Russia's Climate Commitments: Which GDP Growth Contributes To Emissions?

By Anna Korppoo*

Introduction

The Kyoto Protocol aimed at reducing the industrialized country group Annex I emissions by at least 5% of the 1990 level by 2008-2012.[1] Further, based on the Fourth Assessment Report of the Inter-governmental Panel on Climate Change (IPCC), industrialized countries need to achieve aggregate emissions cuts of 25-40% by 2020 in order to limit global warming to 2˚C[2]. As expected, the Copenhagen climate negotiation session failed to establish a comprehensive international climate regime; the unilateral pledges under the non-legally binding Copenhagen Accord would limit warming to some 3˚C by 2100 [3]. As a result, the issue of burden sharing is still strongly on the agenda of future climate negotiations.

The evolution of the Russian emission limitation pledge for the future climate regime since summer 2009 has been intriguing. In June, 2009 Russian President Dmitry Medvedev announced a 2020 emissions reduction target of 10-15% below 1990 levels.[4] At the EU-Russia Summit in Stockholm in November 2009, he pledged a deeper target of 22-25% over the same period[5]; in Copenhagen, the negotiation process never reached the stage of bargaining over emission reduction commitments due to fundamental differences between the developed and developing country groups. After the summit, the UNFCCC Secretariat invited pledges under the Copenhagen Accord by the end of January, 2010. This time, the Russian government took a step back offering a 15-25% limitation only from 1990 levels[6]. Further, at a meeting of domestic stakeholders, president Medvedev confirmed the Russian commitment to the 25% below 1990 level in February 2010.[7]

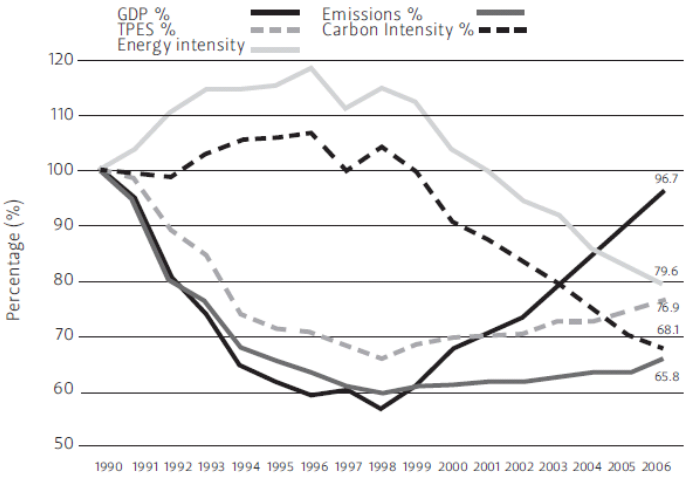

Figure 1. Trends in Russian Energy and Emissions.
Source: Korppoo, Anna; Jakobson, Linda; Urpelainen, Johannes; Vihma, Antto and Luta, Alex (2009). *Towards a new climate regime? Views of China, India, Japan, Russia and the United States on the road to Copenhagen*. FIIA report 19, the Finnish Institute of International Affairs.

Russian Emissions

Figure 1 outlines the development of the main energy and carbon indicators of the Russian economy. It illustrates the impact of the economic transition from year 1990; both the year of comparison under the Kyoto Protocol and the emission limitation Russia has committed to. The significant difference between this commitment and actual emissions (34% below 1990 level in 2006) suggests a large potential to pledge to a considerably deeper emission limitation beyond 2012.

Figure 1 provides evidence that the emissions started decoupling from GDP growth at the end of the 1990s; however, the emission trend has been growing slowly but steadily over most of the 2000s. Even though the structural shift of the economy from heavy industry towards the service sector provides a partial explanation, the decoupling of the emission trend from GDP was to a large extent delivered by the dramatic increase of the value of GDP as a result of the peaking oil prices in the 2000s. Depending on the estimate and method, the energy sector accounts for 20-30% of the Russian GDP[8].

Russian Pledge vs. Business-as-usual Trend

The economic crisis of the late 2000s, which had a significant impact on GDP - 7.9% decline in 2009 from 5.6% growth in 2008[9] - has influenced the emission path from 2009 onwards. In the absence of emission data[10], Figure 2 outlines a rough expert estimate of the economic crisis impact on emissions, i.e., a collapse of the emissions to some 38% below 1990 level in 2009. The red projection illustrates the continuation of the trend of the 2000s growth after the crisis without emission reduction measures. The green projection estimates the impact of the reduction of energy intensity by 40% by 2020 as established in June, 2008 order by the President[11] under a similar GDP growth assumption. For comparison, the blue projection extrapolates the direction of emissions based on the historic trend in the absence of the

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See footnotes at end of text.

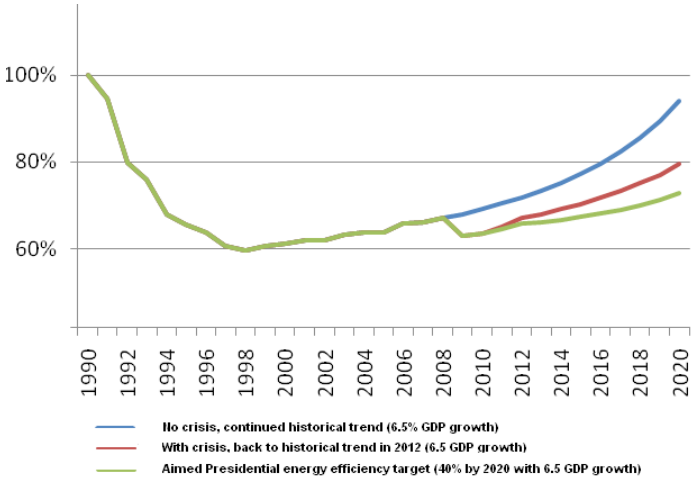

Figure 2 GHG Emission Projections for Russia
Source: Safonov (forthcoming).

2009 economic crisis.

In Novikova, Korppoo and Sharmina (2009)[12], we produced scenarios of CO_2 emissions based on various energy intensity developments and fuel mix cases in order to study the potential impacts of the existing policies on emissions. The policies reflected include the above-mentioned energy intensity reduction target as well as the target of increasing the share of renewable energy from less than 1% to 6.6% by 2020[13].

The scenarios chosen include the following:

- Constant fuel mix, i.e., the announced renewable energy not achieved and only autonomous energy efficiency improvement[14], i.e., no additional policies implemented in order to achieve the efficiency target announced (no policy implementation).
- The announced renewable target achieved and autonomous energy efficiency improvement (partial policy implementation).
- Constant fuel mix and energy efficiency target achieved fully (partial policy implementation).
- The announced renewable target achieved and energy efficiency target achieved fully (full policy implementation).

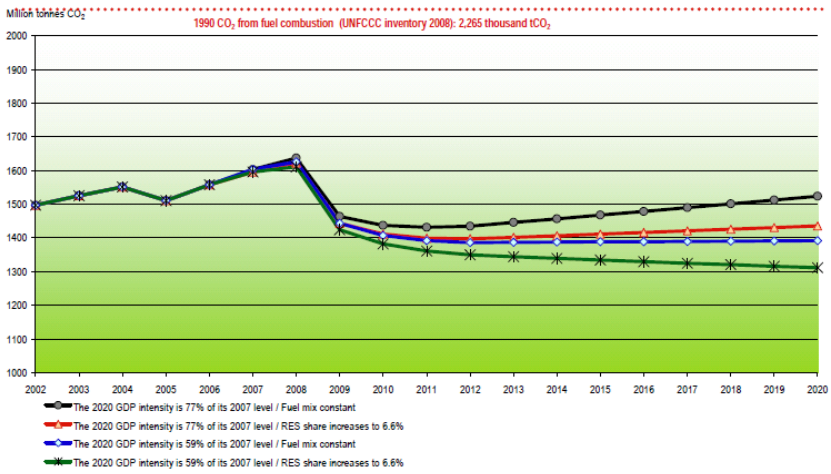

Figure 3. Scenarios of CO_2 Emissions to 2020 for Different Efficiency and Fuel Mix Cases (GDP growth is limited to about. 4% p.a.).
Source: Novikova, Aleksandra; Anna Korppoo and Maria Sharmina (2009). 'Russian pledge vs. business-as-usual: Implementing energy efficiency policies can curb carbon emissions', UPI Working Paper 61, 4 December 2009.

Based on this, the Russian potential to pledge emission limitations/reductions can be approached in roughly two ways. First, it could be assumed that the implementation of existing policies will fail. However, the autonomous energy efficiency improvement would still limit emission growth. Second, it could be assumed that the existing policies are implemented as announced.

In the first case, 33% pledge is likely to represent the no-regret option with a 4% GDP growth assumption since it can be achieved with the autonomous energy efficiency improvement without significant changes in fuel mix. Significantly higher GDP growth (6.6% by 2020) would have to be assumed in order to 'reach' the current Russian pledge of 25% below 1990 level by 2020 even under such policy failure option. In the second case of successful policy-implementation, the scenarios show that under the assumption of 4% GDP growth, about a 40% limitation of 1990 level emissions by 2020 is likely to represent the most likely emission trend.

Linking the Growth Factors of Russia to Emissions

The model used in Novikova, Korppoo and Sharmina (2009) also demonstrates the importance of GDP growth as a factor defining emission growth: the more optimistic GDP growth assumption leads to a constantly growing emission trend, while the more conservative GDP development path generates a flat trend of emissions.

When estimating emission limitation potential based on GDP projections, the GDP growth factors should be further scrutinized. Beyond the high oil price, the explaining factors behind the rapid economic growth (6.9% on average) over 2000-2008 included the existing under-utilized production capacity, which could be brought online without large investments, as well as the structural shift of the economy towards the service sector and a growing middle class consuming these services. These elements can no

longer provide additional growth beyond a brief post-crisis peak; the existing production capacity was in almost full use in 2008, and under the current economic circumstances it will be difficult to attract investments required for modernizing the economy and increasing production capacity. As a result, Russia's growth potential[15] is widely believed to be some 4-5% per annum[16].

It is notoriously difficult to estimate the future development of international oil prices, which could boost the Russian GDP to growth beyond its natural growth potential, i.e., over 4-5% per annum. The European Central Bank estimates that an oil price change by 1% changes Russia's GDP growth by 0.5 percentage-points the same year [17]. Further, Ollus (2007) has estimated that a US$10 increase in international oil prices translates to 2% increase of the Russian GDP.[18] Figure 4 illustrates the correlation of the Russian GDP with oil prices.

However, Figure 1 illustrates how the GHG trend decoupled from the booming oil price based GDP growth in the 2000s. Hence, it can be concluded that this type of peak GDP growth in Russia does not directly lead to skyrocketing emissions. As a result, it could be argued that when estimating the potential to limit emissions, the Russian government should separate the impact of the oil price to GDP growth in order to arrive in a more rigorous conclusion, while taking into account the multiplicative effect of oil revenues to domestic consumption.

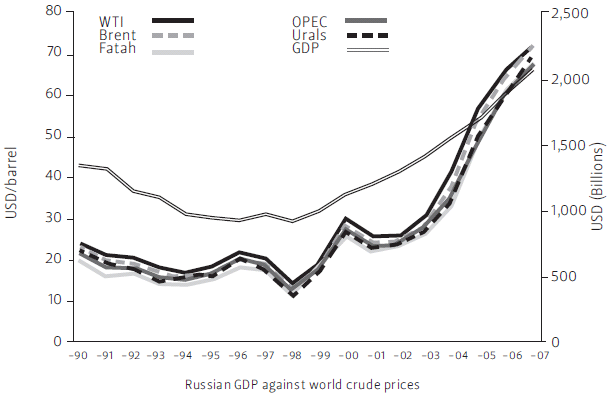

Figure 4. Evolution of Russian Gross Domestic Product at Purchasing Power Parity (plotted against annual averages of chief crude oil price indicators)[19]

Source: Korppoo, Anna; Jakobson, Linda; Urpelainen, Johannes; Vihma, Antto and Luta, Alex (2009). *Towards a new climate regime? Views of China, India, Japan, Russia and the United States on the road to Copenhagen*. FIIA report 19, the Finnish Institute of International Affairs.

Conclusion

The 2000s decoupling of emissions from the booming-oil-price-based GDP growth proved that applying optimistic GDP projections beyond realistic growth potential to estimate the emission trend is likely to generate inflated emission projections. Instead, the Russian government should separate this GDP growth factor from the GDP projection when estimating GHG emissions to support decision-making on emission limitation commitments. This would limit the emission-relevant growth expectation to some 4-5% per annum. Based on these arguments, and leaving space for error, the Russian government is unlikely to have problems complying with a pledge of about 30%, even in the absence of implementation of the announced energy efficiency and renewable energy targets; and about 35% should these targets be achieved.

In the light of the adopted energy policies illustrated above, the current pledge represents a significantly less ambitious commitment than the average of the industrialized country group Annex I. According to den Elzen et al. (2009, p. 63), the comparable effort of Russia in sharing an aggregate 30% reduction of emissions between the Annex I would be a reduction of emissions by 50% of the 1990 level by 2020[20].

In practice it seems unlikely that Moscow would agree on pledging beyond the business-as-usual emission path; the feeling of superiority as a reducer of emissions due to the freefall of the GHG trend as a result of the post-socialistic economic collapse is strong[21]. This is regardless of external observers highlighting the absence of focused and sustainable emission reduction policies.

The changes of heart with the Russian emission limitation pledge for the Copenhagen process may reflect internal political struggle. President Medvedev has clearly been more supportive of climate policy than Prime Minister Putin; he has even been linking international climate policy to domestic energy efficiency and modernization policies to be implemented even in the absence of emission limitation targets. The evolution of the Russian pledge suggests that conservative - or even climate skeptical - views in the government may be holding back these initiatives by Medvedev. Therefore, pledging beyond -25% of the 1990 level by 2020 may be unrealistic, regardless of the credibility of the GDP and policy projections used.

Footnotes

[1] The actual emission reductions by Annex I during 2008-2012 are in practice very much influenced by the US withdrawing from the Protocol, the expected non-compliance by Canada as well as the remaining impact on the aggregate reduction by the collapse of emissions in the post-socialistic countries in the 1990s.

[2] IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the

Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland.

[3] Ambition of only two developed countries sufficiently stringent for 2°C. http://www.climateactiontracker.org/. Accessed 11 March 2010.

[4] "Conversation between Dmitry Medvedev and Director of News Programmes at Russia's Channel One, Kirill Kleimenov". Available at http://www.kremlin.ru/eng/speeches/2009/06/18/1241_type82916_218210.shtml. Accessed 10 March 2010.

[5] President of Russia, Пресс-конференция по итогам 24-го саммита Россия–ЕС. Available at http://news.kremlin.ru/transcripts/6034. Accessed 10 March 2010.

[6] Russian submission to the UNFCCC, 29 January 2010. Available at http://unfccc.int/files/meetings/application/pdf/russiacphaccord_app1.pdf. Accessed 10 March 2010.

[7] Medvedev, Dmitry. Opening remarks at meeting on climate change, 18 February 2010. Available at http://eng.kremlin.ru/text/speeches/2010/02/18/1841_type82913_224384.shtml. Accessed 10 March 2010.

[8] Suni, Paavo (2007). Oil Prices and the Russian Economy: Some Simulation Studies with NiGEM, p.3.

[9] Rostat (2010). Национальные счета: валовой внутренний продукт. Available at http://www.gks.ru/free_doc/new_site/vvp/tab3.xls. Accessed 080310.

[10] The official GHG emission data typically lags behind some two years.

[11] о некоторых мерах по повышению энергетической и экологической эффективности российской экономики, Order of the President, N889, 4 June 2008.

[12] Novikova, Aleksandra; Anna Korppoo and Maria Sharmina (2009). 'Russian pledge vs. business-as-usual: Implementing energy efficiency policies can curb carbon emissions', UPI Working Paper 61, 4 December 2009. http://www.upi-fiia.fi/fi/publication/97/.

[13] Energy Strategy of the Russian Federation for 2030, 2007 (draft).

[14] Economies improve their energy efficiencies by some 1% per annum without targeted measures, mostly due to the improvement of the energy efficiency of new energy consuming appliances and production capacity.

[15] Growth potential consists of elements such as capital, labour, structural change and technical development.

[16] Deutsche Bank Research, Russia in the Financial Crisis and Beyond. 11 December 2009. p.12. Sutela, Pekka, Venäjä tuskin toipuu nopeasti at Venäjä ja kansainvälinen rahoituskriisi. BOFIT Online 2/2009.

[17] R. Beck, A. Kamps and E. Mileva (2007). Long-Term Growth Prospects of the Russian Economy. European Central Bank. Occasional Paper No 58.

[18] Ollus, Simon-Erik, "Natural resources – a blessing or a curse?", in *New conditions of growth in Russia*, by Seija Lainela, Simon-Erik Ollus, Jouko Rautava, Heli Simola, Pekka Sutela and Merja Tekoniemi. BOFIT Online: 2007 No. 7.

[19] Data: *IMF (Russian GDP), EIA (West Texas Intermediate, Brent Crude), IEA (Fatah Oman/Dubai Crude, Urals), OPEC (OPEC Reference Basket)*. The Russian GDP data for 1990 and 1991 consist of estimates by the Economist Intelligence Unit. At the end of 2007, the Urals Crude was supposed to be phased out by the newer Russian Export Blend Crude Oil REBCO (not reflected in this graph).

[20] den Elzen, Michel et al. "Pledges and Actions: A scenario analysis of mitigation costs and carbon market impacts for developed and developing countries", The Netherlands Environmental Assessment Agency, 2009. WAB 500102032.

[21] Korppoo, Anna (2009). The Russian debate on climate doctrine: Emerging issues on the road to Copenhagen. UPI Briefing Paper 33, 5 June 2009. Available at http://www.upi-fiia.fi/fi/publication/79/

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