63.

Anisimov, Oleg and Svetlana Reneva. 2006. Permafrost and Changing Climate: The Russian Perspective. *Ambio* 35 (4): 169-175.

Bachelet, D., R. P. Neilson, J. M. Lenihan, and R. Drapek. 2001. Climatic change effects on vegetation distribution and carbon budget in the United States. *Ecosystems* 4:164–185.

Bernard, A., A. Haurie, M. Vielleand and L. Viguier. 2008. A two-level dynamic game of carbon emission trading between Russia, China, and Annex B countries. *Journal of Economic Dynamics and Control* 32 (6):1830-1856.

Bernard, A., S. Paltsev, J. Reilly, M. Vielle, L.L. Viguier. 2003. Russia's role in the Kyoto Protocol. DSpace@MIT, 6. <http://hdl.handle.net/1721.1/3584>, accessed January 15, 2010.

Buchner, Barbara and Silvia Dall'Olio. 2005. Russia and the Kyoto Protocol: the long road to ratification. *Transition Studies Reviews* 12 (2):349-382.

Boden, T.A., G. Marland, and R.J. Andres. 2009. *Global, Regional, and National Fossil-Fuel CO₂ Emissions*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi10.3334/CDIAC/00001.

Carbon Offsets Daily. 2010. "Russian Roulette: Russia's surplus of carbon credits too big of a gamble for some". <http://www.carbonoffsetsdaily.com/news-channels/global/russian-roulette-russia%20%99s-surplus-of-carbon-credits-too-big-of-a-gamble-for-some-2-34637.htm>.

Carbon Disclosure Project. 2010. "Russia's top companies report their carbon emissions and strategy via the Carbon Disclosure Project". <https://www.cdproject.net/en-US/WhatWeDo/CDPNewsArticlePages/Russia-2010-Report-launched-Moscow.asp>.

Climate Doctrine of the Russian Federation 2009.

Council of the European Union. "Expression of willingness to be associated with the Copenhagen Accord and submission of the quantified economy-wide emissions reduction targets for 2020". *European Council Letter to UNFCCC on Copenhagen*. Brussels, January 27, 2010. <http://register.consilium.europa.eu/pdf/en/10/st05/st05794.en10.pdf>, accessed February 10, 2010.

Doyle, Alyster. 2009. "Russia CO₂ emissions up in 2007 lag GDP growth". *Reuters*. <http://www.reuters.com/article/idUSTRE53F1HR20090416>

Editorial. 2009. After Copenhagen. *Nature* 462, 957: doi:10.1038/462957b.

European Environmental Agency: Data and Maps. <http://www.eea.europa.eu/data-and-maps>, published January 2009, accessed April 22, 2010.

EIA. Energy Information Administration of the United States. "International Energy Outlook 2010". <http://www.eia.doe.gov/>, accessed April 22, 2010.

EuroActive Network. 2009. "Russian 'hot air' threatens UN climate deal". <http://www.euractiv.com/en/climate-change/russian-hot-air-threatens-un-climate-deal/article-186633>.

Goodale, Christine L., Michael J. Apps, Richard A. Birdsey, Christopher B. Field, Linda S. Heath, Richard A. Houghton, Jennifer C. Jenkins, Gundolf H. Kohlmaier, Werner Kurz, Shirong Liu, Gert-Jan Nabuurs, Sten Nilsson, Anatoly Z. Shvidenko. 2002. Forest carbon sinks in the Northern Hemisphere. *Ecological Applications* 12 (3):891-899.

Grubb Michael. 2004. Kyoto and the Future of International Climate Change Responses: From Here to Where? *International Review for Environmental Strategies* 5 (1):1-24.

Harrison Pete. 2010. "EU says its Kyoto support depends on Russia, Japan". *Reuters*, <http://www.reuters.com/article/idUSTRE62U3602010031>.

Heffernan, Olive. 2010. The road from Copenhagen: the experts' views. *Nature Reports Climate Change*, doi:10.1038/climate.2010.09.

Henry, Laura A. and Lisa McIntosh Sundstrom. 2007. Russia and the Kyoto Protocol: Seeking an Alignment of Interests and Image. *Global Environmental Politics* 7 (4):47-69.

Houghton, R.A., D. Butman, A. G. Bunn, O. N. Krinkina, P. Schlesinger and T. A. Stone. 2007. Mapping Russian forest biomass with data from satellites and forest inventories. *Environmental Research Letters* 2 (4), doi:10.1088/1748-9326/2/4/045032.

Higgins, Sean. 2009. "Russian claim to carbon credits may bedevil Copenhagen talks". *Investors Business Daily*, Dec.2009 <http://www.investors.com/NewsAndAnalysis/Article.aspx?id=514441>.

IEA. International Energy Agency. *World Energy Outlook 2010*. <http://www.worldenergyoutlook.org/>, accessed February 23, 2010.

IPCC. 2007. Climate Change 2007. Impacts, Adaptation and Variability. Working Group II Report. Chapters 10 and 12.

Kanter James. 2008. Russia's Carbon Credits Seen as Barrier to Warming Curb. *New York Times*, Dec.7, 2009, <http://www.nytimes.com/2009/12/08/business/energy-environment/08carbon.html>.

Klepper, Gernot and Sonja Peterson. 2005. Trading Hot-Air. The Influence of Permit Allocation Rules, Market Power and the US Withdrawal from the Kyoto Protocol. *Environmental and Resource Economic* 32 (2):205-228.

Korppoo, Anna. 2008. *Russia and the Post-2012 Climate Regime: Foreign Rather than Environmental Policy*. Briefing Paper 23. The Finnish Institute of International Affairs. International Politics of Natural Resources and the Environment, 8 p.

Krankina, O.N., M.E. Harmon, W.B. Cohen, D.R. Oetter, O. Zyrina. and M. V.Duane. 2004. Carbon stores, sinks, and sources in forests of Northwestern Russia: can we reconcile forest inventories with remote sensing results? *Climatic Change* 67 (2-3): 257-272.

Kotov, Vladimir and Elena Nikitina. 2002. *Reorganisation of Environmental Policy in Russia: The Decade of Success and Failures in Implementation and Perspective Quests*. The Fondazione Eni Enrico Mattei Note di Lavoro Series Index: 57.2002 http://www.feem.it/web/activ/_activ.html.

Lioubimtseva, Elena. 2010. Global food security and grain production trends in Central Eurasia: do models predict a new window of opportunity? *National Social Science Journal* 41 (1): 154-165.

Lioubimtseva, Elena and Jonathan Adams. 2004. Possible implications of increased carbon dioxide levels and climate change for desert ecosystems. *Environmental Management*. 33 (4) S388-S404.

Lioubimtseva, Elena and Geoffrey M. Henebry. 2009a. Climate and environmental change in arid Central Asia: impacts, vulnerability, and adaptations. *Journal of Arid Environments* 73 (11): 963-977.

Lioubimtseva, Elena and Geoffrey M. Henebry. 2009b. Potential impact of climate change on the grain productivity in Central Eurasia: human vulnerability and adaptations (pp. 22-27) In Sofia University (Ed.), *Global Changes: Vulnerability, Mitigation, and Adaptation*. Sofia, Bulgaria: Sofia university "St. Kliment Ohridski" University Press,

“Medvedev calls for green overhaul of Russian economy,” *RIA Novosti.ru*, February 18, 2010, <http://en.rian.ru/Environment/20100218/157930576.html>.

“Medvedev threatens Russian withdrawal from Kyoto agreement” *RIA Novosti.ru*, April 16, 2010 <http://en.rian.ru/Environment/20100416/158607110.html>.

Melillo, J. M., A. D. McGuire, D. W. Kicklighter, B. Moore III, C. J. Vose, C. J. Vose, and A. L. Schloss. 1993. *Global climatic change* 363:234–240.

Myneni, R.B., J. Dong, C. J. Tucker, R. K. Kaufmann, P. E. Kauppi, J. Liski, L. Zhou, V. Alexeyev, and M. K. Hughes. 2001. A large carbon sink in the woody biomass of Northern forests. *PNAS* 98, 26:4784-4789.

Nikitina, Elena. 2001. Russia: climate policy formation and implementation during the 1990s. *Climate Policy* 1: 289-308.

Point Carbon. Carbon Market Daily. <http://www.pointcarbon.com/>, accessed May 20, 2010.

Pugliese, Anita and Julie Ray. 2009. Top-Emitting Countries Differ on Climate Change Threat. Gullup. <http://www.gallup.com/poll/124595/top-emitting-countries-differ-climate-change-threat.aspx>.

“Russia sets conditions for considering emissions cut” *RIA Novosti.ru*, December 10, 2009, <http://en.rian.ru/Environment/20091210/157188874.html>, accessed March 10, 2010.

Russian Federation: The Fourth National Communication to UNFCCC. 2006. Moscow, 40 p. in Russian.

Samuelsohn, Darren and Josh Voorhees. 2010. “Senate Cap-And-Trade Bill Coming Out Next Week – Boxer”. *The New York Times*, May 5, 2010. <http://www.nytimes.com/gwire/2010/05/05/greenwire-senate-cap-and-trade-bill-coming-out-next-week-44983.html>.

Schulze, E.-D., J. Lloyd, F. M. Kelliher, C. Wirth, C. Rebmann, B. Lühker, M. Mund, A. Knohl, I. M. Milyukova, W. Schulze, W. Ziegler, A. Varlagin, A. F. Sogachev, R. Valentini, S. Dore, S. Grigoriev, O. Kolle, M. I. Panfyorov, N. Tchekakova and NN. Vygodskaya. 2001. Productivity of forests in the Eurosiberian boreal region and their potential to act as a carbon sink – a synthesis. *Global Change Biology* 5 (6):703-722.

Shvidenko, Anatoly and Sten Nilsson. 2003. A synthesis of the impact of Russian forests on the global carbon budget for 1961–1998. *Tellus* 55B, 391–415.

UNFCCC. 2010a. United Nations Framework Convention on Climate Change, “Greenhouse gas inventory data update released on March 22, 2010”, http://unfccc.int/ghg_data/items/3800.php, accessed April 1, 2010.

UNFCCC: 2010b. The United Nations Framework Convention on Climate Change, Greenhouse Gas Inventory Data 2010, http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php, accessed January 5, 2010.

Van Lieshout M., Kovats, R.S., Livermore, M.T.J, and W.J. Martens, 2004. Climate change and malaria: analysis of the SRES climate and socio-economic scenarios. *Global Environmental Change* 14, 87-99.

Victor, David G. and Joshua C. House. 2004. A new currency: climate change and carbon credits. *Harvard International Review* 26:56-59.

Victor, David G., Nebojsa Nakicenovic, and Nadejda Victor. 2001. The Kyoto Protocol Emission Allocations: Windfall Surpluses for Russia and Ukraine. *Climatic Change* 49, (3):263-277.

Williams, Jeffery R., Jeffrey M. Peterson and Siân Mooney. 2005. The value of carbon credits: Is there a final answer? *Journal of Soil and Water Conservation* 60 (2):36A-40A.

World Bank. 2008. World Development Indicators. <http://data.worldbank.org/data-catalog>, accessed May 10, 2010.

Yulkin, M.A. 2007. Kyoto protocol and the possibilities for reducing greenhouse-gas emissions in the Russian metallurgical sector. *Metallurgist* 51 (3-4):191-194.

Zhang, R., G. Barry; K. Knowles ; J. A. Heginbottom ;J. Brown. 2008. Statistics and characteristics of permafrost and ground-ice distribution in the Northern Hemisphere. *Polar Geography* 31 (1-2):47-68.

Figure 1 National CO₂ Emissions: 1918-2006

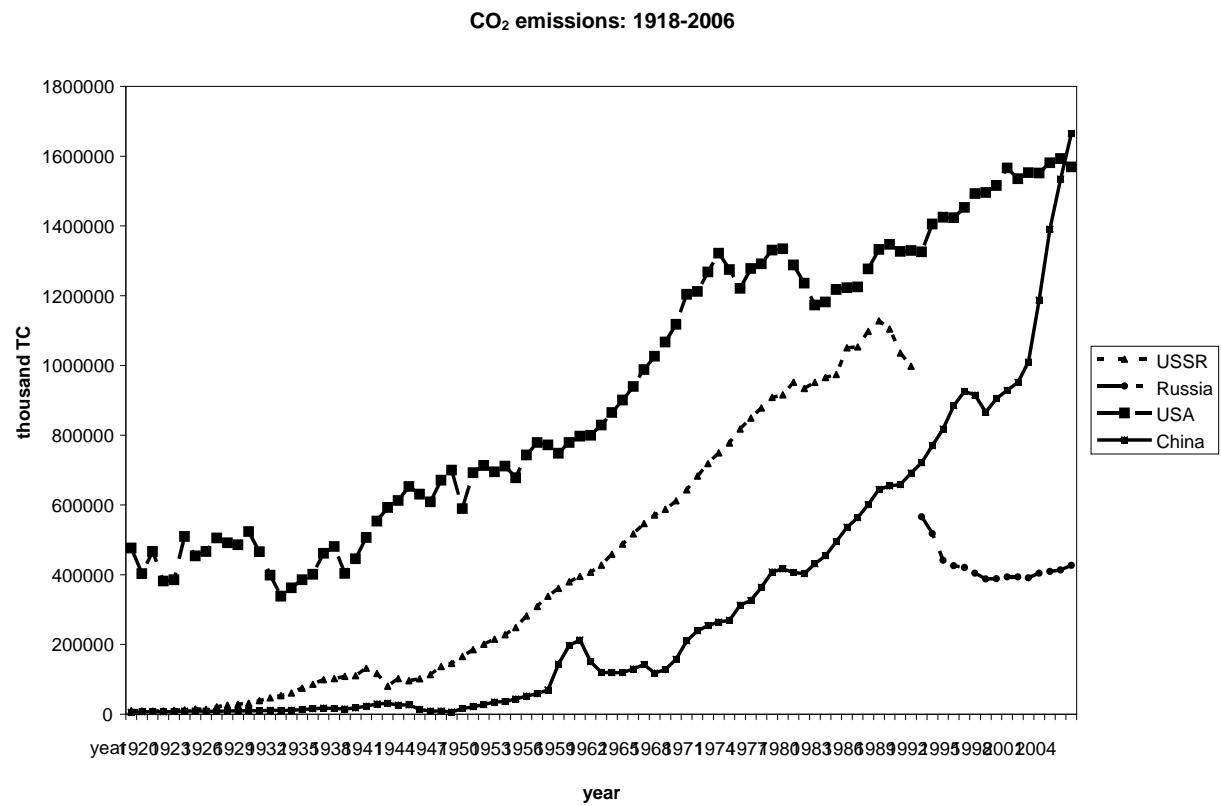


Figure 2 National Per-Capita CO₂ Emissions: 1918-2006

