Environmental Security in the Russian Arctic: Drivers, Pressures and Responses

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The beginning of a new stage of circumpolar co-operation is often ascribed to the 1987 Murmansk speech of Mikhail Gorbachev, who laid down key challenges and opportunities that still define Arctic co-operation today: (i) peaceful cooperation in jointly developing Arctic natural resources, (ii) scientific exploration of the Arctic, (iii) circumpolar collaboration on environmental protection, and (iv) opening of the Northern Sea Route as an international transport corridor2. This speech paved the road for the establishment of the Arctic Council in 1996 based on the 1991 Arctic Environmental Protection Strategy. The Council remains the most significant intergovernmental forum for dialogue in the circumpolar region. Its main focus on the environment pillar of sustainable development is a manifestation of the Arctic countries’ recognition that enhanced dialogue and action on environmental protection is the cornerstone of assuring broader security in this region.

This paper argues that to assure prosperity and a sustainable future for the Arctic region, Arctic states including Russia have to embrace the concept of environmental security defined as an integrated approach for assessing and responding to the risks as well as the opportunities generated by an environmental state-change3. Among multiple environmental state-change drivers, climate change is the most important. With the rate of warming in the Arctic twice as fast as the global average4, the region is already showing evidence that characterizes dangerous climate change (defined by the UNFCCC as a state precluding ecosystem adaptation, jeopardizing food production or preventing sustainable development)5. The Arctic region also has the greatest concentration of potential tipping elements in the entire Earth System, including Arctic Sea ice (the system that by some estimates already crossed a tipping point or “point of no return”6), the Greenland ice sheet, North-Atlantic deep-water formation, dieback of boreal forests, permafrost, marine methane hydrates and others7. While our understanding of the Arctic environmental state-change and its implications for economies and societies improved significantly over recent years, this abundant knowledge did not translate yet into a wider adoption of evidence-based policies and actions by the Arctic states8. Arctic policy and decision makers should increasingly focus efforts on questions of how to respond to a rapid change and how to build resilience of socio-ecological systems in the Arctic9.

The Arctic as a whole can be considered among the world’s last remaining wilderness areas, but it is undergoing profound and rapid change affecting its ecosystems, economies and well-being of its residents10. The Arctic is of

1 The views expressed in this publication are those of the author and do not necessarily represent those of the United Nations Environment Programme.
5 Carlos M. Duarte, Timothy M. Lenten, Peter Wadhams, Paul Wassmann. Abrupt climate change in the Arctic. Nature Climate Change, 2012; 2 (2): 60 DOI: 10.1038/nclimate1386
8 UNEP Year Book: Emerging Issues in our global environment (2013). Chapter 2: The view from the top: Searching for responses to a rapidly changing Arctic.
vital importance not only as a crucial natural resource base of global significance, but also as a provider of ecosystem services including global climate regulation, biodiversity, and fisheries\textsuperscript{11}. Climate change impacts in the region are multi-faceted and potentially transformative for a number of sectors of Arctic economies including fishing, agriculture, forestry, renewable (wind, solar, hydro- power) and non-renewable (gas, petroleum and mining) resources, tourism and maritime transportation, land and coastal infrastructure as well as have social and demographic impacts particularly for the traditional way of life of indigenous communities\textsuperscript{12}.

The Arctic Zone of the Russian Federation (AZRF) as defined in the legislation encompasses fully or partially the territories of Murmansk Oblast, Sakha (Yakutia) Republic, Arkhangelsk Oblast, Nenets and Yamalo-Nenets Autonomous Okrugs (AOs), Chukotka AO as well as islands in the Arctic Ocean. The AZRF is approximately 9 million km\textsuperscript{2} in size and has a population of about 2.5mln people. The Russian Arctic economy produces 12-15\% of the national GDP and generates about a quarter of all country’s export revenues coming largely from extractive industries. The Russian Arctic has the highest share of value added produced from the extraction of natural resources among Arctic regions (50\%). In 2003, together with the US state of Alaska, three oil and gas producing regions of the Russian Arctic, Khanty-Mansi, Yamalo-Nenents and Sakha accounted for 60\% of the total circumpolar GDP\textsuperscript{13}.

Russia’s oil and gas industry concentrated largely in the Arctic and sub-Arctic regions serves as a basis for ensuring balance in the country’s international payments, maintaining the national currency and formation of investment resources. With capital investments at below 15\% of the country’s total (but increasing), the industry provides over 50\% of the federal budget revenues and about 65\% of export revenues. The market equity value of five major Russian oil companies represents 60\% of the total Russian stock market value\textsuperscript{14}. In the near to mid-term future, Russian northern economies will continue to rely on intensive development of new oil and gas fields moving off-shore. Ambitious plans of the Russian government aiming at reaching 95 mln tons of oil and 320 bln cubic meters of gas extracted on the shelf by 2020\textsuperscript{15} could cost tens of billions of US dollars and more to be spent on the exploration and development of these commodities from a few prospected areas in the Barents and Kara Sea\textsuperscript{16}. These costs will need to be substantially increased considering the need to build coastal infrastructure, including overhaul and storage terminals, oil and gas storage, networks of underwater and land pipelines, additional sea transport and auxiliary ships, safety services, and information networks on weather and ice conditions. These developments would require sophisticated technologies and practices often not available domestically.

About 80\% of the Arctic population resides along Arctic coasts that are strongly impacted by rapid Arctic change\textsuperscript{17}. The role of subsistence economies based on hunting, herding, fishing and gathering continues to be of major significance to northern economies and the indigenous peoples of the Russian North and throughout the

\textsuperscript{13} Ibid.
\textsuperscript{14} Russia’s oil production and global developments. Oil and Gas Eurasia, May 2011, http://www.oilandgaseurasia.com/tech_trend/russia%E2%80%99s-oil-production-and-global-developments
\textsuperscript{15} In 2010, Russia produced 505 million tons of oil and 650 billion cubic meters of natural gas, or over 18\% of the global hydrocarbon production in terms of energy equivalent. About 70\% of produced oil and 40\% of produced gas are exported, primarily to the European markets and CIS (for gas). According to the Energy Strategy of the Russian Federation until 2030, the share of Arctic shelf should increase to about 40-45\% or higher in the planned oil and gas production compensating for diminishing resources in the Western Siberia by 2030. This should allow to sustain current levels of oil and gas production.
circumpolar region\textsuperscript{18}. Profound new environmental and economic drivers will stress social systems in the Arctic. Government policies in social, regional and natural resources management areas, international market and trade conditions, and cultural and demographic changes caused by urbanization and cultural globalization are impacting society simultaneously with environmental change\textsuperscript{19}.

Arctic societies and cultures including those of indigenous peoples have a long history of resilience based on their adaptive capacity to respond and often profit from changing physical, economic and social challenges\textsuperscript{20}. The evidence is growing that the established resilience of environmental and social systems in the Arctic is challenged by the rapid pace of change, which is unprecedented in recent history\textsuperscript{21}. For the Nenets indigenous communities of the Yamal peninsula, a relatively unrestricted movement of people and animals in space and time allowed them to exploit sustainably a wide range of habitats in the past. This single factor was crucial to sustain their resilience\textsuperscript{22}. However, the nature and pace of the ongoing expansion of infrastructure, terrestrial and freshwater ecosystem degradation, climate change, and the increasing number of migrants into the Yamal region might put this established resilience into jeopardy. The United Nations Environment Programme estimated that by 2050 perhaps as much as 80 percent of the circumpolar Arctic land area will become impacted by infrastructure developments if current development trends persist or accelerate\textsuperscript{23}. The importance of protecting indigenous people’s rights to land and natural resources is fundamental to the survival of these communities as reflected in a number of international declarations and conventions (e.g. United Nations Declaration on the Rights of Indigenous Peoples, 2007).

The Russian government, by both the articulation of its policies and by actions, was clear in sending a message to the global community that Russia’s economic future is in the Arctic. Therefore, the degree of this country’s success in building internal capacities and resilience to respond to multiple challenges of a warming Arctic will have important impacts on Russia’s foreign policy and regional security in general. Secure development of the region in ways beneficial to its population and the environment will make Russia a more predictable player and partner not only at the circumpolar level but also globally. Failure to utilize opportunities and address risks from the changing Arctic in a sustainable way will put Russia at a disadvantage vis-à-vis other global players and could have negative consequences for regional stability. This plausible scenario might see Russia being more assertive and isolated in its ambitions to secure extraction and transport of natural resources and control of the Northern Sea Route.

The strong reliance of the Russian economy on oil and gas markets concentrated in the Arctic, primarily on oil and gas revenues, makes the country vulnerable to shifts in global commodity prices. It explains why Russia was hit particularly hard among emerging economies by the 2009 economic and financial crisis that led to a GDP decline of 8% within one year and caused oil and gas exports to fall by 40%. The country could already be a victim of the so-called “resource curse” phenomenon when the abundance of certain natural resources and rents resulting from their exploration causes stagnation and further decline in economic growth and human

\textsuperscript{18} Ibid.
\textsuperscript{19} Ibid.
\textsuperscript{20} Resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change so as to retain essentially the same function, structure, identity, and feedbacks (Chapin III, F.S. (2006). Building resilience and adaptation to manage Arctic change. Ambio, 35, 198-202.)
development in the long-term instead of leading to higher prosperity. Given the continuing global high demand for fossil fuels in the years to come, high exposure of the Russian economy to commodity markets external shocks could continue for decades. For the strategies of economic modernization proposed by the former Russian President Dmitry Medvedev to succeed in building a post-industrial economy dominated by a high-tech sector and services industry, the Russian government would need to invest billions of dollars over at least two decades to finance badly needed structural economic changes. A tangible source of these revenues would likely come from Arctic resource rents. Historic analysis of resource rents in Russia reveals that fluctuations in the level of these rents always played a central role in the Russian political economy and country’s economic performance. The peculiar nature of the rents consisting of formal and informal streams and particularly their re-distribution between the private sector and state favored expansion of low-efficient extractive industries and maintaining a status quo of weak property rights. The long-term costs of continuing with this strategy are substantial because of the high price volatility of oil, gas and metals markets, depleting reserves and high financial risks associated with exploration and development in the Arctic. As a result, in the short-to-medium term the country’s leadership is left with no choice other than continuing the exploration and development of new deposits on the Arctic shelf and in Siberia. Without major reforms of the existing policy landscape and introduction of technological know-how, environmental and social risks from these expanding activities are significant. As some scholars suggested “an Arctic-based economy can therefore turn out to be a way for postponing the need for an in-depth reformation of the country’s economic structure or an engine of Russia’s modernization.”

Effective governance institutions and processes are underpinning the sustainability of socio-economic and environmental systems. The ability of governance to respond and address ongoing challenges (response function) as well as anticipate future challenges (preventive function) is critical and particularly relevant for governing systems operating in environments undergoing transformation. Young proposed three sets of issues/themes that should characterize the effectiveness of the response function of governance institutions as well as three sets of criteria that would characterize preventive governance function. Among the first set are criteria that (i) take into account interests of major non-Arctic actors; (ii) avoid functional fragmentation (embrace principles of ecosystem-based management and spatial planning), and (iii) are designed to respect the pace of change. Among preventive function criteria are three distinct themes: (i) early warning systems, (ii) rapid response capabilities, and (iii) deliberative approaches to decision making under uncertainty. These themes could be used to define, develop and implement governance systems in the Russian Arctic in the face of rapid climate change. Scholarly literature analysis of at least some of these governance systems in the Russian Arctic remains limited, and policy research in this area is urgently needed.

Supporting effective environmental governance is a key to assure sustainability of development activities in the Russian Arctic. An integrated ecosystem-based management approach balancing environmental, economic, and

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24 http://www.oilandgaseurasia.com/tech_trend/russias-resource-curse-how-high-oil-prices-are-stunting-reforms
26 M. Laruelle (2013). In search of Borea. Hopes, Hypes and Realpolitik in Russia’s Arctic strategy. In press.
27 Governance is a social function involving the establishment and administration of assemblages of rights, rules, and decision making procedures intended to steer socio-ecological systems toward pathways that are collectively desirable and away from pathways that are undesirable (Young et al., 2012).
28 Adaptive governance is an evolving research framework for analyzing the social, institutional, economical and ecological foundations of multilevel governance modes that are successful in building resilience for the vast challenges posed by global change, and coupled complex adaptive social-ecological systems (SEI definition).
cultural needs and objectives should be promoted at the federal, regional and local levels in the Russian Arctic. Application of this approach would require strengthening existing and developing new opportunities for participatory planning and better stakeholder engagement, support for valuation of ecosystem services and mandatory application of environmental impact assessment and strategic environmental assessments, developing mechanisms and institutions linking closely science to decision making, and apply spatial management tools such as land-use planning and marine spatial planning. These measures will not address systemic issues of sustainability and prospects for “green” growth of the Russian economy in general and the Arctic regional economy in particular. However, they have an important role to minimize environmental risks of ongoing and planned development activities and at the same time testing innovative management approaches and environmentally sound technologies in anticipation of badly needed structural macro-economic reforms.