2020

Overview: Will Great Power Politics Threaten Arctic Sustainability?

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2020 North Pacific Arctic Conference Proceedings

The Arctic in World Affairs

A North Pacific Dialogue on Will Great Power Politics Threaten Arctic Sustainability?

Edited by

Lawson W. Brigham, Robert W. Corell,
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KMI KOREA MARITIME INSTITUTE

EAST-WEST CENTER

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KMI/EWC SERIES ON THE ARCTIC IN WORLD AFFAIRS

The Korea Maritime Institute (KMI) is a government-affiliated research organization under the umbrella of the National Research Council for Economics, Humanities and Social Science (NRC) in the Republic of Korea (hereinafter Korea). Since its establishment in 1984, the KMI has been a major think tank in the development of national maritime and fisheries policies, including shipping and logistics, port development, coastal and ocean management, maritime safety and security, and fisheries affairs.

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The first volume in the series, *A North Pacific Dialogue on Arctic Transformation*, based on the 2011 North Pacific Arctic Conference, was edited by Robert W. Corell, James Seong-Cheol Kang, and Yoon Hyung Kim.

The second volume, *A North Pacific Dialogue on Arctic Marine Issues*, from the 2012 conference, was edited by Oran R. Young, Jong Deog Kim, and Yoon Hyung Kim.

The third volume, *A North Pacific Dialogue on the Future of the Arctic*, from the 2013 conference, was edited by Oran R. Young, Jong Deog Kim, and Yoon Hyung Kim.

The fourth volume, *A North Pacific Dialogue on International Cooperation in a Changing Arctic*, from the 2014 conference, was edited by Oran R. Young, Jong Deog Kim, and Yoon Hyung Kim.

The fifth volume, *A North Pacific Dialogue on the Arctic in the Wider World*, from the 2015 conference, was edited by Oran R. Young, Jong Deog Kim, and Yoon Hyung Kim.

The sixth volume, *A North Pacific Dialogue on Arctic Futures: Emerging Issues and Policy Responses*, from the 2016 conference, was edited by Robert W. Corell, Jong Deog Kim, Yoon Hyung Kim, and Oran R. Young.

The seventh volume, *A North Pacific Dialogue on Building Capacity for a Sustainable Arctic in a Changing Global Order*, from the 2017 conference, was edited by Robert W. Corell, Jong Deog Kim, Yoon Hyung Kim, and Oran R. Young.

The eighth volume, *A North Pacific Dialogue on Arctic 2030 and Beyond—Pathways to the Future*, from the 2018 conference, was edited by Robert W. Corell, Jong Deog Kim, Yoon Hyung Kim, Arild Moe, David L. VanderZwaag, and Oran R. Young.

The ninth volume, *A North Pacific Dialogue on Global-Arctic Interactions: The Arctic Moves from Periphery to Center*, from the 2019 conference, was edited by Robert W. Corell, Jong Deog Kim, Yoon Hyung Kim, Arild Moe, Charles E. Morrison, David L. VanderZwaag, and Oran R. Young.

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Preface

The year 2020 marked the 10th anniversary of the North Pacific Arctic Conference. Starting in 2011 without an explicit long-term strategy, NPAC has developed over the years into a robust enterprise. It is now recognized as an influential forum for identifying emerging Arctic issues likely to appear on policy agendas in the future, framing these issues for consideration in policy arenas, and exploring alternative responses to the issues. The Korea Maritime Institute (KMI) and the East-West Center (EWC) are proud to be the sponsors of NPAC. We look forward to the continuation of this enterprise in the coming years.

Due to the impact of COVID-19, conference participants were unable to meet physically in 2020 and enjoy the hospitality and productive working environment of the EWC on its Honolulu campus. Nonetheless, the year was marked by the usual careful preparation by the sponsoring organizations; the circulation of a set of excellent papers designed to elucidate themes of critical importance to nations on both sides of the Pacific from a variety of relevant perspectives; and outstanding participation by global experts in a virtual conference consisting of seven sessions, one of which was entirely for early career professionals whom we call "NPAC Fellows." While not a substitute for the face-to-face engagement of a normal year, the virtual conference was a distinct success. We pay tribute to all those who worked hard to achieve this success. This volume provides the papers prepared for NPAC 2020 and summarizes the virtual discussions for broader audiences.

In most of the three decades since the end of the Cold War, practitioners and analysts have regarded the Arctic as a distinct region, where interested actors, whether Arctic or not, could cooperate on the pursuit of scientific research and environmental protection, and develop new governance mechanisms to enhance the quality of life in the Arctic and promote the sustainable use of its resources. But for some years, NPAC has explored the increased integration of the high north into the broader currents of world affairs. Geopolitics has been no exception. As tensions reemerged among the larger powers in other global regions, they also affected the Arctic which was gaining growing attention for its resources and potential trade routes. Hence, the choice of the overarching theme for NPAC 2020: Will Great Power Politics Threaten Arctic Sustainability?

The papers collected here and the discussions summarized in the Overview chapter suggest that high politics are real and will remain a prominent feature in the Arctic. But global recognition of the urgent attention needed to deal with existential threats like climate change and of the growing challenges of sustainability in the Arctic is also rising. We need to update conceptions of the Arctic and its institutions to take into account the place of the region in the broader planetary context. This has promise for dealing more effectively with climate change, protecting marine and terrestrial resources, using transportation routes safely, and promoting vibrant community and Indigenous life, as well as for dealing with geopolitical tensions. In the coming decade, NPAC will continue to explore these issues seeking innovative approaches by using primarily but not exclusively what we have come to regard as a "North Pacific lens," that is, a way of thinking about Arctic challenges and our responsibilities for the region that integrates the perspectives of the Arctic states (Canada, Russia, and the United States) and the major non-Arctic states (China, Japan, and Korea) of the North Pacific Region.

Many individuals helped plan, develop, and readjust NPAC procedures to respond to the COVID-19 environment, but several deserve special mention. This year marked the retirement from the East-West Center of Yoong Hyung Kim, who is also President of the JIAM Academy at the Korea Forum for Progress and Professor Emeritus at the Hankuk University of Foreign Studies. He played the central, coordinating role throughout NPAC's first decade. He was counselled and assisted by a team of experienced Arctic hands, especially Oran R. Young, professor emeritus at the Bren School of Environmental Science and Management, University of California, Santa Barbara, and Robert W. Corell, Principal, Global Environment and Technology Foundation and its Center for Energy and Climate Solutions and professor at UiT—the Arctic University of Norway. Others who deserve special mention for their work in planning and coordinating NPAC 2020 activities and preparing and editing this volume for publication include Charles E. Morrison, Chair of the NPAC Steering Committee and former President of the East-West Center; Jong Deog Kim, Senior Research Fellow at the Korea Maritime Institute; Lawson W. Brigham, Global Fellow in the Wilson Center's Polar Institute; Arild Moe, Research Professor, Fridtjof Nansen Institute; and David L. VanderZwaag, Professor of Law and the Canada Research Chair (Tier 1) in Ocean Law and Governance, Dalhousie University.

We also thank all the members of the NPAC Steering Committee for their continued work on behalf of the NPAC Program. Most importantly, we wish to thank the program panelists for their papers, the commentators, and all the other participants involved in contributing to the success of this virtual conference. We extend our appreciation to Daniel Glick, our copyeditor, for his excellent contributions in preparing the text for publication. We are grateful to Nancy Lewis, adjunct senior fellow and former Research Program director at the East-West Center, and to Malgorzata Smiezsek of UiT—the Arctic University of Norway for their support throughout, especially for developing the NPAC Fellows program. Our sincere gratitude goes to Jaymen Laupola, Justina Leach, and Shayne Hasegawa at the East-West Center for their expert management and technical back-up in hosting the 2020 virtual conference.

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OVERVIEW

Overview: Will Great Power Politics Threaten Arctic Sustainability?[1]

Yoon H. Kim, Oran R. Young, Robert W. Corell, Lawson Brigham, Jong Deog Kim, Arild Moe, Charles E. Morrison, and David L. VanderZwaag

THE NPAC STORY 2011-2020

The North Pacific Arctic Conference (NPAC) was launched at the East-West Center in February 2011 as a joint project of the Korea Transport Institute (KOTI) and the East-West Center (EWC), co-sponsored by the Korea Maritime Institute (KMI). KMI became the prime sponsor of subsequent iterations of the conference starting in August 2011. The October 2020 virtual conference rounded out a decade of the NPAC experience.

Two considerations have motivated NPAC organizers from the outset. One centers on the dramatic biophysical changes occurring in the Arctic itself. These are driven by the expanding effects of climate change on Arctic biophysical systems, notably the reduction of sea ice that has provided for greater marine access and potentially longer seasons of navigation. This emerging physical access has combined with the forces of globalization and shifting geopolitical realities to create an increasingly dynamic set of diplomatic and economic alliances and competition. It has, among other things, produced a surge of interest on the part of Northeast Asian states in the development of the Arctic's increasingly accessible natural resources and shipping routes.

The ongoing Arctic physical and geopolitical reordering accelerated following the collapse of sea ice in 2007. That year, sea ice cover in the Arctic Basin declined to an area that climate models of the time projected would not occur until 2055. This shrinking sea ice cover increases environmental fragility and threatens human security in manifold ways. Melting ice also facilitates access to untapped natural resources and the use of the Arctic for regular seasonal shipping—a concept that was almost unthinkable a few short decades ago. The Northeast Passage, which includes Russia's Northern Sea Route (NSR), is the shortest route between Northeast Asia and Northwest Europe, although use of the route also involves challenging environmental conditions that include the presence of sea ice in autumn, winter and spring. The NSR now handles an increasing volume of destinational shipping and is slowly becoming relevant as a new trade route between the North Atlantic and North Pacific regions, even more so because the Arctic contains globally significant reserves of hydrocarbons that have heretofore been inaccessible.

This dovetails with the second NPAC consideration, which arises from the observation that mainstream discussions of Arctic issues in the past have largely reflected a North Atlantic perspective. NPAC, by contrast, adopts a North Pacific lens (see Figure I.1) looking at Arctic issues in a global frame, rooted in the recognition that the nations surrounding the North Pacific—Canada, China, Japan, Korea, Russia, and the United States—include the world's three largest economies. These countries are among the world's largest energy producers and consumers/importers, provide bases for the world's principal stockpiles of nuclear weapons, and account for more than 50 percent of global greenhouse gas emissions. Access to Russian Arctic oil and gas may provide Northeast Asian countries with alternative sources of supply, thereby increasing their energy security. At a time when a global pandemic has disrupted global oil and gas prices and climate change looms ever larger as a front-line international political issue, a growing number of stakeholders are claiming interest in the future of Arctic governance, and notably in the future of the Russian Arctic.

As a result, this wider lens draws our attention to the importance of global-Arctic interactions, or what NPAC calls "The Arctic in World Affairs." The eight Arctic states (Canada. Demark/Greenland, Finland, Iceland, Norway, Sweden, the Russian Federation, and the United States) wish to maintain a position of preeminence when it comes to dealing with matters of Arctic Ocean governance. However, major non-Arctic states, while recognizing the sovereign rights of the coastal states in their economic zones and on their continental shelves, have growing interests in the maritime Arctic relating to activities such as commercial shipping, oil and gas development, fishing, and ship-based tourism. They are increasingly claiming to have a legitimate interest in being consulted when it comes to addressing matters relating to the governance of such activities. Many questions arise from these new formulations: What is the appropriate mechanism for introducing the concerns of the non-Arctic North Pacific countries in forums dealing with Arctic issues? Can they achieve a significant voice in the deliberations of the Arctic Council? Can they address these issues through other mechanisms?

NPAC was created to provide a venue for frank engagement under the Chatham House Rule between practitioners and analysts regarding Arctic scientific and policy issues of mutual interest to the North Pacific Arctic states and non-Arctic states, as well as to other nations with emerging interests in this region. Each year NPAC has convened a group of 35-40 individuals at the East-West Center in Honolulu, including government officials, scientists, Indigenous persons, representatives of the business community, and others associated with nongovernmental organizations. They spend two and a half days together in an environment that encourages informal but substantive exchanges about issues of mutual interest. The

Source: KMI designed the map based on Google Maps, 2020

Figure I.1 The Arctic through a North Pacific lens

East-West Center embodies Hawaii's "Aloha" spirit, a symbol of openness and fellowship. Moreover, the objectives of NPAC are compatible with the East-West Center's mission to promote better relations and understanding among the peoples and nations of Asia and the Pacific.

As Table I.1 indicates, NPAC has developed a network of 199 Arctic leaders with a wide range of perspectives (practitioners/analysts, men/women, Indigenous people, early career scholars) from the eight Arctic states, the three North Pacific non-Arctic states, and the three North Atlantic non-Arctic states. NPAC has disseminated its work through the publication of ten annual proceedings volumes, two EWC Wires, and a special issue of *Global Asia*, a well-respected policy journal. NPAC 2017-2020 embarked on attracting members of the next generation of Arctic policy and science leaders to participate in NPAC's processes.

Table I.1 The NPAC network during 2011-2020

Total participants	199
Nationalities represented	14
8 Arctic states/6 non-Arctic states	122/77
Practitioners/analysts	63/139
Men/women	160/39
Indigenous	10
Early career scholars	25

NPAC has addressed issues of current interest from a policy perspective and in a holistic manner that integrates perspectives from a highly diverse range of participants. The goal is to provide early observations and warnings regarding the nature of emerging Arctic issues, to frame them in ways conducive to constructive policy consideration, and to stimulate innovative thinking about these issues (e.g., the effects of climate change in the Arctic, development of the Arctic's energy resources, implementation of the IMO Polar Code, the role of non-Arctic states in the Arctic Council) rather than to work out detailed responses to specific issues on the Arctic policy agenda. Participants in NPAC sessions do not come away with suggestions for precise language to be used in dealing with specific treaties or agreements being negotiated. But attendees often benefit from sharing forward-thinking approaches regarding issues that are coming into focus as policy concerns. These informed discussions in turn provide alternative ways to frame these issues and assist in making them actionable in policy arenas. Participation in NPAC offers a safe environment for participants to explore innovative approaches to issues already populating the Arctic policy and also to gain insight into issues likely to make their way onto this agenda in the near future. The NPAC format encourages vigorous discussion in a setting in which participants can express themselves without concerns about political and diplomatic sensitivities. All participants gain an appreciation for the complexity of issues and uncertainties confronting the future Arctic.

Under a decadal umbrella of the first overarching theme of *The Arctic in World Affairs*, NPAC addressed key Arctic issues in the first cycle from 2011 through 2014: Arctic transformations in 2011, Arctic marine issues in 2012, the future of the Arctic in 2013, and international cooperation in a changing Arctic in 2014 (see Table I.2).

Table I.2 NPAC's 2011-2020 decade themes

Overarching Theme for NPAC 2011-2014: The Arctic in World Affairs
• NPAC 2011: Arctic Transformation
• NPAC 2012: Arctic Marine Issues
• NPAC 2013: The Future of the Arctic
• NPAC 2014: International Cooperation in a Changing Arctic
Overarching Theme for NPAC 2015-2017: The Arctic as a Zone of Peace & Prosperity
• NPAC 2015: The Arctic in the Wider World
• NPAC 2016: Arctic Futures: Emerging Arctic Issues and Policy Responses
• NPAC 2017: Building Capacity for a Sustainable Arctic in a Changing Global Order
Overarching Theme for NPAC 2018-2020: A Sustainable Arctic in a Changing World
• NPAC 2018: The Arctic in 2030 and Beyond: Pathways to the Future
• NPAC 2019: Global Arctic Interactions: The Arctic Moves from Periphery to Center
• NPAC 2020: Virtual: Will Great Power Politics Threaten Arctic Sustainability?

The discussions became more robust and substantial every year. Furthermore, NPAC has sought to communicate the results of these NPAC conferences with the world at large through the publication each year of a conference proceedings volume.

A key issue then emerged over what the overarching theme should be for the second cycle, from 2015 to 2017. In August 2014, the Center for American Progress called on then-Secretary of State John Kerry to establish *climate change* as the central theme for the U.S. chairmanship of the Arctic Council from 2015 to 2017. Subsequently, Kerry argued in a policy speech at the East-West Center that "complex challenges such as climate change and maritime territorial disputes can be transformed into opportunities for such advances as clean energy development and regional cooperation." Since Finland succeeded the U.S. as chair of the Arctic Council from 2017 to 2019, the U.S. and Finland led the principal forum for Arctic collaboration from 2015 to 2019. In framing the overarching theme of the second cycle of NPAC activities, the changing relationship between Russia and the West was also taken into consideration in light of developments such as the Ukraine crisis.

The second cycle of NPAC adopted the overall theme of *The Arctic as a Zone of Peace & Prosperity*, including "The Arctic in the Wider World" in 2015, "Arctic Futures: Emerging Arctic Issues and Policy Responses" in 2016, and "Improved Science Policy Engagement as a Key for Building Capacity for a Sustainable Arctic" in 2017. One of the new dimensions of the second cycle was analysis of Arctic policy in a global context and the inclusion of current and former government officials to influence the course of Arctic policymaking. Another new dimension was the participation of a new generation of leaders in NPAC activities.

Encompassing the overarching theme of *A Sustainable Arctic in a Changing World*, NPAC's third cycle (2018-2020) focused on "The Arctic in 2030 and Beyond: Pathways to the Future" in 2018 and "Global-Arctic Interactions: The Arctic Moves from Periphery to Center" in 2019. Though COVID-19 forced the conference to become virtual in 2020, NPAC 2020 focused on the question, "Will Great Power Politics Threaten Arctic Sustainability?"

NPAC's achievements during the decade from 2011 to 2020 rested on five strategic ideas:

1. **Each conference had an overall theme:** The annual NPAC conference has been organized around a central theme and overarching vision, set by the Chair of the NPAC Steering Committee in consultation with senior counselors together with a series of substantive sessions to give concrete focus to the theme.
2. **Each conference session was structured and led by a chairperson:** A session chair was appointed to foster the development of each substantive session, including a set of framing questions, and to lead the session at the conference.

3. **Sessions engaged a range of experts:** The sessions have been organized to enable a range of insights provided by invited speakers/panelists with the essential knowledge and experience regarding the chosen topics. These speaker/panelists were provided in advance with a set of questions to guide the development of their contribution to each session.
4. **Sessions were structured in three parts:** These included (a) a summary overview of the framing questions by the session chair, (b) brief presentations of submitted papers, and (c) open discussion among the panelists and with all participants in the conference.
5. **Each session participant prepared a paper:** Draft papers were circulated in advance of the conference. The conference leadership established a process that enabled all participants to revise and upgrade their papers so that they could be included in the annual volume of conference proceedings.

PROLOGUE TO NPAC 2020

During the decade that has elapsed since the inception of the North Pacific Arctic Conference, the Arctic has experienced a cascade of transformative changes. These novel physical and political landscapes are interacting in complex ways and involve biophysical, economic, and social forces that will condition and potentially threaten efforts to achieve sustainability in the high latitudes in the foreseeable future. Taken together, they pose growing challenges to Arctic governance systems initially instituted through the development of the Arctic Environmental Protection Strategy and the creation of the Arctic Council during the 1990s and refined during the 2000s and 2010s.

The perpetuation of the status quo is not a realistic option for those committed to a sustainable Arctic. While the way forward remains unclear at this stage, the need for innovation in Arctic governance is emerging as a critical challenge for the 2020s. A central issue for NPAC 2020 concerned the merits of alternative ways to frame these challenges.

In the aftermath of the Cold War (during which time the Arctic was a high-alert militarized zone), Arctic states took the lead in launching a series of initiatives aimed at promoting international cooperation in the high latitudes on a regional basis. A clear vision, often described as the

Arctic "zone of peace" narrative launched in a speech by the Soviet leader Mikhail Gorbachev in 1987, evolved to guide the development of practices arising from these efforts and to ensure the coherence of the resultant arrangements. According to this narrative, the Circumpolar Arctic is a distinct international region with a policy agenda of its own that highlights issues of environmental protection, the well-being of the region's human communities, and the many facets of sustainable development.

For some years, this narrative proved effective in guiding the course of international cooperation regarding the high latitudes. It supplied the conceptual basis for the creation of the Arctic Council (AC) in 1996 as a forum for "promoting cooperation, coordination and interaction among the Arctic States, Arctic Indigenous Peoples and other Arctic inhabitants on common Arctic issues." Over time, the AC developed into a more complex body that now includes a multiplicity of operational mechanisms supported by an international secretariat.

The eight Arctic states, according to the Arctic zone of peace narrative, can and should take the lead in addressing Arctic issues by virtue of their sovereignty, sovereign rights, and jurisdiction in the region. Indigenous Peoples' Organizations have a right to engage in these initiatives as Permanent Participants. Other interested parties, including both non-Arctic states and non-state actors, are invited to participate, but only as Observers on terms set by the Arctic Council and subject to explicit limitations on their engagement in Arctic affairs. There is no need to negotiate an Arctic Treaty to formalize these arrangements; a more flexible system of informal practices spearheaded by the Arctic Council provides sufficient basis for pursuing sustainable development in the Arctic.

The Arctic Council provided a basis for launching a series of influential policy initiatives, such as the Arctic Climate Impact Assessment (2004) and the Arctic Marine Shipping Assessment (2009). It also served as a platform for the development of legally binding agreements on specific topics, such as search and rescue (2011), oil spill preparedness and response (2013), and scientific cooperation (2017). By 2013, the foreign ministers of the Arctic states assembled at the biennial Arctic Council Ministerial Meeting felt justified in proclaiming with a clear note of satisfaction that, "We have achieved mutual understanding and trust, addressed issues of common concern, strengthened our co-operation, influenced international action, established a standing secretariat, and, under the auspices of the Arctic Council, Arctic States have concluded legally binding agreements."

With the passage of time, however, a number of developments have triggered growing concerns about the adequacy of the Arctic zone of peace narrative as a basis for framing and addressing Arctic issues. The central thread tying these developments together is a growing interest in the Arctic on the part of powerful outside actors as well as Arctic states. This intensifying attention on the region is fueled by priorities extending beyond the Arctic Council's mainstay issues relating to environmental protection, the well-being of Arctic communities, and sustainable development.

In addition, spillovers from broader shifts in the global landscape of international relations are increasingly affecting the handling of Arctic issues. The effect has been to catalyze a reemergence of great-power politics in the Arctic and a move toward securitization as the basis of an alternative perspective that runs counter to the Arctic zone of peace organizing principle. Though it has not yet crystalized into a compelling competitor to the dominant perspective of the post-Cold War era, the rise of this new way of framing Arctic issues has turned the region into an increasingly contested space among those responsible for policymaking.

The collapse of sea ice cover, which drew international notice in 2007 and continued during the ensuing years, has increased the accessibility of the Arctic and stimulated interest among powerful economic players seeking to exploit the natural resources of the region and explore the potential of Arctic shipping routes. As a resurgent power, Russia has developed a strategy centered on exploiting its Arctic hydrocarbons and stimulating interest in the use of the Northern Sea Route while simultaneously bolstering its military presence in the country's northern region. China has shown increasing interest in the economic potential of the Arctic, initiating the concept of the "Polar Silk Road" as an element in its Belt and Road Initiative to expand its international trade routes.

Under the Donald Trump Administration, the United States reacted to these developments defensively, treating them as security issues requiring enhanced measures to respond to perceived threats to U.S. national interests. Globally, especially in the wake of Russia's annexation of Crimea in 2014 and the imposition of Western sanctions in response to this action, relations among the great powers have become increasingly conflictual. The effect has been to draw the Arctic increasingly into a global system featuring both the acceleration of the impacts of climate change and more conflictual interactions among major players whose thinking about Arctic policy matters is colored by a heightened influence of great-power politics and national self-interests rather than regional comity.

The result is the growth of a sense of uncertainty regarding narratives to be used in thinking about the future of the Arctic. Does it make sense to continue to treat the Arctic as a distinct region with a policy agenda of its own, despite tighter links to global developments? If so, is there a need to revise or replace the Arctic zone of peace narrative as a basis for framing issues for consideration in policy arenas? Will securitization trigger developments that interfere with efforts to achieve sustainability in the Arctic? Are there ways to address issues involving great-power politics without interfering with ongoing efforts to achieve sustainability in the Arctic? Does the success of Russia's recent large-scale natural gas development on the Yamal Peninsula and associated maritime logistics presage an international oil and gas rush? Do these developments raise questions about the effectiveness of the Arctic Council in addressing Arctic affairs? Is there a need to consider adjustments in the constitutive provisions of the Arctic Council to allow it to operate effectively under the conditions now arising in the Arctic? If so, what adjustments would make sense and how can they be introduced during the foreseeable future? These questions formed the backdrop for discussions of specific issues at NPAC 2020.

This volume, reporting on the work of the conference, is organized into four substantive parts in addition to this Overview. Part I consists of six perspectives on high politics in the new Arctic, highlighting the growing geopolitical tensions among Russia, the United States, and China and their implications for the Arctic. Part II contains a series of papers that drill down on issues arising in the Bering Strait Region. Part III includes papers exploring the sustainability of large-scale businesses in the Arctic from the perspectives of the Northern Sea Route, the Indigenous community, international cooperation, logistical issues in the post-COVID-19 era, and Russian polices. Part IV explores the future of Arctic marine cooperation with papers addressing United States-Russian relations, Icelandic views, non-Arctic state perspectives, and the Arctic implications of a new global agreement currently under development on marine biodiversity in areas beyond national jurisdiction.

PART I HIGH POLITICS IN THE NEW ARCTIC

Part I addresses the growing geopolitical tensions among three major countries—Russia, the United States, and China—and their implications for the Arctic. The general tone was that higher tensions and rhetoric have the potential to spill over into the cooperative efforts of the Arctic Council and other forums as well as to produce negative impacts on the lives of Arctic residents, including Indigenous Arctic communities. However, the rhetoric and apprehensions appear to exceed current realities. Despite some increased securitization, the Arctic is not now a major zone of international conflict, and, as reflected in some of the other NPAC 2020 sessions, cooperation continues among interested states on such issues as Bering Strait shipping lanes and Central Arctic Ocean fisheries.

After the end of the Cold War, the notion of "Arctic exceptionalism" began to emerge. High politics and historical rivalries were taken off the table as countries pursued low-politics objectives through the Arctic Council and other cooperative mechanisms. But during the past decade, particularly in the past two years, geopolitical tensions have increased, casting doubt on this notion of Arctic exceptionalism.

The analyses and discussion of this session highlighted the divergence in Russian, American, and Chinese interests and rhetoric. Russia has placed high hopes on the Arctic as a driver of economic growth, while China is seeking legitimacy as an Arctic player by pursuing commercial and scientific interests in the region. By contrast, the United States, under its outgoing administration, saw these developments as new threats from its traditional superpower rivals and was more reactive than assertive.

For Russia, the Arctic region is integral to the overall economic development plans for the country as well as to its security interests. Russia has more military forces in the Arctic region than any other country. But this fact, Russian participants insisted, was a consequence of geography and modernization rather than military assertiveness or geopolitical insecurities. Russia continues to regard the Arctic as a low-tension region in geopolitical terms. For Russia, "national security" concerns in the northern part of the country focus on socio-economic and environmental challenges, including depopulation, under-investment in infrastructure development, and melting permafrost.

The United States has been a less engaged power with only occasional spurts of interest in the Arctic, although the U.S. has shown leadership within the Arctic Council. Because the Arctic has not been deeply embedded in prevailing national security and foreign policy outlooks since the end of the Cold War, U.S. policy interests have swung like a pendulum to reflect overall American foreign policy and national security priorities. During the second term of the Barack Obama administration, climate change rose to the top of the American priorities, while the Donald Trump administration focused on security concerns. The Joe Biden administration will likely swing the pendulum back with a robust international climate agenda. The United States is faced with the reality that it will need to comprehensively assess its interests in the Arctic order to develop a stronger consensus about this region, why it matters to the United States, and what its longer-term interests and objectives should be.

As an increasingly assertive global power, China aspires to receive recognition of the legitimacy of its presence in Arctic discussions and to affirm its rights to define and defend its interests as a member of the international community. But it faces serious constraints compared to Russia and the United States because it is not a territorial Arctic state. Its military has no experience operating in Arctic environments. Even to have a major non-military presence in the region, China is dependent upon being supported by at least one Arctic state. For this reason, China has tended to prioritize activities that are bilateral with friendly states and are relatively apolitical, including economic initiatives, scientific research, and global approaches to governance. Its interest in the Arctic is to keep the region open, not closed.

China's financial power has helped it to achieve a position of influence in some regions, but this is less the case among Arctic Ocean coastal states, which are developed countries or dependencies thereof. China's main supporter is Russia. In the post-sanctions period, Russia values Chinese financial support, especially relating to the recent Yamal Peninsula energy development, which is China's only successful large-scale investment in the entire Arctic to date.

Despite some sense that geopolitical tensions have been partly hyped up by the media and by U.S. Secretary of State Mike Pompeo's speech challenging Russia and China preceding the 2019 Arctic Council Ministerial Meeting, there is concern that large-power competition could become a more serious problem affecting Indigenous life, the smooth operation of the Arctic Council, scientific cooperation, and possibly international business investment in the Arctic.

In this volume, considerable attention is given to Indigenous rights and life. Large-power domestic policies and international rivalries, especially where they involve major infrastructural developments, can be quite harmful to the livelihood and rights of Indigenous Peoples who often have a limited voice in national and international affairs. Indigenous Peoples are mostly focused now on advancing their rights vis-à-vis the governments of Russia, the United States, and Canada, and in reducing wasteful development, but progress has been uneven. Internationally, circumpolar Indigenous Peoples who otherwise fall under their respective national governments' jurisdiction have joined together to promote solidarity in the Arctic Council, the UN, and other appropriate organizations to maximize their influence and defend their interests.

The question arose concerning whether the Arctic Council itself should formally bring geopolitics in some form on to its agenda. A Russian participant said that Russia would welcome engagement on these issues, perhaps including military-to-military meetings of defense ministers or senior official discussions, but not necessarily within the Arctic Council itself, whose mandate excludes matters of military security. An American suggested that some form of parallel discussion could take place shortly before or after Arctic Council meetings, perhaps as a kind of retreat by foreign ministers.

One participant said she had long felt the Arctic Council took an unnecessarily restrictive view of its role and was not comprehensively addressing all the issues of the Arctic, notably including national security concerns. Another raised the question of what role Indigenous Peoples would play in influencing future discussions of highly political issues. It was noted that the Inuit Circumpolar Council from its creation in 1977 has expressed views on geopolitical matters, urging that the Arctic be declared a zone of peace or a nuclear-free zone. Another Indigenous participant was skeptical that nongovernmental voices could play much role in intergovernmental discussions on these matters. The more that an issue becomes one of high politics, the participant asserted, the more each government wants to handle it independently. In this case, all non-state actors, Indigenous or otherwise, that can have a strong influence on low politics issues would be pushed to the margins. The view being asserted was not as a matter of preference, but simply a reality of high politics.

On other issues, it was felt that there is an increased need for icebreakers for commercial and scientific purposes, but there should not be an icebreaker "race" as such to match the arms races of the Cold War. This is because a vast majority of the world's icebreakers are for commercial use and are not naval ships or combatants. It was noted that good analysis required a nuanced understanding of the changing internal debates in the larger powers on Arctic issues. Finally, there was some discussion of an "Arctic Treaty" as a more comprehensive, binding framework. The analogue, of course, is the Antarctic Treaty of 1959, which set out a framework for demilitarization of the continent and cooperation focused on the role of scientific research.

The polar differences, however, are clear. Neither of the superpowers (the U.S. and USSR at that time) had territorial claims in the Antarctic region. It was not on the shortest missile or bomber paths between the two countries, there were no permanent residents, and there was no realistic prospect of the continent becoming a major source of fuels or other resources. Rather than a comprehensive treaty, cooperation in the Arctic will need to be built piece-by-piece, some bilaterally, some through the Arctic Council, some through international institutions such the International Maritime Organization, and some through largely non-governmental cooperation, including organizations of Indigenous Peoples.

PART II BERINGIA: THE FUTURE OF THE BERING STRAIT REGION

Part II addresses the complex suite of drivers of change, uncertainties, and issues relating to the well-being of Arctic communities and preservation of the environment in Beringia, or the Bering Strait Region.

Beringia encompasses both land and sea. It comprises the Bering Strait itself, the Bering Sea to the south of the Strait, and the Chukchi Sea to the north of it. It includes sizable land territories in western Alaska and the Chukotka Peninsula. There are also islands, of which St. Lawrence Island, located within the U.S. EEZ, is the biggest. The session mainly dealt with ocean issues in the region.

The region is part of the Arctic, but it is also a critical gateway to the Arctic. This means that there is interest in the region from states and actors outside the region. Participants wanted to know what is occurring in the natural environment, what are the most important developments, and what are the drivers. How are changes in the natural environment affecting human activities, but also the other way around: How are human activities affecting the environment?

The region is very important for its living resources. These are harvested by Indigenous and local communities, and the relationship between biophysical developments and local and Indigenous communities' traditional subsistence economies and cultures is an important issue. The integration of Indigenous voices and concerns in the management of the region is likewise an important task.

Shipping is a key activity in the Bering Strait Region. If we go back a few years, the expectations were that we would see a rapid growth in shipping through the Strait. That has not really happened. Shipping has been growing, but the total numbers are still modest. The latest statistics for 2019 indicate that about two vessels per day on average pass through the Strait during the navigational season. There is also local and regional traffic that does not go through the Strait.

Another development, seen as imminent just a few years ago, was increasing exploration and subsequently offshore hydrocarbon production in the Chukchi Sea as well as the Beaufort Sea, with accompanying supporting maritime logistics using the Strait. Such activities have not taken off either. This has much to do with the fall in oil prices since 2014 and uncertainties about the longer-term outlook for relatively expensive Arctic oil. Growth has also been hampered by growing concerns about possible environmental restrictions and regulations as world governments continue to grapple with climate change and transboundary pollution. The Trump administration worked to lift restrictions on exploration and drilling, but the industry's skepticism remains—and the incoming Biden administration has sent early and strong signals that climate policy will take a prominent place in policymaking. Nevertheless, exploration is still going on, only closer to shore. And there is a lot of resource industry activity on land, both in Alaska and on the Russian side, that is connected to maritime activities and transportation. Measures have been taken to prevent accidents from happening, for example by establishing IMO approved voluntary corridors for ships passing through the Strait. Participants asked: how are these regulations implemented and enforced? Are there regulatory gaps? What kind of regulations are considered? How much marine traffic will there be in the future to require such extensive regulation?

The whole of Beringia is within the jurisdiction of either the United States or Russia. The Strait itself lies within the territorial waters of the two countries. This means that the bilateral aspect is extremely important and existing arrangements or potential cooperation between the United States and Russia became a recurrent theme in this session of NPAC 2020.

There are many observed changes in the physical environment. Many of them are connected to climate change and related ecological responses. One participant drew attention to reduced seasonal ice cover and its influence on migration of fish stocks. The seasonal ice cover has prevented non-Arctic species from migrating northwards and at the same time forms a pool of cold water which allows cold-water species to remain in the Bering Sea as the surrounding waters warm. The rapid reduction in seasonal ice is spawning changes in fisheries patterns, however, which can already be observed. Northward movement of sea mammals has also been documented.

Sea temperatures and salinity are also affected by inflow of water from the south. Scientists understand many of the effects on living resources, but there are uncertainties about how radical the effects are or will become due to the lack of time-series data. Changes in the natural environment bring new challenges for Indigenous communities. Reduced ice cover makes coastal areas more vulnerable to erosion, and animals necessary for subsistence harvests are becoming less available.

Another participant brought home the many ways environmental changes are already being felt by Indigenous communities, from changing animal migration patterns to the challenges facing hunters operating, quite literally, on thin ice. These ecological disruptions represent a seismic shift in the traditional rhythms of the communities. At the same time, there is fear that significant growth in vessel traffic through the narrow Strait will increase the likelihood of contamination, marine debris, and accidents.

A key question is what role Indigenous Knowledge can have in identifying and responding to increased human activities. Good examples can be found in the conservation of the walrus population. Indigenous experts have informed and greatly enhanced many research projects by improving methods of data collection, explaining walrus behavior to improve the usefulness of population estimates and adaptation strategies, reviewing research results and conclusions, and confirming the condition of the walrus population for Endangered Species Act listing purposes. The combined roles of Indigenous Knowledge in environmental research and in measuring the effectiveness of governance relating to the health and well-being of Indigenous communities could contribute to good governance decisions in the Bering Strait Region.

Another participant underlined that environmental changes are compounded by societal changes, with big implications for Indigenous communities. Such changes include more commercial shipping, more commercial fishing, the prospect of offshore oil and gas activity, restrictive regulations, the influences of long-range pollution, and more. A major concern with the threats emanating from changes in the environment as well as in social conditions is that of cumulative effects. The ability to assess cumulative effects remains poor, despite much scientific and management attention.

The overarching driver of these and other shifts is climate change, which requires a global rather than a regional response. Regional measures are also important, even if they mean managing within the overarching effects of climate change. When considering additional regulations, some participants cautioned against adding another layer of administration or oversight. This could create more confusion and more demands on the time and attention of all concerned, without necessarily achieving better outcomes. Some felt we should instead find better ways to make existing institutions work more effectively. There is much to be built on, such as governance of shipping through the IMO and fisheries management, as well as including Indigenous Knowledge in policy decisions.

A concrete suggestion was to consider establishment of marine protected areas (MPAs) as an instrument to reduce or even avoid cumulative effects. To be effective, MPAs would need to reduce or carefully manage human activities of all kinds. MPAs may seem a blunt tool for management, but in the absence of reliable ways to measure and prevent cumulative effects, a blunt tool is sometimes the only one available. The present relatively intact environmental state of Beringia, with abundant fishes, seabirds, and marine mammals, is in part the result of being a de facto MPA thanks to lack of access and modest amounts of human activity to date. Conserving the abundance of

Source: www.emodnet.eu/en/checkpoint/arctic/challenges/marine-protected-areas

Figure I.2 Marine protected areas

the region will require keeping it largely undisturbed through a combination of sectoral and cross-sectoral measures. This will become more challenging if easier access leads to increased extraction of available resources, as some project.

The Bering Strait Region, and especially the Strait itself, is also of great importance for countries outside the region due to its role as a gateway to the Arctic. Two participants provided non-Arctic State perspectives on the future of the region. One underlined that stability and governance in the region are significant for the development of the Arctic. Outside states cannot directly participate in the management of the Bering Strait Region. That is up to the United States and Russia. Thus, relations and cooperation between them are crucial. But outside states can and do take part in international cooperation activities, which is important for governance of the region. The Pacific Arctic Group (PAG) is a noteworthy example of scientific cooperation composed of institutional and individual members from Canada, China, Japan, Korea, Russia, and the United States, organized under the International Arctic Science Committee. Its cooperative research and investigations include many aspects of physical and biological systems. With the distributed biological observation plan, PAG established unified criteria for analysis, simplifying the comparison of research results from expeditions organized by individual member states.

The interest in freedom of navigation through the Bering Strait is obvious and the Strait meets the definition of a "strait used for international navigation" set forth in UNCLOS. However, the narrowest part of the Strait is within the territorial waters of Russia and the United States and most of the region lies within their EEZs. In China, there is some concern over possible implementation of UNCLOS Article 234, which gives coastal states the authority to impose regulations on navigation to prevent pollution in ice-covered areas. To what extent does it apply to the Bering Strait Region? China wants the U.S. and Russia to reach a consensus on passage rules. Their joint proposal for a Bering Strait shipping plan was appreciated by China. There is concern in China over a new Arctic Cold War and how it could affect cooperation in the Bering Strait Region. In such an atmosphere, China expects new concerns over its involvement in the Arctic. China would support establishing mechanisms to jointly enhance the transparency of Arctic activities. The situation in Beringia is an indicator of whether the Arctic is heading for "peaceful cooperation" or "Cold War confrontation."

Another participant argued that United States-Russian relations are key for the future of the Bering Strait Region for other countries as well. For example, Korea's direct economic interests are first of all connected to shipping, as Korean shipyards are heavily involved in construction of the new generation of Arctic-class vessels. A negative security situation in the Bering Strait Region will affect the development of Arctic shipping, and hence Korean economic interests.

PART III THE NORTHERN SEA ROUTE AND ARCTIC MARINE TRANSPORTATION

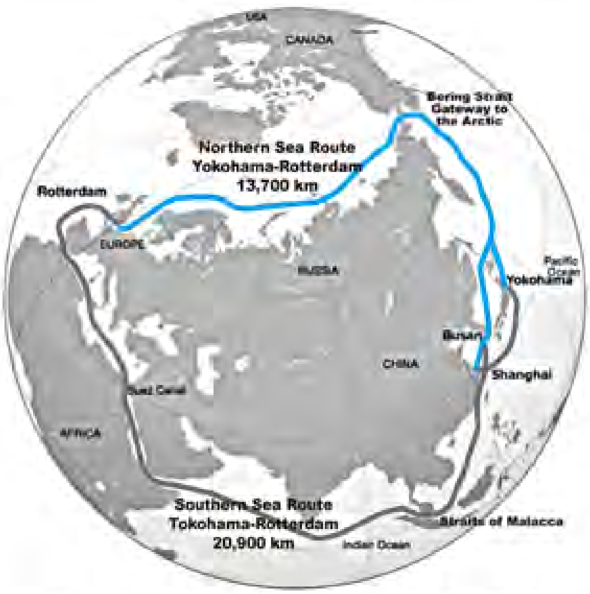
Part III examines a variety of issues relating to increased commercial shipping using the Northern Sea Route (NSR) and Arctic marine transportaion.

The NSR is the National Arctic Waterway of the Russian Federation. It is defined in Russian law as a set of marine routes from the Kara Gate (a strait south of Novaya Zemlya) in the west to the Bering Strait in the east. The Barents Sea is not included in the legal definition of the NSR. Hence, a full voyage or transit across the entire NSR is *not* a full, trans-Arctic voyage across the top of Eurasia. The Northeast Passage is the historic name given to the marine routes across the Russian maritime Arctic from the Pacific Ocean and Bering Strait in the east to Norway and the Atlantic Ocean in the west. Cabotage is the maritime term given to ships voyaging within the waters of a coastal state, in this case the Arctic waters (out to 200 nautical miles as the boundary of the Exclusive Economic Zone) of the Russian Federation.

The NSR running along Russia's northern border provides a link between Asia and Europe that is substantially shorter than the Suez Canal route. Treated as a priority by Russia and as a matter of growing interest on the part of China, Japan, and Korea, the NSR is already seeing significant increases in destinational shipping (e.g., the operations of ice-strengthened tankers transporting liquefied natural gas from the Yamal Peninsula). But the future of the route as a shipping artery for through traffic is sensitive to a variety of biophysical, economic, legal, political, social, strategic, and technological considerations. Despite the considerable attractions of the NSR, an air of uncertainty lies over the future of the route for trans-Arctic shipping. A critical question concerns the extent to which uses of the route that meet economic and political requirements can be made sustainable in response to ever-changing biophysical and sociocultural considerations.

One participant provided an overview of the NSR's current uses. The influence of new technologies on the development of the NSR and the entire Russian maritime Arctic was interwoven throughout the discussion. She stated that liquefied natural gas (LNG) development has been the primary catalyst for the development of the NSR in the past five to seven years and will be for the foreseeable future, along with oil, ammonia, ethane and possibly hydrogen. She also anticipated the use of new ship propulsion fuels (such as LNG) to make the NSR more climate friendly and noted that 40 percent of the shipping in the Russian maritime Arctic is using lower carbon fuels (including LNG) and there is a concerted effort to make the NSR *greener*. She was skeptical that large-scale trans-Arctic shipments would occur in the near future along the NSR and its westward extension to Europe.

Discussion in this session was organized under three central themes:



Source Map: Shepherd, Andrew, et al. "A Reconciled Estimate of Ice-Sheet Mass Balance." *Science*, vol 338, no. 6111, 2012, pp. 1183–1189.

Figure I.3 The Northern Sea Route (NSR) and Southern Sea Route (SSR) and distance comparisons

(i) How does the current and future operation of the NSR, including governance, fit into the global picture of commercial shipping? (ii) How will climate change and COVID-19 affect the future of the NSR? (iii) What are the infrastructure requirements for the Russian maritime Arctic region, and will foreign investment be a factor in its development?

How does the current and future operation of the NSR, including governance, fit into the global picture of commercial shipping? One participant observed that during the first two decades of the 21st century, natural resource developments have been the primary drivers of Arctic marine transportation, a theme consistent with the findings of the Arctic Council's Arctic Marine Shipping Assessment (AMSA) of 2004-2009. There are ongoing demands (especially in India and China) for LNG, oil and coal (for coal perhaps only in the short-term). Current Arctic shipping along the NSR is dependent on two factors: global demand for resources and global commodities prices. The Russian government's approach has been to develop marine routes/marine transport rather than new pipelines for the movement of oil and gas out of western Siberia. The government also has comprehensive strategies for development of the Russian Arctic, so it is sometimes difficult to see how Russian companies are free to make decisions that may or may not conform to national Arctic strategies (particularly regarding the pursuit of investment, both domestic and foreign).

The use of the NSR and Northeast Passage (NEP) as potential trade routes between Europe and the Pacific has garnered global attention for several decades (Figure I.3). One of the key challenges is overcoming the seasonal and unpredictable nature of marine access. Shorter distances, compared with a southern route through the Suez Canal, are observed on maps that are ice-free. However, such maps are misleading in that they do not indicate a host of practical environmental and physical factors (including key draft restrictions) that are critical constrains to regular trans-Arctic traffic. The price of ship fuels and the higher costs of Arctic ships that meet the standards of the mandatory IMO Polar Code are significant factors. Many Russian and western experts view the NEP and NSR as a system of routes supplemental to those through the Suez Canal. The Arctic routes function seasonally (during summer) when they can be more economically viable and used by lower ice-class (and non-polar class) commercial ships.

Rosatom, the Russian state nuclear energy corporation, has emerged as a key player in developing the NSR. Participants argued that Rosatom is better organized and has more financial resources than other ministries. At the center of Rosatom's strategy for NSR development is acquisition and management of Russia's nuclear icebreaker fleet. Icebreaker-led convoying of commercial ships is at the heart of Arctic marine operations, just as it was during the era of Soviet Arctic operations along the NSR. Noted during the discussion has been a change in Rosatom's earlier market-driven focus to a reduced transparency and a vision more dependent on government support of icebreaker and marine infrastructure development. A new concept for a state-owned, transshipment (container) operation follows a strategy more aligned with government control of marine traffic along the NSR.

How green the NSR could become was a topic of interest. The carbon footprint of nuclear icebreakers is assumed to be zero (although historically at least, Rosatom as a large industrial complex manager does not have a legacy of being either clean or green). Some commercial ships along the NSR will certainly use cleaner fuels; LNG initially, and possibly hydrogen (a zero-carbon fuel) in the future. It is likely that the global shipping enterprise outside the Arctic will drive development of these advanced ship fuels responsive in part to IMO regulations to mitigate stack emissions. It will be interesting to see if during the upcoming Russian Chairmanship of the Arctic Council (2021-2023), the promise of "green, sustainable Arctic shipping" becomes an agenda priority for the Russian Federation and gains resonance among the other Arctic states.

A change in Russia's approach to the NSR has emerged during the past decade. Participants remarked that an era of liberalization and more openness to international commerce has been replaced by a more protectionist, nationalist strategy: new laws and regulations focus on limiting future ships carrying natural resources to Russian-built vessels; a system of transshipment and hubs is to be government-owned and controlled; and access to the Russian maritime Arctic by foreign ships is becoming more challenging than in recent years. These actions do not seem to favor the NSR becoming an international waterway of choice by global shippers. The major focus of these Arctic waterways and marine transport systems remains facilitating the movement of Russian Arctic natural resources to global markets.

How will climate change and COVID-19 affect the future of the NSR? One participant argued that the global COVID-19 pandemic has had short-term impacts on development of the Russian Arctic, although the impacts on oil and gas development in western Siberia do not appear substantially disruptive. Since the vast majority of (large commercial ship) NSR marine traffic involves destinational voyages, regional traffic levels will not likely be directly influenced by the pandemic's impacts on global shipping. Participants noted that the pandemic's impacts on global container shipping have not been as serious as first predicted. The more serious consequences of the pandemic for the Russian Arctic come from the impacts on global markets, especially for oil and gas. How long-term such impacts will remain will be dependent on new vaccines and the lasting strength of the pandemic.

Regional and global climate change impacts on Russian Arctic development and the supporting NSR transport system are complex. Participants understood there are both positive and negative impacts of climate change on the NSR and Russian Arctic development. The profound retreat of Arctic sea ice provides for greater access to the Russian maritime Arctic and potentially longer seasons of navigation (and plausibly year-round navigation along the entire coast in the future). However, anthropogenic climate change brings serious permafrost melting and a range of impacts on infrastructure development. More frequent and extensive forest and tundra fires in the Russian Arctic are increasingly attributed to rapid regional warming. These have direct impacts on communities and infrastructure location and future development. The existential threat of climate change is originating from outside the Arctic, but the Arctic will be buffeted nonetheless: among other things, global change mitigation efforts and the move to renewable energy sources will almost certainly affect global oil and gas demand and commodity prices. The Russian economy's reliance on natural resource development may be seriously affected by changing global energy demand. One key observation during the discussion was that the marine transport system is perhaps ancillary to the overall development challenges of the Russian Arctic.

Climate change and regional developments have particular and serious implications for Russian Arctic Indigenous Peoples. New infrastructure developments have had negative and disruptive impacts on traditional ways of life. Reindeer herders have been especially affected due to the seasonal migration/movement of the herds in response to development pressures. The construction of coastal infrastructure in support of oil and gas initiatives has had cumulative impacts on Indigenous communities. There are, however, several new opportunities as a result of NSR development that could support the linkage of locally produced reindeer products with international markets, especially in Asia.

Greater marine access increases the need for waste management facilities (to handle greater marine traffic), for the designation of marine protected areas in the Russian maritime Arctic, and for such regulations as instituting and enforcing a heavy fuel oil ban. How the Russian Federation responds to these environmental protection initiatives will be key to the development of a "sustainable" or "green" NSR. International use of the NSR will also be dependent on the levels of marine safety and environmental protection afforded to voyaging along the length of the Russian maritime Arctic. Russia's serious engagement within the Arctic Council will hopefully influence key sustainable development and environmental protection approaches.

What are the infrastructure requirements for the Russian maritime Arctic region and will foreign investment be a factor in its development? Marine infrastructure investments are essential for the development of a safe and efficient NSR. A broad range of infrastructure needs require domestic funding, perhaps supplemented with foreign investment: ports, icebreakers, communications systems, hydrography and charting, aids to navigation, ship reception facilities, search and rescue (SAR) response capacity, environmental response capacity, surveillance and monitoring systems (for comprehensive domain awareness), and more. Direct government investment in new nuclear and non-nuclear icebreakers is well underway. Less clear is the source(s) of large investments needed for the more practical marine navigation requirements, although investments in response facilities (for SAR and oil-spill response) are being made.

Foreign investment in marine infrastructure located in the Russian Arctic is more complex and problematic. A viable return on foreign investment in such marine infrastructure is more difficult to foresee/achieve. Countries such as China may likely wish to control the property rights. The key question is whether Russia will easily or willingly give up ownership of infrastructure to a foreign state (or foreign commercial company). One participant believed ports are a key indicator of investment for foreign investors in the Russian Arctic. Scale and port size will likely be key factors that decide whether foreign investors can make money from long-term investments in Arctic ports. Chinese, Japanese, and Korean investors will look for links between Arctic ports and their respective domestic ports. A good example would be marine traffic linkages between Arctic ports and those in northern Japan. The potential for future foreign infrastructure investments will also be influenced by the environmental and marine safety standards implemented throughout the Russian maritime Arctic.

Summing up, the session produced a number of conclusions. First, the majority of large, commercial ship traffic using the NSR is *destinational*. Arctic natural resources are being carried out of the Russian Arctic by LNG tankers and bulk carriers to global markets in Europe or in Asia. This mode of marine transportation is considered the primary use of the NSR in the foreseeable decades.

Second, none of the participants concluded in their future visions for the NSR that the NSR would host large numbers of ships on trans-Arctic voyages. There are plausible niche markets whereby ships could conduct seasonal (spring, summer and autumn) trans-Arctic voyages in ice-free or partially ice-covered waters. Any traffic of this type would be a seasonal *supplement* to traffic on southern routes currently using the Suez Canal.

Third, anthropogenic warming and global climate changes have both positive and negative impacts on use of the NSR. The extraordinary retreat of Arctic sea ice provides for greater marine access and potentially longer seasons of navigation. However, continued permafrost melt and increasing fires in the Russian Arctic create challenges for infrastructure development. Global mitigation efforts to reduce greenhouse gas emissions will plausibly affect oil, gas, and coal development in the Arctic and thereby influence marine navigation along the NSR.

Fourth, recent Russian federal legislation regarding use of the NSR is focused on making the NSR a domestic waterway focusing on Russian-built ships, with restrictions on foreign-flagged vessels.

Fifth, the vision of the Russian government (regional and central) is to create a Russian state-owned Arctic container shipping system using two transshipment hubs near Murmansk and in Kamchatka. There remain many questions regarding whether global shipping companies would show any interest in this Russian initiative.

Sixth, there may be lasting and unforeseen impacts of the COVID-19 pandemic on Arctic development and the entire global shipping enterprise.

Seventh, Russian Arctic development and increases of NSR marine traffic will have multiple impacts on Indigenous Peoples. Onshore infrastructure development (such as pipelines, ports, worker settlements, roads, and more) block animal migration routes and alter seasonal livelihood opportunities. However, new marine connections linking the NSR to the interior of the Russian Arctic may provide opportunities for the export of reindeer products and artisanal goods to international markets.

PART IV ARCTIC MARINE COOPERATION: SECURING A SUSTAINABLE FUTURE

Part IV assesses the adequacy of existing arrangements to promote marine cooperation in the Arctic and explores options for promoting comprehensive cooperation in the Arctic Ocean in the future. Discussion in this session was organized into two main blocks: (i) an assessment of Arctic marine cooperation facilitated by the Arctic Council; and (ii) prospects for Arctic marine cooperation outside the Council.

Marine Cooperation through the Arctic Council. The Arctic Council has a considerable track record of achievements relating to marine cooperation. Prominent examples include assessments such as the Arctic Climate Impact Assessment (ACIA) and the Arctic Marine Shipping Assessment (AMSA), strategic plans like the first and second Arctic Marine Strategic Plans, and the work of the Council's task forces in preparing legally binding agreements.

The Council's working groups have played major contributing roles. With respect to marine cooperation, the activities of the Working Group on the Protection of the Arctic Marine Environment (PAME) are particularly noteworthy. The Arctic Monitoring and Assessment Programme (AMAP) and the Working Group on the Conservation of Arctic Flora and Fora (CAFF) have also addressed marine issues. PAME is now working on the issue of marine debris in the Arctic and is preparing a regional action plan on litter. AMAP is assembling a new version of its report on *Snow, Water, Ice, and Permafrost in the Arctic*, which will pay increased attention to the human dimensions of these biophysical processes. CAFF continues to pursue the implementation of recommendations from its Arctic Biodiversity Assessment. In general, the working groups facilitate a bottom-up process within the activities of the Council and provide an opportunity for non-Arctic State observers and other observers to play constructive roles.

Because the Arctic Council lacks authority in its own right, it must interact with other organizations, regimes, and authoritative processes to play a significant role in the realm of governance. This can take a variety of forms. The findings of ACIA helped to energize the consideration of climate change within the UNFCCC, and the recommendations of AMSA played a leading role in pushing toward agreement on the IMO Polar Code. Arctic Council task forces developed the content of the 2011, 2013, and 2017 agreements which the Arctic States then adopted by consensus. The efforts of the Permanent Participants within the Council have helped to mobilize Indigenous voices in intergovernmental bodies such as the UNFCCC.

In general, the world is not well-informed about the work of the Arctic Council. More broadly, there is limited understanding of the contributions of informal bodies in bringing a variety of stakeholders into the conversation, preparing the ground for initiatives in other forums, and generally contributing to norm creation in contrast to rulemaking. In this regard, one participant likened the work of the Arctic Council to the work of the Asia-Pacific Economic Cooperation (APEC) as an informal body.

At the same time, the Arctic Council faces constraints and obstacles in addressing issues of Arctic marine cooperation. A number of specific concerns surfaced in the course of the discussion. The consensus requirement for decision making can impede progress. The high rate of turnover of Senior Arctic Officials (SAOs) makes it hard to address complex issues over time. One commentator observed that the representatives of the Permanent Participants often have a better understanding of the long-term development of Council activities. There is sometimes a lack of follow-up in the sense of tracking responses to Council recommendations and assessing the effects of Council initiatives. There is continued lack of clarity regarding the role(s) of observers and some lack of inclusivity. For example, while the emphasis on the role of Permanent Participants is clearly a strength, the Council does not have a particularly good mechanism for engaging with subnational units of government in the Arctic.

In some cases, the issues are complex. For example, there has been considerable debate about the role of task forces and the relationship between task forces and the working groups. The Arctic Council's contribution to the development of the Polar Code, for example, grew out of the efforts of PAME. But the Council's work on the 2011 SAR Agreement was conducted in a task force outside the scope of any working goup. The Task Force on Arctic Marine Cooperation (TFAMC) did make recommendations during its first phase (2015-2017). But it was unable to come up with a strong proposal during its second phase (2017-2019). The effort to develop a long-term strategic plan for the Arctic Council may have overshadowed the work of the TFAMC during its later stages.

The informality of the Arctic Council is an advantage in the sense that it makes the Council less bureaucratic and more flexible. Yet there is clearly a need for more explicit and effective rules. The question is whether there is a different way of doing business that is appropriate for informal bodies such as the Council.

Overall, there are issues regarding the adaptability of the Council. The Arctic of the 2020s differs in many critical ways from the Arctic of the 1990s. The question is whether the Arctic Council will be able to adjust its practices to remain effective under newly emerging conditions.

Looming over these specific concerns are questions relating to the impacts of COVID-19 and the shifting perspectives of the United States on Arctic issues. The impact of the pandemic may not be all bad. The are some real advantages to addressing issues through virtual interactions. As several participants noted, the future role of the United States may be affected strongly by the outcome of the recent national election.

Turning to future developments, one participant noted that there are currently no active task forces. This may reflect a kind of task force fatigue. Still, we should treat task forces as a tool in the Arctic Council toolkit.

While many have found the results of the TFAMC disappointing, the SAO-based Marine Mechanism (SMM) growing out of the work of the task force is now up and running. Its first meeting, organized as a webinar series, occurred during September and October. The meeting has been action oriented, focusing on four specific themes and stressing actionable points. A related idea is to organize a ministerial level meeting on Arctic oceans issues to take a broad perspective, including links to the Central Arctic Ocean Fisheries Agreement and whatever emerges from the ongoing negotiations on biodiversity beyond national jurisdictions (BBNJ).

Several participants noted the importance of creating a culture of cooperation within and among the working groups and task forces and then engaging the SAOs in support of initiatives emerging from these deliberations. A notable example relevant to marine cooperation is the cooperation between Russia and the United States in developing the content of the 2011, 2013, and 2017 agreements.

Discussion touched on the question of whether there is a need for a dedicated Arctic science body dealing with marine issues, along the lines of ICES for the North Atlantic and PICES for the North Pacific. Could such a body operate within the framework of the Arctic Council or would it be preferable to locate it outside the Council? The International Arctic Science Committee (IASC) established in 1990, for example, has a working group on marine scientific issues.

The Arctic Council can provide a mechanism for the Arctic States to discuss and coordinate their positions regarding issues arising in other venues such as the IMO.

Discussion returned several times to the role of observers, and especially non-Arctic State observers, in the activities of the Council. What roles can observers play and how can these roles be clarified and strengthened? Observers have been active and effective within several of the working groups, as the experience of AMSA makes clear. Other initiatives are also feasible as in the case of Korea's work with the Permanent Participants on marine mapping.

Observers should be free to participate in the work of the Council, but there is a need to be aware of considerations of equity in engaging with the observers and to devise innovative forms of engagement in this connection. The issue is not so much a matter of formal adjustments (e.g., changing the terms of reference for observers) but rather a matter of developing informal practices that facilitate participation without undermining the distinctive features of the Arctic Council.

One important consideration in this regard involves the distinction between stakeholders and rightsholders. The observers are legitimate stakeholders whose contributions are important. But it is important to bear in mind that the Permanent Participants are rightsholders who play a different role in the work of the Council.

Marine Cooperation Outside the Arctic Council. The second part of the discussion in this session turned to issues involving Arctic marine cooperation unfolding outside the Arctic Council. A transcendent effort involves the negotiation under UN auspices of an international legally binding instrument on biodiversity beyond national jurisdiction (BBNJ). The basic idea is to patch up holes in UNCLOS and to introduce explicit provisions relating to (i) marine genetic resources, (ii) area-based management tools, (iii) environmental impact assessments, and (iv) capacity building and technology transfer. The negotiations were planned to reach a conclusion in 2020, but the timetable has been slowed due to the impacts of COVID-19.

A main question is how a BBNJ agreement would relate to the Arctic Ocean. Only a small portion of the Arctic Ocean (~2.8 million square kilometers) lies beyond the jurisdiction of the coastal states. Once remaining boundary delimitation disputes are resolved, an even smaller segment of the Arctic seabed will become part of what is known as the Area. This raises several questions of interest to the future of Arctic marine cooperation.

Much will depend on the interface between a future BBNJ regime and the management practices of the Arctic coastal states, which hold jurisdiction over most of the Arctic Ocean. Even if these states adopt cooperative positions, there will be major questions regarding the interface between the different management practices and cooperation regarding species, such as polar bears, that move freely between the EEZs of coastal states and areas beyond their jurisdiction.

It is important to note as well that several of the Arctic States have dragged their feet regarding the BBNJ negotiations. Russia and the United States are prominent cases in this regard. They are particularly opposed to strong provisions regarding marine genetic resources for many of the same reasons that led the United States to oppose the provisions of Part XI of UNCLOS on the International Seabed Authority. But they are also concerned about the issue of not undermining existing agreements in connection with the BBNJ negotiations. Even if a BBNJ agreement is completed and opened for signature sometime in 2021, there is a chance that the United States and Russia will ratify it. This will create a confusing situation regarding marine cooperation in the Arctic.

This is one reason why many expressed optimism regarding the role of the Central Arctic Ocean Fisheries Agreement (CAOFA) opened for signature in October 2018. While the CAOFA is not yet legally in force, nine of the ten signatories have ratified the agreement, and the expectation is that the tenth signatory (China) is expected to ratify in the near future.

The CAOFA has a number of features that have attracted positive attention. The so-called 5+5 membership formula—which includes the five Arctic coastal nations Canada, Denmark, Norway, the United States, and Russia as well as China, the European Union, Iceland, Japan, and Korea—recognizes the legitimate role of non-Arctic States, while maintaining the preeminence of the Arctic coastal States. The application of the precautionary principle to put in place regulatory arrangements prior to any resource exploitation is notable. The arrangements for scientific cooperation are exemplary. Additionally, the option to create one or more regional fisheries management organizations (RFMOs) exists, should the need arise. The joint program of scientific research under the CAOFA has already held a provisional meeting, and member countries have pledged to support continued research needed to implement the CAOFA effectively.

Still, there are several important questions that arise in relation to the CAOFA. What could be the relationship between the CAOFA and a BBNJ agreement? Could the provisions of the BBNJ agreement kick in once the initial 16-year moratorium on fishing under the CAOFA expires? This is an interesting idea, but it may not work in practice if one or several of the Arctic coastal States refuse to participate in a BBNJ agreement. Moreover, it is unclear how the BBNJ agreement could relate to the work of any RFMOs eventually created to deal with commercial fishing in the Central Arctic Ocean, an even murkier question if ecological changes make economic activities in the CAO and beyond viable in the future.

COVID-19 has sharply curtailed marine science in the Arctic during 2020. What have been the effects of this interruption already, and what can we expect regarding the conduct of Arctic marine science going forward? We are learning how to carry out some forms of science in a virtual format. But there is no substitute for scientists' ship time at sea in the pursuit of Arctic marine research.

There is in addition an important need to recognize and integrate different kinds of knowledge relevant to Arctic marine cooperation. Indigenous Knowledge and the inclusion of Indigenous voices is critical in this regard. In addition, we need to improve our ability to understand coupled natural and social systems as human activities become more prominent in the Arctic and anthropogenic forces become more powerful drivers in this region. The promising role of the Local Communities and Indigenous Peoples Platform, established under the UNFCCC to facilitate the exchange of experiences and sharing of best practices in climate mitigation and adaptation, was noted by one participant. The Platform offers a new window for the engagement of Arctic Indigenous Peoples in the UNFCCC process.

An important feature of the development of the CAOFA has been the engagement between the marine science community and members of the policy community working on the text of the agreement. This form of co-production needs to be cultivated and applied throughout our efforts to encourage Arctic marine cooperation. In this connection, there may be a role for what many people now refer to as "science diplomacy."

Several other interesting observations emerged in this session. There are many other intergovernmental bodies (e.g., the International Hydrographic Organization) and nongovernmental bodies (e.g., the International

Association of Classification Societies, the International Union of Marine Insurance) that are relevant to the broader picture of Arctic marine cooperation. One of the major issues going forward will be to sort out and clarify the roles of the full suite of relevant bodies and find ways to ensure that their efforts are complementary not only in the development of innovative forms of marine cooperation but also in the administration of arrangements once they are in place.

Some key questions about the future of Arctic marine cooperation also emerged. One specific issue concerns the future of the SAO-based Marine Mechanism. Will there be well-defined terms of reference for this mechanism? More generally, what is the status of the proposed Arctic Council Strategic Plan? Will there be a continuing effort to develop such a plan? If so, what will it have to say about Arctic marine cooperation?

NEXT STEPS FOR NPAC

The closing session of NPAC 2020 highlighted issues relating to the future of the Arctic as a means of identifying options for consideration in future NPAC conferences. Having completed a full decade of conferences, NPAC has become a robust mechanism for engaging practitioners and analysts in rich conversations about emerging Arctic issues. Still, there is a need for innovation in identifying themes for the next cycle of NPAC conferences. The rapidly changing Arctic, giving rise to what many now regard as a *New Arctic*, will have profound environmental, social, cultural, economic, and geopolitical effects that extend well beyond the region (see graphic). Awareness of the significance of the New Arctic is taking hold in many settings from the World Economic Forum to diplomatic circles as well as in the scientific community.

A new feature of NPAC activities in recent years has been the contribution of NPAC Fellows highlighting the perspectives of younger observers and scholars on current and future challenges relating to the Arctic. In the closing session, some of the Fellows focused on specific substantive issues, such food security in the Arctic, the management of marine living resources, and the delimitation of continental shelf jurisdiction in the Arctic Ocean. Others spoke of opportunities for Arctic cooperation, ranging from scientific collaboration to the development of confidence-building measures and the value of reexamining the conceptual frameworks we use in organizing our thinking about Arctic issues. These additions to NPAC will be an important element for NPAC in the decade ahead.

Several members of the NPAC Steering Committee followed up with their own observations about opportunities for NPAC going forward. This resulted both in the identification of specific issues for consideration in the future (e.g. linkages among a growing range of institutional arrangements relating to the Arctic Ocean, and options for confidence-building measures) and in putting forth suggestions about enhancing the impact of NPAC going forward (e.g. communicating findings to a wider audience and avoiding disconnects between topics addressed in specific sessions). In future conferences, NPAC will explore the significance of the idea of the *New Arctic* and the role of the Arctic nested globally in the *New Global Commons*.

THE NEW ARCTIC: Navigating the Realities, Possibilities, and Problems

Surprise is the New Normal in the Arctic: The region's environmental conditions and ecosystems remain highly volatile. Scientific research and scientific collaboration among affected states have increased, but the ongoing, drastic climatic changes render any high degree of predictability impossible. This has repercussions for environmental mitigation or adaptation measures, and for overall policymaking in the region—and inattention to these questions is not a viable option. As a first step, there is a significant need for increased scientific collaboration on data related to environmental changes in the Arctic region.

The Arctic is a Multi-level Issue Set: There are local concerns about coastal erosion, loss of traditional livelihoods, and the dual-edged prospect of increased tourism. Governments within the Arctic zone face the broader challenge of installing the infrastructure and governance frameworks to manage future economic opportunities and new shipping routes—along with increasing militarization by some parties. And there are global issues, including improved resilience and prediction capabilities for rising sea levels and new and more volatile weather patterns.

This is a New Global Commons: Even countries with no direct Arctic claims have begun to show far greater interest in the region. For some, this interest reflects concerns about the anticipated climate change-induced effects elsewhere in the world. Other countries see long-term opportunities in resource extraction, or the promise of more direct polar shipping routes. China's regional ambitions and the attention of other non-Arctic nations such as Singapore are a case in point.

Source: A research study of the "*The New Global Commons: Emerging Global Diplomatic Challenges*," at the Institute for the Study of Diplomacy, Edmund A. Walsh School of Foreign Service at Georgetown University, Washington, DC (US)

Figure I.4 The new global commons: Emerging global diplomatic challenges

Note

1. Many of the following points are based on Session Chairs' and Rapporteurs' Reports from the 2020 North Pacific Arctic Conference.

PART I

HIGH POLITICS IN THE NEW ARCTIC

How to Balance on the Ice: Great Power Politics and Emerging Arctic Security

Marc Lanteigne

The Arctic is Not a Blank Space, and Even Less So Now

Since 2019, the security situation in the Arctic has undergone a series of rapid changes, which have been interpreted as either a return or a restoration of hard security concerns in the region. Key drivers of these developments include the ongoing effects of climate change in the Arctic. The region's physical transformation has opened up economic opportunities in many sectors, including energy development, raw material extraction, and shipping. This has led to a resurgence of the stubborn myth that the Arctic is *terra (or mare) nullius*, open to development or exploitation by any power able and willing to do so. This view dismisses both international law and the growing number of institutions that have sought to better regulate activities in the far north. A second variable that has affected strategic perceptions of the Arctic has been the "southern spillover" of non-Arctic issues into the region, including the deteriorated relationship between the United States and Russia since the Crimea/Donbass crises of 2014 and after in Ukraine, as well as rapidly cooling ties between the U.S. and China in the wake of the post-2018 bilateral "trade war." Third, despite misgivings by the region's two major players, the United States and Russia, the Arctic is becoming steadily internationalised. This is occurring not only due to Chinese policies, but also via several other non-Arctic states such as Germany, Japan, the United Kingdom, and even India and Singapore,[1] collectively beginning to claim a greater say in Arctic affairs. This has prompted the question of how Arctic and non-Arctic governments can best effectively cooperate to addressing both environmental and political developments in the region.

Following more than 20 years of the Arctic being widely viewed as dissociated from "traditional" hard strategic concerns after the end of the Cold War, the question of whether the Arctic might be viewed as an arena for strategic—and even military—competition has reappeared as a result of the changes described above. During the halcyon days of the 1990s, the Arctic benefitted greatly from the peace dividend associated with the dissolution of the Soviet Union, and this allowed the Arctic to be identified as an area of "high north, low tension." Security concerns in the Arctic at this time often fell into catchall "non-traditional" areas, including environmental security (combatting climate change and its associated local effects) and human security (such as addressing underdevelopment, poverty and connectivity challenges). This view of the Arctic can best be traced to the 1987 watershed speech by the last president of the USSR, Mikhail Gorbachev, in Murmansk, which called for confidence- and peace-building measures to create a new security milieu in the Arctic that would favour cooperation to tackle the region's distinct challenges.[2] This post-Cold War community spirit was reflected in the creation of the Arctic Council in 1996, a group that made a conscious decision to omit military affairs from its agenda in the Ottawa Declaration, its founding document.[3]

Within the Arctic Council, its eight members, Canada, Denmark (Greenland), Finland, Iceland, Norway, Sweden, the Russian Federation, and the United States, have traditionally sought to promote the Arctic as a zone of cooperation and joint problem-solving while recognising the region's distinct geography, demographics and economics. Even during the diplomatic downturn between Russia and the United States, there remained a tacit "check your politics at the door" stance both in the Council and within many sub-governmental, Track II organisations and conferences that address the region. However, these regimes are now facing considerable strains due to diverging great power agendas in the Arctic, coupled with the growing number of non-Arctic governments, including Beijing, that are participating in regional dialogues where possible.

Both the United States and Russia have been seeking to consolidate their Arctic policies, with the latter rapidly developing its strategic and economic interests in Siberia and the Russian Far East, while also testing Western security in the region. After several years of neglecting the Arctic, the then-government of President Donald Trump attempted to push an assertive strategy of displacing climate change with great power competition as the major strategic challenge to the far north. He called for an increased U.S. strategic presence at both poles while openly challenging regional norms, including the "agree to disagree" stance with Canada on the legal status of the Northwest Passage (NWP) that has been in place since the 1980s.[4] Reports that surfaced in August 2019—that the Trump government was actively investigating the possibility of purchasing Greenland from Denmark—not only demonstrated ignorance of, or derision for, the 2009

Self Rule Agreement between the Danish and Greenlandic governments that guarantees the right of self-determination for Greenland,[5] but also reflected a zero-sum stance on the Arctic that demonstrated less interest in cooperation with other regional actors.

China, as the largest non-Arctic state, has begun to expand its regional agenda to reflect scientific diplomacy, but also expressed its desire to expand economic opportunities in the region through various partnerships with local governments. Although several other non-Arctic states, including Great Britain, Germany and Japan, have published Arctic policy documents that expressed interest in having a greater say in far northern affairs, Beijing's Arctic White Paper, published in January 2018, received by far the most international scrutiny. This document confirmed the Chinese view that while non-Arctic states have no rights to Arctic sovereignty, they affirmed their right to engage in scientific and economic activities in the region in accordance with international law.[6] These include access to Arctic resources such as oil, gas, and raw materials, which has been the focus of Chinese Arctic cooperation with Russia. In addition, Beijing has been interested in taking advantage of trade opportunities appearing with the opening of new trade routes in the Arctic, which have now been officially connected to Beijing's post-2013 Belt and Road (*yidai yilu* 一带一路) trade initiatives. Paramount among these sea lanes has been the Northern Sea Route abutting Siberia and connecting Northeast Asia and Northern Europe. China has also begun to see the possibilities appearing via the Northwest Passage in the Canadian Arctic, and even some sort of Central Arctic Ocean route as the waters surrounding the North Pole are projected to become ice-free in the coming decades.[7]

Great Powers Redefine Their Arctic Roles

It can therefore be argued that great power politics, in a more traditional form, are "back" in the Arctic, at least in conventional thinking about the region. This "return" can be observed from two different directions. The first is the more visible spillover of conflicting great power policies, especially between Russia and the United States, along with its NATO allies, into the Arctic as both countries have recognised the region as more central to their strategic interests. After a long dormancy period between 2016 and 2019, when the Arctic was almost completely absent from policy agendas in Washington, the U.S. government has sought to rework its regional thinking to reflect a much stronger hard-power approach, one which, despite ongoing American talk of closer cooperation with its fellow Arctic Council members, has actually served to have the opposite effect.

The first major shift was the *de facto* jettisoning of climate change as an American security concern in the Arctic, reflecting the views of the Trump administration that the phenomenon did not exist, despite the ever-growing macrocosm of evidence to the contrary.[8] In addition to seeking to dilute environmental policy within the United States, American policymakers have sought to export these views into the Arctic by advocating great power competition as a far more pressing strategic concern in the far north. The most visible sign that the Trump government had begun to view the Arctic through almost exclusively a military lens was the blustery and ill-informed speech by then-U.S. Secretary of State Mike Pompeo at the Arctic Council's Ministerial May 2019 meeting in Rovaniemi, Finland.[9] This presentation was a significant example of the problems the United States had under the Trump government in engaging the Arctic while also developing a unilateral, isolationist stance on several of the region's key issues. First, Pompeo's remarks broke a long-standing taboo in the Council by directly pointing to other Arctic actors, notably Russia, as military threats, and also challenged China's concept of being a "near-Arctic state" (*jin beiji guojia* 近北极国家), a phrase which has been used in both Chinese research and policymaking milieus for nearly a decade.[10]

Pompeo's stance during the speech that only Arctic and non-Arctic states existed was not only a costly signal by Washington to Beijing, indicating Washington would not tolerate Chinese participation in regional affairs, but it was also a backhanded rebuke to several other non-Arctic states as observers in the Arctic Council, including U.S. friends and allies, that they too were being counted out as regional actors. Several non-Arctic states in addition to China, including Great Britain, France, Germany, Japan, Singapore, and Korea have developed significant Arctic engagement policies, with some governments also suggesting that they too should have a significant say in the emerging political and legal affairs in the far north.[11] As a result, the Arctic has increasingly been moving away from the international strategic periphery, raising the question of the degree to which the Arctic should be considered an international security concern as opposed to a regional one.

The Trump administration also shook other regional diplomatic protocols by suggesting that Russian claims to the Northern Sea Route, as well as Canadian sovereignty over the Northwest Passage (which Washington views as international waters) were, in Pompeo's words, "illegitimate." Since the late 1980s, there had been a tacit agreement between Ottawa and Washington to agree to disagree on the legal status of the NWP. Yet, the policy chasm between the two governments widened under the Trump administration, as exemplified by curious comments made in September 2020 by James DeHart, the then-U.S. Coordinator for Arctic Affairs, that the dispute is simply "technical" in nature.[12] American maritime policy in the Arctic has also been complicated by Washington's failure to ratify the UN Convention on the Law of the Sea (UNCLOS).[13] With the election of Joe Biden as U.S. President in November 2020 and his promises to return the United States to a more multilateralist foreign policy and to make addressing climate change a national priority, international observers have expressed hopes that a more cooperative American approach to Arctic policies was on the horizon.[14]

President Vladimir Putin in Russia has sought to develop the Arctic as a major component of his efforts to boost the country's economy, which has borne the brunt of Western sanctions and economic isolation in the wake of its annexation of Crimea. Since the start of 2020, the Russian economy has been further battered by the fall in energy prices and the global financial slowdown caused by the pandemic, as well as the domestic-level effects of the coronavirus itself. Moscow has invested a great deal of political capital promoting the potential for Siberia and the Russian Far East to provide major boosts to the country's economy. This has been led by energy projects, including local natural gas shipments, as well as the opening of the Northern Sea Route for faster Asia-Europe maritime shipping, and the associated building of ports and infrastructure to support Arctic sea trade. President Putin has called for the ambitious growth of NSR shipping to eighty million tonnes by 2024, (figures for 2019 were 31.5 million tonnes), an indication that Russia is also seeking to nourish as well as protect its Arctic assets in ways that have caused consternation in both the United States and Europe.[15]

In a classic case of the security dilemma at work, Western governments have cited the reopening of previously abandoned Cold War-era military installations, which the Russian government has framed as being necessary to protect an economically invaluable region as well as monitor what is expected to be an uptick in sea traffic. On a more offensive note, incursions by Russian aircraft and submarines into or close to other countries' Arctic spaces have become more frequent. The most recent large-scale Russian military exercises, *Vostok 2018*, included operations throughout Siberia and the Russian Far East; Moscow has also increased trans-Arctic radar coverage and developed systems for radio-electronic jamming of foreign aircraft and vessels.[16]

The United States and its NATO allies have also been stepping up their own regional activities in response to Russia's expanded Arctic policies. These have included the reactivation and modernisation of the U.S. Navy's Second Fleet to include Arctic operations, the reopening of military facilities in Keflavik, Iceland by the United States after American forces had been withdrawn in 2006, and calls by the Trump government, despite pandemic-related economic strains in the country, for a "fleet" of new icebreakers to be in place by 2029 to replace the two aging vessels still in operation by the U.S. Coast Guard. One of the two American icebreakers, the *USCGC Healy*, suffered a fire and engine failure in August 2020, which cut short Arctic missions that year.[17] In May of that year, ships with the U.S. and British navies conducted manoeuvres in the Barents Sea, close to Russian territory, with a similar mission taking place in September that year, joined (controversially) by a Norwegian Naval frigate, *HNoMS Thor Heyerdahl*.[18] These events were meant to be signals to Moscow that the U.S. was not going to be ceding political and strategic oversight of the far north to Russian interests. However, these moves have also placed strains on American NATO allies in the Nordic region, including members that were less enthusiastic about assuming a harder line against Russia.

The perceived "icebreaker gap" between the U.S. and Russia continues to reflect the strategic thinking of the former, however, at least in terms of the perceived need to "show the flag" in the far north. In comparison with the United States, Russia currently has more than 40 functioning icebreakers, including nuclear-powered ships. In April 2019, one of the latest nuclear-powered submarines operated by Russia, the *Ural*, was formally launched in St Petersburg. In September the following year, after considerable technical issues, another similar vessel, the *Arktika*, was also launched and reached the North Pole the following month.[19] China has also been candid about developing a nuclear icebreaker,[20] potentially with an engine design that could be transferred to a military vessel. With its two existing conventional icebreakers, Beijing now has the ability to field missions at both poles with greater regularity.[21] As a response, statements published by Washington since 2019—including an April publication by the U.S. Coast Guard and an annual report on China's military activity by the U.S. Department of Defense released the following month—have sought to both delegitimise China as an Arctic actor and paint Beijing having interests that challenge security in the Arctic.[22] The far north has since become looped into the overall declining relationship between the two great powers, with the Trump government previously accusing Beijing of seeking a military presence in the Arctic by stealth, including the potential for submarine incursions and dual use strategies involving the development of scientific projects for later strategic purposes.

In other areas, a certain degree of great power cooperation in the Arctic can be observed, and this can partially be due to concerns about being perceived as having too divergent a regional policy. One prominent example of this regime-building behaviour has been the initial success of the Polar Code, confirmed in 2017 via the International Maritime Organisation, which has sought to regulate civilian ship transit both in the Arctic and in the waters off Antarctica.[23] Addressing the concerns about overfishing in the region as more open water becomes reachable, a Central Arctic Ocean fishing ban entered into force in October 2018 with American and Russian support in addition to that of Canada, China, the European Union, Iceland, Japan, Norway, and Korea.[24] However, there is still the high possibility that there strains on maintaining maritime security in the Arctic will continue to grow, as more of the region becomes ice free in the summer, as evidenced for example of reports in late 2020 of an increasing number of military encounters between U.S. and Russian vessels in the North Pacific and Bering Sea region.[25] With the likelihood of ongoing diminishing sea ice in the Arctic Ocean in the near-term and with the potential for open waters over the North Pole by as early as 2035 according to an August 2020 report,[26] the possibility of maritime security concerns multiplying in the region cannot be discounted.

As formerly inaccessible northern sea routes continue to open, maritime security concerns—including search and rescue, incidents at sea, and codes of conduct for regional sea-lane transit—have been subject to debates and subsequent agreements. At the same time, issues relating to maritime sovereignty and the boundaries of exclusive economic zones (EEZs) will also likely appear with greater regularity. Both the U.S. and Russia appear to be moving towards toughening their stances in this area. The Putin government, which has begun to view the Arctic as essential to its near-future economic planning, announced new stipulations in 2019 on the use of the Northern Sea Route by foreign vessels, introducing mandatory 45-day notifications of transit and the transfer of information on ships and their cargo to Russian authorities.[27] These rules have been subject to rebuke by American officials, with one U.S. Admiral responding to these policy changes by arguing that the Arctic was "nobody's lake." In addition, the Trump administration was said to be considering "freedom of navigation operations" in the Arctic Ocean, despite the considerable logistical challenges involved.[28]

In June 2019, the U.S. Department of Defense released an updated Arctic strategy report to Congress that illustrated the challenges that China and Russia present to security in the region, including concerns that Beijing may seek to influence Arctic governance via its emerging economic strength. The paper confirmed that the United States should build greater "situational awareness" of Arctic challenges, enhance operations in the region (including via military exercises and cold-weather training), and strengthen the Arctic's "rules-based order,"[29] a term that both China and Russia often interpret as a synonym for American hegemony.

Changed Definitions of Security

Until recently, security in the Arctic had traditionally been discussed within non-traditional, non-military structures, and indeed these so-called non-traditional areas of security remain of primary concern to many who observe the region, to say nothing of the four million persons who inhabit the far north. The most pressing of these matters has been the specific effects of climate change in the region, with the Arctic often being cited as the "canary in the coalmine" for the planet's overall risk of climate change effects. The far north is facing the erosion of polar ice and altered local weather conditions, with an associated set of impacts on local-level socio-economic affairs, including those affecting Indigenous communities.[30] The landmark 2018 study by the UN Intergovernmental Panel on Climate Change, which endeavoured to describe the global impact of a planetary temperature rise by 1.5°C in the coming years, confirmed that the Arctic regions would be most significantly affected.[31]

Thus, many discussions about regional security, including on the local and individual levels as well within the echelons of states and the international system, have used climate change as a starting point. Concerns include human security (health as well as food security) and matters of economics and developments, with related points concerning communication and transportation. The onset of the global pandemic during 2020 has if anything magnified these worries. Although many Arctic communities have been isolated from the worst of the outbreaks, they are still facing associated developmental strains due to the global health and financial crises.

Amid these changes, the Arctic is now facing the introduction, or reintroduction, of more "traditional" great power security issues as the strategic concerns of both major Arctic players—Russia and the United States—along with those of large non-Arctic states such as China, have appeared in the region with greater width and depth. This has led to two concerns as the study of Arctic security continues to evolve. First, there is the concern that the great power focus in the Arctic will represent a distraction from environmental and associated emergencies facing the region, and indeed that many of the great power security challenges are being inflated or transplanted from the south. Second, and more worrisome, is that effective global-level solutions to the changed conditions in the Arctic will be neglected as a strategic priority.[34] However, even though the Far North continues to be a source of international scrutiny due to threats of climate change, those security concerns may now have to share figurative space with classical power politics, as the region continues to move away from the perceived strategic periphery and towards the conventional in global strategic discourses.

Notes

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From Climate Change to Great Power Competition: Reprioritizing U.S. Arctic Policy

Heather A. Conley

A quick and effective diagnostic for understanding the evolution of U.S. Arctic policy over the past decade begins and ends with two U.S. military strategic bookends. The first is the U.S. Navy's 2009 "Arctic Roadmap," a product of the Navy's Task Force Climate Change (formed in 2009, the Task Force was disbanded quietly in March 2019).[1] The second is the U.S. Air Force's 2020 "Arctic Strategy: Ensuring a Stable Arctic through Vigilance, Power Projection, Cooperation, and Preparation."[2]

The 2009 Arctic Roadmap was the U.S. Navy's response to the January 2009 National Security and Homeland Security Presidential Directives (NSPD-66/HSPD-25) related to the Arctic.[3] The Navy's Roadmap broke new ground in that the U.S. military began to address the global defense and security implications of a rapidly transforming climate. Accompanied by vivid images of the diminishing polar ice cap and new shipping routes, the Roadmap labelled maritime boundary disputes as a key Arctic challenge and viewed engagement with Russia and China as opportunities. After assessing the likelihood of future conflict in the region, the Navy noted that there would be "no new Navy missions" in the Arctic, but that it should adopt the posture of being "prepared to increase Arctic engagement."

Fast forward 10 years to the most recent U.S. military Arctic strategy from the Air and Space Force, its first-ever Arctic strategy as a service. The Air Force rests its strategy on the foundations of the 2017 U.S. National Security Strategy, which frames U.S. national security policy as a growing competition between its two near-peer competitors (Russia and China).[4] It also draws inspiration from the 2018 National Defense Strategy and the 2019 Defense Department's Arctic strategy (which was legislated by Congress).[5] In its preface to the strategy, the Secretary of the Air Force, Chief of Staff of the Air Force, and the Chief of Space Operations note that "the Arctic region is critical to U.S. national security and homeland defense" and that "U.S. Air and Space Force are prepared to *deter adversarial behavior* [emphasis added] and to defend the homeland."[6] With its concentration of new fighter aircraft, northerly air bases, and missile defense capabilities, the U.S. Air Force has the most capabilities in the

Arctic of any branch of the military.

What caused the shift from "no new missions" in 2009 to "deter adversarial behavior" in 2020?

Following the collapse of the Soviet Union in 1991, the United States became strategically ambivalent about the Arctic. With its focus on environmental remediation, scientific research, and international collaboration, U.S. policymakers viewed the Arctic as a bespoke economic and environmental opportunity for bilateral cooperation with Russia, particularly between the Russian Far East and the state of Alaska, and for enhanced multilateral environmental engagement and cooperation through the Arctic Council. The United States lulled itself into a very deep strategic slumber from which it would occasionally and abruptly awake—as in 2007, when a Russian publicity stunt placed a Russian flag on the Arctic seabed at the North Pole and Russia resumed its long-range bomber flights in the Arctic. Shortly after these events, Washington returned to its previous state of policy inertia.[7]

Although the Arctic was mentioned (in the very last paragraph) of its 2010 National Security Strategy, the first term of the Barack Obama administration focused very little on the Arctic.[8] NATO ally Norway had prioritized the High North as a foreign policy issue and sought to elevate awareness in Washington of both the region's evolution and of its importance to the United States. But Oslo framed the region as "low tension," which was then a correct assessment. But for the United States, which was engaged in military conflicts in Afghanistan and Iraq while also seeking to "pivot" to the Indo-Pacific, low-tension regions receive little senior-level policy attention.

In its second term, the Obama administration did prioritize the Arctic as it prepared for its turn as two-year chair of the Arctic Council (which started in 2015). This began with the release of the 2013 National Strategy for the Arctic Region[9] as the Arctic featured more prominently as part of the Obama administration's ambitious climate agenda, which culminated in the December 2015 signing of the Paris Climate Accord. The Obama administration also created the new position of Special Representative to the Arctic region and reorganized a White House interagency coordination function to streamline state and federal coordination on Arctic issues to support its Arctic Council chairmanship agenda. U.S. policy priorities during this time focused on environmental protection and conservation, dramatically reducing natural resource development, and enhancing climate assessments and scientific collaboration in the Arctic. The administration's most consequential geopolitical decision was agreeing to increase the number of permanent observers to the Arctic Council in 2013, letting in six new countries—five of them from Asia, including China. After this, China's economic and scientific engagement in the Arctic accelerated under Xi Jinping's leadership.

At the same time, the Obama administration actively suppressed any discussion of Arctic geopolitics or military issues related to the region. This became known as "Arctic exceptionalism," which referred to the notion that the region should, and would, be exempted from growing geopolitical tensions—particularly following Russia's military intervention in, and annexation of, parts of Ukraine. Despite this, however, some competitive aspects did creep into U.S. policy: In 2015, President Obama announced that the United States would seek to finance and construct a new heavy icebreaker, noting that Russia had 40 such vessels, with 11 new ships on the way.[10]

The Donald Trump administration took office with four months remaining in the United States' Arctic Council chairmanship. While at first it largely left the Obama agenda and deliverables intact, the new administration began signaling that it would significantly shift its Arctic priorities to economic development, particularly regarding the reopening of onshore and offshore energy exploration leases in Alaska. It also indicated that it would seek to refute the scientific consensus regarding climate change and withdraw U.S. acknowledgement of the phenomenon. Later, the Trump administration's 2017 National Security Strategy did make passing reference to the Arctic, but only with respect to achieving desired outcomes in multilateral settings. Furthermore, the Special Representative position was left unfilled and the administration stripped mention of climate issues from government agency reports and websites. Much of the resulting U.S. Arctic policy was filled by Congress, which pushed the administration to produce regional defense strategies, develop a deep-water port in the American Arctic, and finance a new heavy icebreaker.

However, it was not until May 2019—in a speech from U.S. Secretary of State Mike Pompeo on the eve of an Arctic Council ministerial meeting hosted in Rovaniemi, Finland (then chair of the Arctic Council)—that the United States formally articulated its understanding of the Arctic as the latest arena for great power competition, thereby abruptly ending the notion of Arctic exceptionalism. Pompeo described the aggressive actions of China and Russia in the region and claimed the U.S. was entering "a new phase of strategic engagement in the Arctic, complete with new threats to national interests."[11] Having received little warning, if any, about the contents of this hard-hitting geopolitical speech, the other Arctic nations—including America's allies and partners in the region—responded with shock and silence. One day later, the U.S. blocked the Arctic Council's concluding ministerial statement because the document included references to climate change. The U.S. had isolated itself on Arctic policy on two consecutive days, with few results to show for it.

Three months later, the world was again surprised. In this case, it was after President Trump expressed an interest in purchasing Greenland from Denmark,[12] an initiative spurred by a perceived need to compete with Chinese infrastructure and mining investments in Greenland beyond the capabilities of the Danes. This announcement was another jolt to U.S. Arctic policy and Arctic relationships, leading senior American policymakers to discover that China was indeed present in the region (despite the existence of a Chinese scientific research station in the Arctic since 2004). This jolt, however, produced action, leading to a more significant U.S. diplomatic presence in Nuuk, Greenland as well as increased economic support that would not have been possible without Secretary Pompeo's Rovaniemi speech or the White House's focus on Greenland.

The United States has principally been in a reactive and defensive policy stance to what other state actors are doing in the Arctic. On occasion, this can promote U.S. policy over-reactions to "catch up" to what others are doing in the region. For some Washington policymakers, the development driving geostrategic competition in the Arctic is China's growing global economic presence and the related concern that, in the coming years, Beijing will have dominant control over strategic minerals and regional and global physical and telecommunications infrastructure by state-owned companies with ties to the Chinese military–perhaps in increasingly close cooperation with Russia. For other national security and defense officials, competition is driven primarily by Russian military advancements, particularly Russian submarine activities in the GIUK gap, its testing of new weapon systems, and its frequent and rapid military exercising.

The U.S. government's global hyper-focus on China, coupled with its limited understanding of Arctic geo-economic and geo-strategic trends, has led to concluding erroneously that China is playing a far greater role and having greater impact in the Arctic region than China's actual imprint warrants at the moment. China's vision for the Arctic is long-term and strategic, which the U.S. fails to fully grasp. The U.S. military and select members of Congress, on the other hand, are more deeply troubled by Russian military activities, arms control violations, and the regime's willingness to use military force in a variety of theaters—especially as both Russia and NATO members increasingly flex their military capabilities in the region. These developments should cause alarm, particularly if they are not accompanied by enhanced communications, transparency, confidence-building measures, and a dedicated military forum to avoid accidents and miscalculations. But for now, the U.S. government has viewed the Arctic solely in geostrategic and economic development terms as it scrambles to identify additional icebreaking capabilities that would give the U.S. greater presence in and access to the Arctic region. Encouragingly, the State Department has recently named a diplomat to be the new Special Representative to the Arctic region. At least during the Trump administration, however, Washington continued to demonstrate limited interest in the environmental protection activities of the Arctic Council.

U.S. Arctic policy will change significantly under the new President Joe Biden administration. The Biden team has signaled that it is likely to quickly restore a more climate-focused Arctic policy and engage more effectively within the Arctic Council. Yet it must also address Russia's military capabilities, particularly in the western Arctic. It is likely that the new administration will revert to a conservation-oriented approach and discourage economic development in the American Arctic and elsewhere. It will also need to enhance transparency with respect to China's growing economic and scientific presence in the Arctic and gain better insights into future Sino-Russian Arctic collaboration.

At the end of the day, the Biden administration must develop a consistent, positive and multifaceted diplomatic, economic, environmental, and security strategy in which it increases the U.S. physical presence and influence in the circumpolar Arctic by means of a well-resourced and balanced approach.[13] By actively engaging allies and partners across a range of maritime and terrestrial environmental issues, both bilaterally and multilaterally, the U.S. can shape its preferred policy outcomes as well as address the Arctic's evolving military and economic dimensions. It can also identify opportunities to constructively engage both Russia and China. The United States, with its allies and partners, can simultaneously address climate change and great power competition in the Arctic–but only with a bipartisan and multifaceted strategy of positive regional engagement.

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Prospects and Limitations for China as a New Arctic Player

Sun Yun

With the escalating great power competition between the U.S. and China, China has increasingly become the most discussed and debated player in the Arctic. The suspicion and hostility of other countries, particularly the United States, towards China's role and intention are unique and unprecedented, especially taking into consideration China's non-Arctic identity and the moderate level of its current engagement in the Arctic. As a non-Arctic state, China's activities in the Arctic can only be pursued through bilateral cooperation with Arctic states or through multilateral forums such as the Arctic Council. The lack of channels, conduits, practical experience, and capabilities are all serious constraints that China has to overcome before it can truly become a major power in the Arctic.

China sees the Arctic as a land of opportunities and, potentially, for energy co-development and commodity transportation if there is the chance. However, after 30 years of exploration, the Chinese have fundamentally come to terms with the reality that China's identity as a non-Arctic state is the biggest obstacle to its regional endeavors, as China cannot adopt any Arctic agenda without the support of an Arctic state. The Arctic region already has its own regional forum—the Arctic Council—and the behavior of any non-Arctic player is heavily constrained by the existing rules and norms for the region. Judging by the slow progress of China's Arctic activity and the fact that China has practically achieved only one success in the region (the Yamal LNG project), expanding China's influence in the Arctic has not been and is unlikely to be an easy task.

The U.S. Perception of a Chinese Threat in the Arctic

Until two years ago, China had not been viewed as a major concern in the U.S. government's statements about the Arctic. None of the key government reports, including President Obama's "National Strategy for the Arctic Region" (May 2013), the "United States Navy Arctic Roadmap for 2014 to 2030" released in February 2014, or the Department of Defense's 2018

National Defense Strategy made a specific reference to China in the Arctic.

However, since late 2018 and early 2019, the focus on China in the Arctic by the United States, especially from a military security point of view, has grown exponentially. In its 136-page annual report to Congress on China's armed forces released on 2 May 2019, the Pentagon devoted specific attention to its "Special Topic: China in the Arctic." The report cast doubt on China's claim to be a "near-Arctic state." In particular, it echoed Danish concerns about China's expanding capabilities and interests in the region, stating that China's interest in establishing a research station, a satellite ground station, airport renovations, and mining in Greenland could "support a strengthened Chinese military presence…which could include deploying submarines to the region as a deterrent against nuclear attacks."[1] Clearly, the U.S. fears that Chinese civilian development in the region could be an easy entry for Beijing's future military deployment. The Pentagon also pointed out that the Arctic provides an opportunity for Sino-Russian commercial cooperation, citing the Yamal LNG project.

Four days after the Pentagon report's release, Secretary of State Mike Pompeo gave a speech at the meeting of the Arctic Council in Finland on "Looking North: Sharpening America's Arctic Focus," in which he singled out China, both in terms of commercial investments and militarization in the Arctic. Similar to the Pentagon's civil-military connection, Pompeo stated that "Beijing attempts to develop critical infrastructure using Chinese money, Chinese companies, and Chinese workers – in some cases, to establish a permanent Chinese security presence."[2] Notably, Pompeo likened China's intentions in the Arctic to its recent activities in the South China Sea and asked, "do we want the Arctic Ocean to transform into a new South China Sea, fraught with militarization and competing territorial claims?"[3] These statements represent the U.S. government's growing concern about China's commercial and military intentions in an area Washington sees as outside of Beijing's sphere of influence.

The enhanced U.S. perceptions of China as a threat to its interests in the Arctic took place in the context of intensified great power competition between the U.S. and China during the Trump administration. The administration's China policy was based on a judgment that the engagement strategy aimed at reforming China and integrating it within the "rules-based" system has failed, leaving the U.S. no option but to treat China as an aggressive competitor.

Despite a tradition of international cooperation and the low level of tensions in the Arctic region, China's interests and activities in the Arctic were singled out by the Trump administration as introducing a new arena of great power competition. Secretary of State Pompeo's May 2019 Arctic Council speech serves as the strongest evidence that the U.S. government perspective on China's involvement in the Arctic is saturated with hostile interpretations, adamantly rejecting and denying its positive impact or value. In this construct, China is seen as a threat to be countered rather than a potential partner to be engaged.

While the U.S. national security community has defined the Arctic as vulnerable to "strategic spillover" from tensions, the growing and popular narrative is that China's activities in the South China Sea represent a pattern for its engagement in the Arctic. The argument may not be that China is trying to establish territorial claims in the Arctic, but that China's aggressive behavior in the South China Sea suggests important patterns and precedents regarding its adherence to international maritime laws elsewhere, including the Arctic region. Associated with China's actions in other maritime domains, the Congressional Research Service has raised the possibility of seeking to impose punitive actions, such as suspending China's observer status at the Arctic Council.[4] As stipulated by the Arctic Council's rules of procedures, the observer status of any country is subject to review every four years, based largely on their compliance to the 1996 Ottawa Declaration of the Arctic Council. China's opaque economic activities, military intentions, and rapid expansion in the Arctic could be arguably seen as in violation of the Ottawa Declaration, which could directly affect China's participation in this most important regional forum on the Arctic.

Defining the Chinese Threat in the Arctic

If anything, the Chinese Arctic policy community feels misunderstood and defamed by the United States. Chinese experts do not see China's technological capability as nearly well enough developed to credibly project power in the Arctic. China does not see the Arctic as a closed region exclusive to the Arctic states. Its ambition goes as far as ensuring the openness and accessibility of the region for China rather than dominating the region and keeping it closed to other powers. However, China's public policy statements have not helped its own case. By asserting China's rights and framing the Arctic primarily as a global governance issue, and by prioritizing the Polar Silk Road as China's strategic Arctic endeavor, China's enthusiasm and actions in the Arctic inevitably invite scrutiny and suspicion.

In addition, Arctic policymaking in China is at best opaque, creating ambiguities about its priorities and ambitions. While Beijing publicly claims its goals in the Arctic are about "knowledge, protection, development and governance" of the region, it also declares China's "activities, assets and other interests" in the polar regions are intrinsic to China's national security.[3] China's record of incremental development of overseas power projection capability in the name of asset protection, as attested by its naval base in Djibouti, does suggest a pattern possibly replicable in the Arctic. Observers get a glimpse of China's capabilities only when Beijing chooses to publicize information, such as that about its nuclear-powered icebreakers, and this exacerbates anxieties about what other capabilities may be already under way but not yet revealed.

However, defining the scope and nature of the perceived Chinese threat in the Arctic requires a focus on concrete capabilities rather than speculation about intentions and potentials. Countries need to be vigilant about China's intentions and activities, but also realistic in gauging the nature and depths of the threat it concretely poses.

In terms of military projection, the most critical weakness for China is that any Chinese military or security presence in the Arctic will have to be supported by (or acquiesced to) at least one Arctic state. It is difficult to see any Arctic state, including Russia, extending that invitation. Without any significant military presence, the Chinese face essential technical constraints and difficulties of access and capability development. The fact is that China, especially its Navy, does not have a polar environment to develop, practice, and exercise operational capabilities that are fundamental there. Nor has it designed naval ships with the polar environment in mind. Without proper equipment or operational background and abilities, the Chinese military might be able to access the Arctic in favorable seasons. But becoming a significant or dominant military player will require much more than what China possesses.

Had the Arctic states been as poor and desperate for capital as Africa, the most lucrative and effective policy instrument in China's foreign playbook—financial capital—would have paved a much smoother path for Beijing to establish, strengthen, and expand its influence in the Arctic region. However, perhaps with the exception of Russia, Iceland, and some local and commercial actors in Alaska and Greenland, most of the Arctic region suffers from far less vulnerability to and dependence on Chinese financing. The more comprehensive and stringent foreign investment regulations, especially in terms of environmental and social impacts by the Scandinavian and North American countries, make them quite immune to Chinese "predatory" lending.

China's Identity Challenge in the Arctic

China's approach to the Arctic is heavily anchored in the perceived disadvantages of not having an "Arctic identity" that would legitimize significant Chinese Arctic engagement. Because China is not an Arctic country and does not have direct territorial or maritime claims in the Arctic region, most if not all its actions have to be pursued with the consent from or in collaboration with Arctic states to give China a foot in the door. In this context, China's attempts to focus on high-politics issues will inevitably generate discomfort, vigilance, and even rejection from Arctic states. And because China does not hold critical leverage over most of them, it must resort to an indirect and circuitous approach, engaging in low-politics issues of the region.

The identity problem is a fundamental obstacle to China's ambitions in the Arctic. China's Arctic policy community has called China an integral player and a key stakeholder in the Arctic's affairs and has identified key Chinese national interests in the Arctic. However, China's exhaustive efforts to justify its roles in the Arctic also reveal a carefully calibrated approach made necessary by China's non-Arctic geographical status. China understands that it is not an Arctic state and cannot claim the same rights as the Arctic states. This fact significantly limits China's ability to expand its presence and influence in the Arctic region. It also requires China to rely more on multilateral platforms and bilateral cooperation than on unilateral approaches to pursue its interests in the Arctic.

This is a key caveat in evaluating China's ambitions and approaches to the Arctic. China is indeed ambitious and will not ignore any opportunity to claim what could potentially and legitimately grant it entitlements or interests in the region. Given the opportunity, China will maximize its efforts to shape the discourse on the Arctic to expand its voice and pursue its interests. However, due to China's non-Arctic state status, many of

China's interests have been pursued indirectly and cautiously.

To counter China's disadvantaged status in Arctic affairs as a non-Arctic state, Chinese discourse prioritizes the Arctic as a global issue, therefore emphasizing multilateral global mechanisms such as the UN. This tendency is particularly conspicuous in its Arctic Policy white paper, given the prevalence of references to the UN Charter and UNCLOS in the management of Arctic affairs and global governance issues such as climate change. China's goal is to keep the Arctic as an open rather than closed region.

China does seek participation in and beyond Arctic regional organizations. Joining the Arctic Council as an observer in 2013 has been lauded in China as a landmark success for China's Arctic policy, as China finally gained legitimate recognition in the perhaps most important Arctic multilateral consultation and governance mechanism. However, China bears no illusion about the limited utility of the Arctic Council for China in terms of its authority and capacity in the Council as an observer. China understands perfectly well that observers only have very limited rights at the Arctic Council and are not allowed to participate in agenda-setting or decision-making. In other words, the Arctic Council is one key channel for China's justified and legitimized interests in the Arctic region. However, for China, joining the Arctic Council is neither a precondition nor an outer limit for China's involvement in the Arctic affairs.

Bilateralism and Russia as China's Principal Arctic Partner

Understanding the sovereignty and rights of the Arctic states, China pursues bilateral cooperation with Arctic states for practical reasons. Among its economic interests, China prioritizes the development of Arctic shipping routes and natural resources in the Arctic region. In China's experience, bilateral cooperation in the Arctic has been most productive in expanding China's economic footprint. The pairing of China's economic power with some Arctic states' need for investment has been particularly helpful in the case of Russia. The international isolation of and sanctions on Russia since the Ukraine crisis are the critical factors that made it possible for China to reach key Arctic deals with Russia, including the Yamal LNG project in 2013 and the Polar Silk Road in 2018. Similarly, Iceland and Greenland are also enthusiastic about economic cooperation with China bilaterally.

Three features shape Sino-Russia cooperation in the Arctic. The first is that Russia is the indispensable partner for Chinese ambitions to become a "near-Arctic" stakeholder. As a non-Arctic state, China needs strong advocacy from an Arctic state for its activities in the region. Against the backdrop of intensifying U.S.-China great power competition and, consequently, the growing strategic cooperation between Beijing and Moscow, Russia is China's irreplaceable partner for Arctic exploration given Russia's location, capability, presence, influence, and its status as an "Arctic superpower."

Second, the Russian and Chinese demands for each other are asymmetrical in nature. In the Arctic region, Russia primarily has its eyes on Chinese financing in order to commercialize its underdeveloped Far North, especially along the Northern Sea Route. But for Beijing, commercial considerations are secondary to the top priority of opening access, and creating a presence, for China as a non-Arctic state. These two goals could be mutually complementary in building and strengthening the Chinese presence and influence while serving the Russian demand for financing and investment and, in turn, revenue creation from the North. To date, the Yamal LNG project remains China's only successful commercial project, not just in the Russian Far North but within the whole Arctic region.

Third, Sino-Russian cooperation in the Arctic has so far existed in the economic, research, governance, and navigation arenas, with the military domain as a more remote sector. While Russia continues to enhance its military presence in the Arctic with multiple dual civilian/military use capabilities, from ports to airfields, China has pursued a lower profile in its Arctic activities, prioritizing scientific research (which can also provide valuable intelligence opportunities), governance, energy, and shipping over hard-security issues. This is not only because China does not wish to present itself as a challenger to Russia's traditional military dominance in the Arctic, but also because Beijing does not yet have a functional military force that can operate in the Arctic today.

Conclusion

Constrained by its non-Arctic state geographical status, China's activities and approach to the Arctic rely primarily on "soft" pursuits such as scientific research, global governance, and economic cooperation instead of on high politics issues. It pursues cooperation with Arctic states on multilateral, regional, and bilateral levels and identifies bilateral cooperation as an effective approach to achieve practical results. Between the U.S. and China, the Arctic might be a more recent domain for the great power competition. Given China's record of using a strong economic presence to pave the ground for the expansion of its strategic influence, a military threat by China in a perhaps already overcrowded Arctic region might be plausible. However, to clearly define the Chinese threat and craft effective coalition and counterstrategies, an accurate understanding of China's specific military capabilities that pertain to the Arctic is desperately needed.

As a latecomer to the Arctic, China faces innate weaknesses and external constraints to the role it could play in the high politics issue in the region. China does not possess critical leverage over most Arctic states to impose itself in the region, although its indirect and circuitous approach still deserves careful examination and vigilant monitoring.

Notes

1. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2019*, 2 May 2019, https://media.defense.gov/2019/May/02/2002127082/-1/-1/1/2019_CHINA_MILITARY_POWER_REPORT.pdf, 114.
2. Pompeo, Michael, "Looking North: Sharpening America's Arctic Focus," Arctic Council, Rovaniemi, Finland, 6 May 2019, https://www.state.gov/looking-north-sharpening-americas-arctic-focus/.
3. Ibid.
4. Congressional Research Service, "Changes in the Arctic: Background and Issues for Congress," accessed 1 December 2020, https://fas.org/sgp/crs/misc/R41153.pdf, 33.
5. Ministry of Foreign Affairs of the People's Republic of China, "China's Arctic Policy [中国的北极政策 Zhongguo de beiji zhengce]," 26 January 2018, https://www.fmprc.gov.cn/web/ziliao_674904/tytj_674911/zcwj_674915/t1529258.shtml;

   "The polar issue is raised to the height of national security by China [极地问题被中国提升至国家安全高度 Jidi wenti bei Zhongguo tisheng zhi guojia anquan gaodu]," Polar and Ocean Portal [国际极地与海洋门户 Guoji jidi yu haiyang menhu], 2 July 2015, http://www.polaroceanportal.com/article/265.

A Russian Perspective on High Politics in the New Arctic

Andrei Zagorski

Since 2014, high politics have spilled over into the Arctic amid tensions between Russia and the West. Western companies withdrew from the relatively few existing Russian offshore projects. The access of Russian companies to equity markets remains limited. Military-to-military contacts and joint exercises have been suspended. The development of an inclusive regional security architecture is on hold, at best. In 2014, the Canadian Chairmanship would not issue visas for Russian officials to attend Arctic Council Working Groups meetings, and Canadian representatives would not attend such meetings in Moscow.[1]

Nevertheless, until recently the Arctic agenda remained cooperative. The establishment of the Arctic Coast Guard Forum and the adoption of the Polar Code in 2015, the 2017 Agreement on enhancing international Arctic scientific cooperation, the 2018 Agreement to prevent unregulated High Seas fisheries in the Central Arctic Ocean, and the approval of the recommended scheme for vessel traffic in the Bering Strait are examples. Together, they seem to reaffirm the concept of "Arctic exceptionalism," which suggested that regional cooperation, though not entirely compartmentalized, remained largely shielded from the spillover of tensions elsewhere.[2]

Still, the question emerges: Can "Arctic exceptionalism" survive the current crisis?[3] Recently, the discourse about the extension of great power competition to the Arctic has fueled fears of a militarization of the region.[4] Against this background, the failure of the 2019 Arctic Council ministerial meeting to reach agreement on the text of a substantive Declaration raised concerns about consequences for the Arctic Council's continued effectiveness.[5]

This paper challenges the vision of the Arctic descending into power politics and arms race. It argues that the real challenge to cooperation lies not in defense postures but in the widening gap in the policies of Arctic Council member states regarding sustainable development. The election of Joe Biden as president of the U.S. may reverse this trend.

The paper begins by asking the question: What makes the Arctic region unique compared to existing regions of high tension? I argue that the exceptionality of the Arctic cannot be explained by continued cooperation but, rather, by the absence of significant conventional military activities (except for the warmer seas adjacent to the North Atlantic). The paper continues by discussing defense postures of the Arctic Ocean coastal states while asking whether low-intensity military activities in the region may evolve into an arms race. It then discusses the most recent Russian strategy for the Arctic, asking whether Moscow is preparing for great power competition. The paper concludes by suggesting that cooperation in sustainable development is most likely to continue even if the military-political landscape deteriorates. Strengthening the cohesiveness of State policies on the conservation of the Arctic Ocean will be crucial for this to happen.

Arctic Exceptionalism

Käpylä and Mikkola summarize arguments in support of the concept of Arctic exceptionalism. First, they argue, "there is not that much to fight over." There are no significant territorial disputes. Maritime boundaries within the territorial seas and the exclusive economic zones (EEZ) are delimited (except for Canada). Ownership of estimated hydrocarbon resources, located almost entirely within the EEZs, is uncontested. The single unsettled issue involves the limits of the extended continental shelf with overlapping claims by Canada, Denmark, and Russia (and, eventually, the United States). However, Canada, Denmark, and Russia have agreed to delimitate their rights cooperatively once the Commission on the Limits of the Continental Shelf (CLCS) has examined their claims. So far, they have acted accordingly. It is important to note that the line delimiting U.S. and Russian maritime zones in the Arctic Ocean was drawn in 1990 and is not questioned.

Second, the Arctic has existing governance structures that foster cooperation and defuse potential conflicts, including the 1982 UN Convention of the Law of the Sea (UNCLOS), the CLCS, and the Arctic Council.

However, virtually all these arguments could apply to regions of high tensions as well. Admittedly, the Black Sea region is poisoned by contested sovereignty and jurisdiction claims, but not the Baltic. In both regions, there are inclusive regional frameworks, notably the Council of the Baltic Sea States (CBSS) and the Organization of the Black Sea Economic Cooperation (BSEC). Despite the degradation of cooperative security architecture and increased military activities of NATO and Russia in these regions, the CBSS and the

BSEC continue to work on sustainable development, environmental protection and blue economy, combatting crime, and providing emergency assistance.[7] Maritime cooperation continues within other frameworks as well.

Supporting regional frameworks aimed at "developing cooperation in areas where all littoral states find common ground: economy; environment; science; fight against organized crime; human trafficking and trafficking in illicit substances" seems consistent with the military deterrence pursued by NATO.[8] Such cooperation is also appreciated in Moscow to facilitate trust building and improve the political climate in the respective regions.[9] Continued regional cooperation on maritime and soft security issues amid Russian–Western tensions is thus not unique to the Arctic. What makes it unique is the fact that such cooperation is not overshadowed by increased military activities of Russia and NATO in most of the region.

Why does the Arctic not witness any significant increase in conventional military activities (with the exception of the maritime areas adjacent to the North Atlantic), and is this state of affairs sustainable over time? One possible explanation involves the harsh physical and climatic conditions in most of the region, which imposes special requirements for deployable and sustainable conventional capabilities.[10] These requirements make the costs of an Arctic defense build-up unreasonably high compared to the low potential for conflict. As long as these conditions persist,[11] they will protect most of the Arctic from militarization unless a catastrophic event or the emergence of a serious threat triggers a rethinking and convinces the Arctic states to invest in much enhanced capabilities and infrastructure.

Defense Postures

For Russia and the United States, the region is important militarily primarily from the perspective of maintaining strategic stability. Though their long-distance strategic nuclear weapons are not stationed here (with the exception of Russia's Northern Fleet), both invested heavily in early warning, surveillance, and air and missile defense, as well as airfields for refueling strategic long-range bombers. This investment was considered cost-effective since, in case of nuclear war, ballistic missiles and strategic bombers would traverse the Arctic space. The main task of the Northern Fleet is to protect Russian submarines with sea-launched ballistic missiles on board from assaults—particularly by U.S. submarines on patrol in the

Arctic Ocean.

With the end of the Cold War, U.S. and Russian offensive strategic capabilities were dramatically reduced and subjected to bilateral limitations and inspections that ensure sufficient strategic stability and predictability. The new Russian hypersonic glide vehicle Avangard and the heavy missile Sarmat are covered under the nuclear arms control regime.[12] The intensity of U.S. and Russian submarine patrols in the Arctic Ocean reduced significantly, although they never stopped. These reductions were not offset by any increased conventional (non-strategic) military activities, for which the Arctic would be the war theatre. Recent studies of a possible Arctic arms race have concentrated on conventional capabilities that could be deployed and sustained in the Arctic and have left aside (as for any other region) U.S. and Russian strategic capabilities.[13]

Conventional capabilities in most of the Arctic remain minimal. Apart from multiple specific challenges, it is particularly large amounts of heavy winter ice and increased movement of ice from spring to fall that is and will remain challenging for any surface operations for decades to come, even as seasonal ice declines as projected.[14] Winter ice loss in the Arctic is less dramatic than in the summer, with the Barents Sea winter ice reductions dominating this trend.[15] However, even in the summer, the conditions of Arctic waters will continue to impose limitations on shipping, particularly due to the risk of being trapped by wind-blown ice or the threat of icing.[16]

As a result, developing deployable naval capabilities for the Arctic would require building special surface ships with unique features enabling them to operate in ice and extreme cold conditions. These features make them expensive and would limit their performance outside the region.[17] Regular combat vessels could operate with care in the Arctic waters to the edge of the ice for a few weeks in summer, but they could not operate in the channel of ice following an icebreaker without extensive modification to the hull and propulsion systems.[18]

Naval capabilities deployable in the Arctic are very limited. The Royal Danish Navy has four ice-capable Thetis-class offshore Patrol Frigates used in the waters of Greenland and the Faroes. In 2008–2017, the Danish navy replaced the three Agdlek-class cutters with the new Knud-Rasmussen-class patrol vessels operating in the Greenlandic waters.[19] Canada is building six ice-capable Arctic and Offshore Patrol Ships, the first of which completed sea trials in July 2020.[20] In 2017, an unarmed Ilya Muromets-class icebreaker was handed over to the Russian Northern Fleet, and in 2019, an Ivan Papanin ice-capable patrol vessel, similar to the Thetis frigates, was launched.[21] None of those ships can operate in the Arctic year-round. In addition, the Canadian, Norwegian, and Russian Coast Guards, which perform "constabulary" rather than military tasks,[22] employ a few ice-capable patrol ships or icebreakers. In 2019, the U.S. launched a program to build up to six Coast Guard Polar Security Cutters.[23]

The defense policy reviews conducted by the Arctic states between 2014 and 2020, amid the growing tensions between Russia and the West, don't reveal any plans to further increase their naval capabilities deployable in the Arctic. In particular, the U.S. Navy has consistently resisted the political pressure and does not plan to acquire any ice-capable ships, claiming that it "does not currently have a specific capability requirement for ice-hardening existing vessels or for the construction of new ones," not least due to "a low level of military threat in the Arctic."[24]

Even just sustaining larger Arctic naval capabilities would require tremendous investment in coastal infrastructure in an environment in which, due to warming, "thawing permafrost, compounded by storm surge and coastal erosion, adversely affects [defense] infrastructure," and "complicates the development of new and resilient infrastructure."[25]

Against this backdrop, it is not surprising that the conventional military activities of Russia, the United States, and NATO increased primarily in the "warmer" parts of the Arctic in the Barents and the Norwegian Seas. This area is adjacent to the North Atlantic, already an arena of mutual deterrence postures of Russia and NATO. For example, the U.S. 2nd Fleet, reestablished in 2019, and the Russian Northern Fleet have overlapping areas of operations in these seas.

The main Russian bases are also concentrated here, some 4,300 miles away from U.S. bases in Alaska. The six small bases being modernized mainly on the islands with some 1,200 servicemen are equipped with long-range radars, air-, missile- and submarine-defense capabilities. Few have airfields for strategic long-range bombers to refuel. Yet the Danish Defense Intelligence Service believes that with these bases Russia "will push the country's forward line of defense into the Arctic Ocean."[26]

Russian Arctic Strategy and Concerns

In 2020, President Vladimir Putin endorsed two new strategy documents:

in March, the "Basics Principles of the Russian Federation Policy in the Arctic to 2035" was released,[27] followed in October by the Strategy for developing the Arctic Zone of the Russian Federation and ensuring national security until 2035.[28] These documents are largely identical in formulating Russia's national interests, threats and challenges to national security and the country's policy objectives. The Strategy, however, lays out ambitious goals for the economic, social and sustainable development of the Russian Arctic in great detail. Both emphasize the goals of sustaining international cooperation, resolving disputes, and promoting a central, cooperative role for the Arctic Council during the Russian Chairmanship (2021–2023), including cooperation on sustainable development and conservation of the cultural heritage of Indigenous Peoples.[29]

Both documents take a comprehensive definition of national security, dominated by non-military threats, such as the continued depopulation of the Russian Arctic, poor quality of life, underdeveloped social, transport and technical infrastructure, lethargic pace of economic and technological development, and inadequate environmental monitoring. While this emphasis is consistent with the previous strategy documents of 2008 and 2013, the 2020 ones place special emphasis on the consequences of climate change that are leading to more frequent natural disasters, particularly thawing permafrost. Military and international political issues occur at the end of the section of national security challenges that may grow to become threats.[30]

Although external challenges are not spelled out in detail, both documents highlight several concerns. These include a growing foreign military presence near the Russian Arctic borders, increasing potential for conflict, and attempts to discredit Russian activities in the region.[31]

The Russian defense establishment points particularly to the reestablishment of the U.S. 2nd Fleet, the increasing presence of U.S. marines stationed in Norway, more active military exercising, and a surge in foreign reconnaissance flights.[32] Russian concerns continued growing in 2020 with the U.S. Navy conducting exercises in the Barents Sea in the spring and autumn, and the decision allowing U.S. nuclear submarines to dock near Tromsø (Norway).[33] Nevertheless, Moscow is not overdramatizing these developments. At the end of 2019, Northern Fleet commander Vice-admiral Alexander Moiseev found his area of responsibility to be "stable and manageable."[34]

While the 2020 Arctic Strategy does not point to signs of growing potential for conflict in the Arctic, the Basic Principles 2035 refers to the uncompleted delimitation of the maritime zones.[35] Since the single incomplete delimitation issue involves Russia's overlapping claims with Canada and Denmark on the extended continental shelf, it is important that both strategy documents confirm that Moscow will pursue delimitation on the basis of international law and agreements reached with other countries.[36] Should Canada and Denmark adhere to the relevant 2014 agreement, this "challenge" would not become a "threat."

The reference to the "attempts to discredit Russian activities in the region" refers to the recent discourse of the rising great powers' rivalry with allegations that are not accepted by Moscow and simply not factually verified.

Conclusions

The military activities of Russia, the United States, and NATO have visibly increased in the Arctic areas adjacent to the North Atlantic. They are unrelated to any dispute in the Arctic proper but rather to the evolving deterrence postures of Russia and the West in the North Atlantic and the Baltic Sea areas. Most of the Arctic remains protected from an arms race by its harsh physical environment. In fact, dynamic warming effects make it more difficult for navies and armed forces to operate in this changing, challenging environment.

Although both Russia and the West seem to regard Arctic cooperation as consistent with their deterrence policies, the extension of deterrence postures from the North Atlantic into the adjacent Arctic seas justifies concern, especially against the backdrop of suspended or severely reduced military-to-military contacts and communications between Russia and other Arctic states. While land exercises in the "European Arctic" are subject to confidence- and security-building measures (with some gaps to be closed), naval activities are not. This increases the potential for incidents in overlapping areas of operations. A lack of proper communications between military establishments can lead to assumptions of worst-case scenarios that usually pave the way to slide into a security dilemma.

To prevent this, an inclusive regional platform for raising and discussing concerns needs to be (re)established. Proper communication between and among military establishments should be restored to address any emergencies. Based on consultations, military experts should agree on a set of additional rules or a code of conduct to increase the predictability of military activities in the Arctic. All states maintain activities but should avoid those that may be interpreted by others as provocative.

Notes

1. For instance: "Канада отказалась от участия в рабочих встречах Аркти ческого совета" ["Canada declined from attending Arctic Council working meetings"], *Kommersant*, 16 April 2014, https://www.kommersant.ru/doc/2453746. As sanctions continue, this may affect the Russian Chairmanship in 2021–2023.
2. Juha Käpylä, Harri Mikkola, On Arctic exceptionalism. Critical reflections in the light of the Arctic Sunrise case and the crisis in Ukraine. FIIA Working Paper, April 2015, https://www.fiia.fi/wp-content/uploads/2017/01/wp85.pdf.
3. Helge Blakkisrud, Introduction: "Can Cooperative Arctic Policies Survive the Current Crisis in Russian-Western Relations?", in *Arctic Review on Law and Politics*, Vol. 9 (2018), p. 377.
4. See, for instance: Michel T. Klare, "A World War Could Break Out in the Arctic", in *The Nation*, 11 February 2020.
5. Timo Koivurova, "Is This the End of the Arctic Council and Arctic Governance as We Know It?", in High North News, 12 December 2019.
6. Juha Käpylä, Harri Mikkola, op. cit., pp. 8–10.
7. See: Danish Presidency 2019–2020 [in the CBSS], https://cbss.org/report/danish-presidency-2019-2020/; Organization of the Black Sea Economic Cooperation: http://www.bsec-organization.org/.
8. NATO Parliamentary Assembly. Committee on the Civil Dimension of Security. *Advancing Stability in the Black Sea Region. Special Report*. Special Report. Ulla Schmidt (Germany) Special Rapporteur. 7 October 2017, p. 17, https://www.nato-pa.int/download-file?filename=sites/default/files/2017-11/2017%20-%20159%20CDS%2017%20E%20rev.%201%20-%20BLACK%20SEA%20-%20SCHMIDT%20REPORT.pdf.
9. See e.g.: The Ministry of Foreign Affairs of the Russian Federation. *Press release on the approval of Common Maritime Agenda for the Black Sea*. 1085-24-05-2019, http://www.mid.ru/en/foreign_policy/news/-/asset_publisher/cKNonkJE02Bw/content/id/3659330.
10. See: Michael D. Bowes, *Impact of Climate Change on Naval Operations in the*

Arctic (Alexandria (VA): Center for Naval Analysis, 2009); Kyle D. Christensen, *The Arctic. The Physical Environment* (Defence R&D Canada – Centre for Operational Research and Analysis – CORA, 2010).

11. These conditions are likely to persist until the end of the century. According to the recent IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, "For stabilized global warming of 1.5°C, sea ice in September is likely to be present at end of century with an approximately 1% chance of individual ice-free years". See: Meredith, M., M. Sommerkorn, S. Cassotta et al., "Polar Regions". In: H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte et al. (eds.), *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (IPCC, 2019), p. 223. URL: https://www.ipcc.ch/site/assets/uploads/sites/3/2019/11/SROCC_FinalDraft_FullReport.pdf.

12. Rose Gottemoeller, "Rethinking Nuclear Arms Control", in *The Washington Quarterly*, Vol. 43 (2020), no 3, p. 155. DOI: 10.1080/0163660X.2020.1813382.

13. Christian le Mière, Jeffrey Mazo, *Arctic opening: insecurity and opportunity*. – IISS (Abingdon, New York, 2013); Siemon T. Wezeman, Military capabilities in the Arctic. SIPRI Background Paper. 2012; Siemon T. Wezeman, *Military capabilities in the Arctic. A new cold war in the High North?* SIPRI Background Paper. 2016; Andrei Zagorski, *Нестратегические вопросы безопасности и сотрудничества в Арктике* [Conventional security and cooperation in the Arctic] (Moscow: IMEMO, 2016); Andrei Zagorski, Безопасность в Арктике [Security in the Arctic] (Moscow: IMEMO, 2019).

14. *Arctic Planning. Navy Report to Congress Aligns with Current Assessments of Arctic Threat Levels and Capabilities Required to Execute DOD's Strategy*. United States Government Accountability Office. Report to Congressional Committees, November 2018, p. 7. URL: https://www.gao.gov/assets/700/695312.pdf.

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Effect of Increased Geostrategic Competition on the Arctic Council and Other Organizations

Bernard W. Funston

Introduction

NPAC 2020 explored issues reflecting the degree to which "high politics" or great power geostrategic rivalries have reasserted themselves into Arctic international relations in recent years—and what implications this state of affairs might have for the future. Although the NPAC conference took place before the American election, its outcome should have a significant impact on both conflict and cooperation in the Arctic in the future. Since its inception in 1996, the Arctic Council has depended on the positive participation of the U.S. to develop the Council's standing and relevance in relation to Arctic-related knowledge production and policy dialogue. Arctic cooperation has not always existed and it is not inevitable. The recent construct that Arctic cooperation is in some sort of separate bubble of cooperative relations and operates outside of and untarnished by the ebbs and flows of larger geopolitical forces is at best wishful thinking. To form a more complete picture, it is necessary to remind ourselves of the background of Arctic cooperation, and the impact of the outgoing U.S. administration on it.

The Emergence of Arctic Environmental Cooperation[1]

The geopolitical situation at the time of the collapse of the Soviet Union in 1991 provided opportunities to advance normalization of the West's relations with Russia. Scientific cooperation on environmental matters in the Arctic appeared to be among the most promising and least political means to do so. The Arctic region was remote, unfamiliar and on the periphery of national affairs—even in most of the Arctic states in those years—and this political upheaval provided ample room for diplomatic maneuvering.

In the 1980s a number of significant environmental issues in the circumpolar North came to public attention: environmental degradation in parts of the Soviet Arctic resulting from mineral production on the Kola Peninsula and at Norilsk as well as dumping of radionuclides in the Kara and White seas; the Exxon Valdez major marine oil spill in Prince William Sound, Alaska in March 1989; and in Canada, where disturbing findings of significant levels of various persistent organic pollutants, heavy metals, and other trans-boundary pollutants in humans and wildlife in northern Canada raised serious health concerns.

In 1987 Mikhail Gorbachev, General Secretary of the Communist Party of the Soviet Union, had proposed in a speech in Murmansk that the Arctic become a "zone of peace" and cooperation. He called for the development of "an integrated comprehensive plan for protecting the natural environment of the north." This prompted Finland to convene a meeting of all eight Arctic states in Rovaniemi in early 1989 to discuss a potential collective response. Subsequent meetings were held in Yellowknife in 1990 and again in Rovaniemi in 1991.

The Finnish initiative produced the Arctic Environmental Protection Strategy (AEPS), which included participation from all the Arctic states. The AEPS is composed of four programs:

- Arctic Monitoring and Assessment Program (AMAP)
- Conservation of Arctic Flora and Fauna (CAFF)
- Protection of the Marine Environment (PAME) and
- Emergency Prevention, Preparedness and Response (EPPR).

Under the AEPS, Environment Ministers provided direction at their biennial meetings. The substantive work of the four working groups was overseen by Senior Arctic Affairs Officials (SAAOs) meetings every six months. Observers included Germany, Netherlands, the United Kingdom, the Nordic Council, UNEP, UN/ECE, the International Arctic Science Committee, and the Northern Forum.

An innovative feature of the AEPS was the inclusion of Indigenous Peoples' organizations as observers. The Inuit Circumpolar Conference (now the Inuit Circumpolar Council), the Nordic Saami Council (now the Saami Council) and the Association of the Peoples of the North of the USSR (now the Russian Association of Indigenous Peoples of the North, RAIPON) were accorded observer status. Observers were not permitted to attend meetings of SAAOs. Indigenous leaders were strongly opposed to being sidelined in this way and at the first AEPS ministerial meeting in autumn 1993 in Nuuk, Greenland, Ministers agreed that exclusion of Arctic Indigenous Peoples was contrary to the spirit of circumpolar co-operation. Thereafter the three

Indigenous Peoples organizations were allowed to attend and intervene in all meetings of the AEPS. These Indigenous Peoples' organizations came to be known as "Permanent Participants" to distinguish them from observers.

However, even as the AEPS was being negotiated, Canada was promoting the concept of an Arctic Council in a speech by former Prime Minister Brian Mulroney during a visit to Leningrad in November 1989.

The Emergence of the Arctic Council[2]

The Arctic Council concept advanced by Canada was intended to create a body with a broader mandate that took into account matters of sustainable development and the so-called "human dimensions" of the Arctic. The Canadian Initiative gained momentum when Canada appointed an Ambassador for Circumpolar and Aboriginal Affairs in October 1994 with a mandate to negotiate the creation of an Arctic Council. The Council took form between 1993 and 1996 through negotiations among the Arctic states. These negotiations were also attended by the three Indigenous Peoples organizations that were AEPS Permanent Participants. Not much progress was made until 1995, when former U.S. President Bill Clinton agreed to push the initiative forward.

The Declaration Establishing the Arctic Council (the Ottawa Declaration) was signed in September 1996. It established the Council as a "high level forum" to promote:

> "*...cooperation, coordination and interaction among Arctic states, with the involvement of the Arctic Indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and environmental protection in the Arctic.*"

The Council subsumed four working groups (AMAP, PAME, EPPR, CAFF) created under the AEPS. Priority tasks included drafting terms of reference for a sustainable development program and rules of procedure to be adopted at the Council's first Ministerial meeting.

While all Arctic states signed the Ottawa Declaration, there was much disagreement behind the scenes as to what the new Council was all about, what it would do and how it would do it. The AEPS had focused primarily on environmental protection but had added a Task Force on Sustainable Development in 1993 in an attempt to broaden its activities. The meaning and implications of "sustainable development," the core concept of the 1987 report of the World Commission on Environment and Development, had continued to concern many delegates in negotiations to set up the Arctic Council. It quickly became evident during the negotiations that there was no commonly shared definition of sustainable development, making it unclear what the mandate and activities of a sustainable development program should be. These concerns were reflected in the text of the Ottawa Declaration, which seemed to treat sustainable development and environmental protection as two distinct pillars rather than one integrated concept.

Another key change in the transition from the AEPS to the Arctic Council was prefigured in the Ottawa Declaration's final preambular clause, which stated that the Council is to "provide for regular intergovernmental consideration and consultation on Arctic issues." The AEPS had been managed by Ministers of the Environment, but because of its broader mandate, the Arctic Council was to be managed by Ministers of Foreign Affairs.

Importantly, Article 3 of the Ottawa Declaration stated:

> Observer status in the Arctic Council is open to:
> a. Non-Arctic states;
> b. inter-governmental and inter-parliamentary organizations, global and regional; and
> c. non-governmental organizations
> that the Council determines can contribute to its work.

The Ottawa Declaration is short and to the point. It provided a framework for intergovernmental co-operation and specified environmental protection and sustainable development as areas of focus. The actual goals, objectives and activities to be undertaken by the Council were left to the Ministerial declarations issued every two years at the biennial Arctic Council Ministerial meetings.

The Current Situation

The Ministerial Declaration feature of the Arctic Council process was most at risk in the Trump era, as was evidenced in the Ministerial meetings in both Fairbanks (May 2017) and Rovaniemi (May 2019), where President

Trump's envoys asserted themselves in unprecedented ways. The Trump administration's behavior has been characterized by some commentators as "abusive, belligerent, uncontrolled, unstable, vindictive, and indecent."[1] At the Arctic Council Ministerial meeting in Rovaniemi, Finland in May 2019, there were more signs of this increasingly caustic approach by the United States. After delivering a belligerent speech focused on supposed security threats the day before the meeting, U.S. Secretary of State Mike Pompeo would not agree to any reference to climate change in a declaration, despite the centrality of the subject to the organization's history and agenda. As a result, a short joint statement was adopted with only a general commitment to ongoing cooperation. This was the first Ministerial meeting that failed to reach consensus on a declaration.

Some commentators had hoped that the efforts of scientists and officials would continue in discreet isolation, outside the circle of awareness of those in U.S. government ranks charged with purging any traces of the Obama administration's legacy and preventing any activity that might offend the fluctuating whims of President Donald Trump. However, the Arctic Council is a consensus-driven organization, and unless the head of the U.S. government shares this consensus, as Trump did not, he will carry the day.

Thus, the outcome of the presidential election in the U.S. in November 2020 will serve as a critical factor in shaping Arctic diplomacy and the opportunities for rejuvenated Arctic cooperation in the future. One of President Joe Biden's immediate priorities is to put climate change high again on its national and foreign policy agenda, starting with rejoining the Paris Climate Agreement, which he has said he will do on his first day. His early naming of John Kerry, a former presidential candidate and secretary of state, as the Special Presidential Envoy for Climate, signaled this priority and stands in stark contrast to President Trump's repudiation of the Paris Climate Agreement and climate science more generally. Because climate change has its most magnified effects in the polar region, Kerry will undoubtedly be engaged with Arctic issues.

Surveys indicate that about 69% of American registered voters favor rejoining the Paris accords, and only 13% are opposed.[2] However, the constituency for Trump's agenda of nationalist isolationist policies, climate change denial, significant roll-back of environmental regulations and worrisome rejections of fact and science in some critical areas of policymaking will try to obstruct progress. There is also potential for cycles of uncertainty and instability in international relations as Trumpist administrations come and go, including the possibility that Trump himself may run again in 2024.

In this environment where U.S. and other countries' political stability is in flux, an expansion of the Arctic Council's work into the field of security would be ill-advised. The *Declaration Establishing the Arctic Council* (1996) would have to be amended and in all likelihood this would lead to a range of other demands for changes that would fundamentally undermine or even dissolve the Council.

The Future

The Arctic Council, which itself is not a legal entity nor a treaty-based body, relies on bonds of goodwill, common purpose and voluntary, consensus-based cooperation to expand Arctic knowledge in order to promote and support rules-based initiatives in the circumpolar North.

Understanding climate change and its impacts have been central to Arctic Council work for almost two decades and will continue to be at the core of the Council's work for the foreseeable future. The appointment of a U.S. Special Presidential Envoy on Climate will surely be welcome news to the other Arctic states and to the Icelandic chairmanship as it prepares for the next Arctic Council Ministerial meeting in the spring of 2021.

However, meaningful progress on climate change cannot be made without global partnerships. The spectacular rise in global interest in the Arctic from 2006 onwards has highlighted issues in respect of access to and participation in the Council from non-Arctic states and other interested parties. For at least the past 10 years member states have been aware that some reforms will be necessary to take account of various structural and operational weaknesses in the Council. A central question is whether the Council should do more to engage in global affairs as they relate to the Arctic or should it primarily concern itself with inward-looking local and regional issues of common interest to the eight Arctic states? Of course, it is possible to do both. Views remain mixed among the member states and other participants about the degree to which this should occur and the mechanisms through which such a goal might be achieved.

It is difficult to predict with any certainty the future trajectory of the Arctic Council. Most regions of the world are struggling to manage the current stresses caused by the COVID-19 pandemic. In the short- and medium-term, the priorities of many states will likely be dictated by the need to address the numerous social, economic and political issues resulting from the pandemic. These will include ongoing public health challenges, unemployment, disrupted supply lines, failed businesses, closed schools and universities, and so on.

It is possible that attentiveness to the Arctic might fade for a time. However, given the critical role the Arctic plays as an indicator region for climate change impacts, this would probably not be a long-term situation. The pandemic does provide a preview of the some of the challenges ahead for Arctic policymakers. For example, in some societies it has been very difficult to get people to adjust to even short-term behavioral modification (e.g. wearing masks to reduce transmission of the virus), notwithstanding that failure to do so could result in serious illness or even death. How then will we make the necessary transition to broader, longer-term measures to mitigate and adapt to the dynamic and growing impacts of climate change?

Notes

1. This section is a summary from Bernard Funston & Terry Fenge, "*The Practice and Promise of the Arctic Council*," 2014
2. This section is from Bernard Funston & Terry Fenge, "*The Practice and Promise of the Arctic Council*," 2014
3. Peter Wehner, "Now Comes the Reckoning", *The Atlantic*, 05 Oct 2020.
4. https://climatecommunication.yale.edu/visualizations-data/registered-voters-say-us-participate-paris-agreement/. Accessed November 26, 2020.

Impact on Indigenous Peoples and Cooperation among Indigenous Organizations

Dalee Sambo Dorough

The Arctic is often characterized as a region of exceptional international cooperation, and the example conjured by most is the Arctic Council. However, if high politics is the realm in which states act on the basis of their survival and maximization of power, the Arctic Council and all other circum-Arctic issues recede in the face of this overarching imperative of national self-interest. Indeed, the Arctic Council is not playing with a full deck of cards, because geopolitics frequently trumps all other issues. This realization has been strikingly revealed by the actions and response of the U.S. in its characterization of its present need for engagement in the Arctic.

At the international level, the most accurate expressions of high politics and the rule of law can be found in the exercise of the right of self-determination by UN member states, including the permanent members of the Security Council. It is not lost on any observer of Arctic matters that the permanent Security Council members are increasingly active on the Arctic stage. The Russian Federation, China and the most recent U.S. posturing generally and more specifically within the Arctic Council has seemingly only fueled a growing fire hazard—to use firefighter language—"materials, structures or processes that may result in creating a fire, or permitting a fire to grow undetected."

The Resurgence of High Politics in the Arctic

Against this very real backdrop, it is crucial to understand that Inuit occupy four of the five Arctic littoral states. Many of the "high political" actions taken by Arctic states will likely lead to deleterious outcomes for Inuit, our communities, and our territory.

There are many symptoms of a high politics pathology that will not be beneficial for Inuit nor humanity at large: the easing of commodity opportunity; the search for food security regardless of the multifaceted costs; State actors undeterred by a global pandemic; and the use of international law to expand real estate—and thereby claims to "sovereignty" as well as sea and seabed resources.

Though there may be no desire for conflict in the region by any of these powerful actors, the reality remains that their respective and collective actions can have dismal impacts for Inuit. The Russian Federation's efforts to update its Cold War military facilities, develop extractive industries, and its promotion, use and regulation of the Northern Sea Route all portend serious concerns. The People's Republic of China is constantly scanning the globe for energy security, economic security, and food security—and their gaze is clearly set on the Arctic. Although China has apparently dropped the term "near Arctic" State, this does not mean that its interest or activities have abated. The Chinese government's Arctic White Paper and Polar Silk Road initiative highlight these continuing interests.

The United States has shown uneven but now growing interest in the Arctic despite the fact that it has been an Arctic nation since 1867. Their present attention seems to solely pivot on reacting to the actions of China, the Russian Federation, and nearly every other major economic power on earth. At the executive level, with Mike Pompeo's 2019 speech in Rovaniemi, Finland, the U.S. thoughtlessly bumbled onto the Arctic Council stage believing that they could use the forum to flex their muscles and use bullying rhetoric to show the world community they are an Arctic nation. At a minimum for the United States, it is significant that the Polar Code was adopted; that a Vessel Traffic Management System for the Bering Strait collaboratively with Russia was adopted; and the moratorium on high-seas fisheries memorialized in the Central Arctic Ocean Fisheries Agreement was accomplished. Otherwise, the U.S. (and in particular, its executive branch) appears to be a bystander without a full understanding of the significance of the region at any scale. Nonetheless, the appointment of James P. DeHart, a senior U.S. foreign service member, is a hopeful sign that the outgoing Trump administration realized the need to address Arctic issues with the substance that they deserve. On the heels of the election and with the transition to President Biden and his cabinet, many across Inuit *Nunaat* welcome the opportunity to have substantive dialogue concerning our rights, interests, concerns, and aspirations. This includes a favorable presence within the Arctic Council as well as constructive, favorable positions in the context of numerous other intergovernmental organizations of direct significance to Inuit, as well as pressing global issues such as climate change.

Because of increased attention and activity, it is crucial for Inuit, whose traditional territory comprises just over 40 percent of the Arctic and its coastal region, to be engaged at every level and present at nearly every table—a daunting task for a modest population. However, the stakes are high, the overall security of Inuit as distinct peoples depends upon this urgent objective.

For Inuit, our needs are immediate, practical, and largely apolitical. The continuing infrastructure deficit facing all Inuit communities and others across the Arctic must be addressed. The pandemic has made this reality more acute. These urgent needs are compounded by numerous other impacts across the Arctic, including the cascading impacts of climate change, biodiversity loss, increased vessel traffic, and food insecurity, among others.

State Responsibilities, Human Rights, and Indigenous Communities

Given these conditions and the nature of high politics, it is important to recall the limitations of the claim to self-determination and the notion of state sovereignty. Thought to be common knowledge, it is important to reiterate that the Purposes and Principles of the 1945 United Nations Charter are to: maintain international peace and security; develop friendly relations based on *respect for the principle of equal rights and self-determination of peoples* (here and below, emphasis in *italics* mine), to achieve international co-operation in solving international problems of an economic, social, cultural, or humanitarian character; and in *promoting and encouraging respect for human rights.*

To curb growing tensions caused by high politics, beginning in 1961 a small number of UN member states introduced an exercise toward "the codification and progressive development of international law" (A/C.6/L.492, 1961), focusing upon elaborating key principles to promote the "friendly relations and co-operation" of states (GA 1686 (XVI), 1961). This exercise was a careful analysis of key principles related to self-determination, and resulted in the *Declaration on Principles of International Law concerning Friendly Relations and Co-operation among states in accordance with the Charter of the United Nations* in 1970 (GA 2625 (XXXV), 1970), and was adopted on the 25th anniversary of the United Nations. Indeed, one may suggest that this elaboration was essential to the survival of the state and especially those who felt a need to create solid black cartographic lines along their borders and to reiterate their status in the context of high politics.

However, few recognize the central nature of the Friendly Relations Declaration principles and their relevance to Indigenous Peoples. The provisions that underscore the fact that every state is committed to the *progressive development of international law*, including within the UN human rights regime. The Friendly Relations Declaration is significant in order to:

> *...constitute a landmark in the development of international law and of relations among States, in promoting the rule of law among nations and particularly the universal application of the principles embodied in the Charter*

The Declaration goes on to emphasize:

> *...the importance of maintaining and strengthening international peace founded upon freedom, equality, justice and respect for fundamental human rights and of developing friendly relations among nations irrespective of their political, economic and social systems or the levels of their development.*

UN member states explicitly affirm that they are:

> *convinced that the subjection of peoples to alien subjugation, domination and exploitation constitutes a major obstacle to the promotion of international peace and security;*
>
> *convinced that the principle of equal rights and self-determination of peoples constitutes a significant contribution to contemporary international law, and that its effective application is of paramount importance for the promotion of friendly relations among States, based on respect for the principle of sovereign equality.*

They further affirm that:

> *Every State has the duty to refrain from any forcible action which deprives peoples referred to in the elaboration of the principle of equal rights and self-determination of their right to self-determination and freedom and independence.*

A crucial imperative in the elaboration of the right of self-determination within the Friendly Relations Declaration is the fact that:

> *by virtue of the principle of equal rights and self-determination of peoples enshrined in the Charter of the United Nations, all peoples have the right freely to determine, without external interference, their political status and to pursue their economic, social and cultural development, and every State has the duty to respect this right in accordance with the provisions of the Charter.*

Furthermore, the agreement stipulates that:

Every state has the duty to promote, *through joint and separate action*, realization of the principle of equal rights and self-determination of peoples" and "To bring a speedy end to colonialism, having due regard to the freely expressed will of the peoples concerned."

A key provision of this Declaration, which must be read in the context of the full instrument, is the requirement or the obligation that states must conduct themselves in a manner consistent with these principles if they themselves want to maintain their own "territorial integrity," which ensures those thick black map lines that are a mark of high politics remain inviolate. Notably, "compliance" includes the criteria that all states are "possessed of a government representing the whole of the people belonging to the territory." The full language of this pivotal paragraph states:

> *Nothing in the foregoing paragraphs shall be construed as authorizing or encouraging any action which would dismember or impair, totally or in part, the territorial integrity or political unity of sovereign and independent States conducting themselves in compliance with the principle of equal rights and self-determination of peoples as described above and thus possessed of a government representing the whole people belonging to the territory without distinction as to race, creed or colour.*

Clearly, Indigenous Peoples were not party to the dialogue, negotiation, and adoption of the Friendly Relations Declarations. Indeed, UN member states created these important principles and guidelines wholly on their own. However, to be sure, Indigenous Peoples are beneficiaries of these criteria. These principles and elements attach to us as distinct peoples, including the requirement of compliance.

We have seen dramatic progressive development of international human rights law specific to Indigenous Peoples, including Inuit. These human rights standard-setting exercises have been accomplished within the context of the purposes and principles of the UN Charter as well as within the same political arena that spawned the whole of the Friendly Relations Declaration. And, through Inuit diplomacy, patience, and intellectual honesty, and often against great odds, we have made a significant contribution not only to the world community, but also to the health and security of our own communities across Inuit Nunaat. These accomplishments have a direct bearing on the present and future discussions of high politics in the Arctic.

Though uneven, at the international level Inuit influenced the negotiations that generated the ILO Convention on Indigenous and Tribal Peoples [No. 169, 1989], the *UN Declaration on the Rights of Indigenous Peoples* [2007], and the OAS American Declaration on the Rights of Indigenous Peoples [2016]. As an element of human rights, each of these instruments are interrelated, interdependent, and indivisible from all other human rights instruments at the international and national level. Those specific to Indigenous Peoples, including Inuit, provide a fundamental cultural context for understanding the individual and collective rights, status, and role of distinct human beings—human beings unlike any others. Hence, the right to be different and respected as such.

This trilogy of human rights instruments does not create new rights. It is imperative to recognize that the human rights of Inuit and all other Indigenous Peoples are inherent or pre-existing. The important Inuit cultural context overlaying the whole array of human rights has been an attempt to educate others about our worldview, our way of life, our understanding of the environment, and our notion of security as a people. Every Arctic rim nation state (with the exception of Iceland, which is not inhabited by Indigenous Peoples) has adopted laws, policies and/or constitutions and generated significant jurisprudence that affirms our distinct status, rights, and role in society. Even Iceland has participated in these human rights processes as a UN member state, voting in favor instruments such as the *UN Declaration on the Rights of Indigenous Peoples*.

Leaping over huge chunks of history, it is necessary to point out that as these human rights standards were being drafted at the international level, they were also being debated and negotiated at the national level in the form of land claims policy and laws. Though not fully implemented, the Russian Federation has national laws and policy concerning the small nations of the Russian north. In 1971, the U.S. Congress passed the Alaska Native Claims Settlement Act, which resulted in the conveyance of 44 million acres of land to state-chartered village and regional corporations.

Four comprehensive land claims agreements entrenched Inuit rights to lands and territories, including coastal seas, as well as Inuit hunting, fishing, and harvesting rights to vast areas. Since 1979 in Greenland, where Inuit are a numerical majority, the government has undertaken incremental and peaceful steps toward eventual independence—an aspirational political enterprise the importance of which cannot be understated in the context of high politics.

Each of these political enterprises pivot on the right of Inuit to self-determination, which is the prerequisite to the exercise and enjoyment of all other human rights. With every right comes responsibility, and self-determination is a heavy responsibility. As a matter of self-determination, which is the foundation for the right to free, prior and informed consent as well as the right to participate directly in all matters that affect you, comes the responsibility to ensure that your voice is heard within every debate that will directly impact you and your people.

The Inuit Circumpolar Council (ICC) and High Politics

The Inuit Circumpolar Council (ICC) emerged at a time of extraordinary tension due to high politics in the mid- and late-1970s. At the urging of the late Eben Hopson, Sr., Inuit united to ensure that we gained uniform recognition of our distinct rights and to raise our collective voice at every international forum of concern in order to safeguard our overall cultural integrity as a people. Indeed, more than four decades ago, the ICC addressed the matter of high politics because of the detrimental impacts that we had already experienced, from forced relocation of villages such as Kaktovik, the construction of DEW line sites, and accidents like that of the USAF B-52 bomber near Thule. Our explicit calls for the Arctic to be declared a *zone of peace* was first made in June of 1977 at the organizing conference of the ICC at Eben Hopson's home community of Utqiagvik, Alaska. Though we had hoped to have our blood relations from Chukotka in attendance with other Inuit delegates from Alaska, Canada, and Greenland, this was not possible due to the Cold War.

In 1983, ICC delegates adopted an even more detailed resolution calling for the establishment of an Arctic zone of peace. Delegates expressed concern about both Cruise and MX missiles, and the mining of rare earth elements of uranium, thorium, and lithium. More recently, at our 2018

General Assembly under the theme "Inuit—The Arctic We Want," we again adopted a resolution mandating leadership to "initiate diplomatic talks for the purpose of laying the groundwork for negotiations to declare the Arctic as a Peaceful Zone."

For Inuit, who view the world in a holistic, interrelated fashion, it is unfortunate that the Arctic Council is not playing with a full deck of cards by leaving out discussions concerning defense, security, and militarization. The issue has been debated, primarily by scholars concerning themselves with myriad Arctic issues. A few gestures have been made about the need to be responsive to this outstanding issue, potentially in the same way that economic development has now become the purview of the Arctic Economic Council.

Whether in maintaining the mandate of the Arctic Council or in the context of its reform, it is clear the issue of high politics is too often addressed without Inuit direct involvement and with little to no consideration of the impacts that the nation-state of mind has upon our peoples and our territory, including the ocean and coastal seas. Yet as I argue here, the international community has recognized the status, rights, and role of Indigenous Peoples, consistent with the international legal norms established by UN member states. Therefore, as a matter of our collective human rights to self-determination as well as lands, territories, and resources combined with UN member state obligations and our responsibilities to future generations, we must have a seat at the tables where matters of high politics are being addressed.

It is crucial to have a seat at every table—high politics or low politics—to ensure that we are being responsible: responsible to our people and our communities; and responsible for our lands, territories, and resources; and responsible to the very environment that supports our way of life and all of the characteristics that make us and our people distinct from all others.

In this way, Inuit are the human face of the Arctic. We have distinct status as peoples, and we have distinct rights, roles, and responsibilities. Therefore, we must play a direct role in the matters of high politics and recognize the limitations by taking a strong dose of what others have conjured up as key principles of high-power politics and the rule of law in the international arena. To take actions without compliance of public international law and the limitations of high politics, will ultimately lead to a loss for all—and especially Arctic Indigenous Peoples.

Korean-Russian Economic Relations in a Period of Heightened Geopolitical Tensions

Kyung Ho Lee

Korea sees Russia, and in particular its Arctic regions, as important for Korea's own economic future. Russia's development plans in the region have provided benefits for Korean industries, notably including shipbuilding, and Korea hopes that Russian imports will help diversify Korea's sources of commodities, especially fuels. However, Korea is also politically allied with the United States, which is one of its most important export markets. Therefore, the escalation of geostrategic tensions in U.S. relations with Russia following the latter's absorption of the Crimean Peninsula in 2014 has been a source of concern in Korea. This paper examines these tensions and how Korea has navigated its relations with Russia and the Russian Arctic under the shadow of this superpower conflict.

Geopolitics Rises to a Top Concern in U.S. Arctic Policy

Although the traditional Arctic features of "cooperation" and "low tensions" continue, the Arctic is increasingly turning into a venue for competition that reflects a growing geopolitical rivalry among the United States, Russia and China.[1] We can identify three main perspectives regarding this situation. First, a long period of low tensions in the Arctic has played an important role in enhancing mutually beneficial cooperation in the region, and this model continues to be necessary. Second, some argue that even though the Arctic cooperation model should be maintained, we should be prepared for inevitable and unavoidable future competition as Arctic resources become more accessible. A third perspective is that Russia and China may misinterpret the situation if they display aggressive behavior in other regions but pay little or no price in the Arctic. The Donald Trump administration, or at least its higher levels, was more inclined to the third perspective, but the incoming Joe Biden administration immediately signaled it will restore climate change to a top priority, a position that requires cooperation of the major Arctic players. We can almost be certain that the new Arctic will feature both cooperation and rivalry.

The geopolitical perception of the outgoing Trump administration—that both China and Russia were increasingly seen as adversaries in Arctic affairs—was revealed in a speech by U.S. Secretary of State Mike Pompeo at the Arctic Council Ministerial Meeting held in May 2019, and which added to a pivotal briefing by a "senior official" at the Department of State in April 2020. Through these emissaries, the U.S. government stated that it was deeply concerned about Russia's growing military activity in the Arctic and by China's economic incursions in resource investments and infrastructure building.

The U.S. Department of State published its Arctic Strategy in 2019. It is an updated version of the Arctic Strategy issued in 2013 and 2016. Compared to previous strategies, what is most noteworthy is that global competition with "China and Russia" is now considered a threat to U.S. security and prosperity in the Arctic in the mid-to long-term. The 2020 National Defense Authorization Act also included specific provisions about Russia, China and the U.S. in the Arctic. A report on the Arctic military activity of Russia and China was required by Congress, as well as research into China's direct investment in Arctic states. The Act also required a study of U.S. preparedness for a mass casualty event in the Arctic and a study of possible U.S. strategic port facilities and their construction costs.

More specially regarding Russia, U.S. Arctic policies seem driven by three main features. First, among Arctic states, Russia is the biggest player—whether measured in coastline, population, or resources. It also has the most suitable Arctic sea route. Second, the Arctic is a priority area in Russia's internal development and external strategies. Third, accelerating retreat of sea ice in the Arctic Ocean will favor the Northern Sea Route (NSR) along Russia's northern coast more than the Northwest Passage (NWP) along Canada's northern coast.

The United States, Canada, and the Nordic countries are also cooperating bilaterally and multilaterally in various areas with Russia. A Search and Rescue Agreement was reached in 2011. The U.S. and Russia established a separate traffic zone in the Bering Strait in 2017 and the International Maritime Organization (IMO) approved it as an official route. In addition, in 2018, five Arctic states, including the U.S. and Russia and five non-Arctic states, signed the legally-binding "CAO Agreement: The Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean."

Nonetheless, the U.S. and its allies are concerned about Russia's growing military activity, especially near the North Atlantic Ocean. Russia

Figure I.5 Current and potential LNG ship order status

was placed under economic sanctions by the U.S. and the EU due to its aggression in Ukraine. Now, the North Atlantic Treaty Organization (NATO) is paying particular attention to how to counter a potential threat and how to respond to Russia's modernization efforts and increased military exercises. A typical example is the Trident Juncture 18 military drill in 2018. It was the largest in the area since the Cold War era; 29 NATO member states joined the exercise performed along the Norwegian coast and in the Baltic Sea. At some point, the U.S. may contest Russia's legal status regarding the NSR. While Russia controls traffic on NSR since it deems the NSR inland waters, the U.S. views it as being in international waters. (The U.S. holds a similar legal position vis-à-vis Canada and the NWP.) In brief, the U.S. Arctic perspective regarding Russia is a mixture of cooperation and conflict, but since 2019 the Trump Administration emphasized the conflictual elements. Arctic watchers await more signals from the incoming Biden administration about these and other Arctic issues but anticipate a less aggressive posture.

Prospects of the NSR and Korea's Interests

Russia is leading in the active development of Arctic resources and promoting the NSR to export them. The Yamal LNG Project has produced 16.5 million tons of LNG a year since 2017, and supplies LNG to Asia and Europe. Russia also set out to develop ARCTIC LNG 2 with external investments from France, China, and Japan. According to the plan, three platforms, each with a capacity for LNG production of 6.6 million tons annually, will be constructed in 2023, 2024, and 2026 to achieve a collective goal of a yearly LNG production of 19.8 million tons. Moreover, Novatek, a private gas producer in Russia, will soon develop the ARCTIC LNG 3 Project with an additional goal of a yearly LNG production of 20 million tons.

Russia is making sustained efforts to increase traffic volume and promote use of the NSR. It is focused on developing smart ports and logistics infrastructure. The Rosatom Group is discussing a $7 billion investment with the largest Russian bank, VTB, and plans to build 55 ice-breaking container ships with this money.[4] It intends to set up a regular traffic route for the NSR using these container ships to compete with the Suez Canal route. Some shipping experts think that container transport via the NSR makes no economic sense and endangers the fragile Arctic environment. Indeed, the world's largest shipping companies, CMA CGM and Hapag Lloyd, decided not to use the NSR for environmental reasons.

Nevertheless, Nikolay Monko, the Director of the Northern Sea Route Administration, reported that the 2019 NSR traffic volume was about 31.5 million tons, increasing more than four times in the last three years. Most of the NSR traffic volume was LNG. Twenty-one million tons (65 percent) of LNG was transported through the Sabetta Terminal on the Yamal Peninsula; 1.5 million tons of minerals (five percent) through the Nornickel's Port at the Yonisey River; and 7.7 million tons of minerals (24 percent) through the Novy Port in Gazprom Neft. Europe-Pacific transit shipments represented the smallest of NSR traffic. In 2019, about 0.7 million tons were transported by 37 ships from east to west via the NSR, up about 24 percent from the previous year.[5]

Russian President Vladimir Putin set a goal for NSR traffic volume to reach 80 million tons in 2024. The Rosatom Group predicts that it will reach approximately 93 million tons in 2024 if the current trajectory continues. Using this assumption, the following traffic volumes will occur: 41 million tons of LNG and 17.5 million tons of oil (Vankor – five million, Payakha – five million, Novy Port – 7.2 million tons) from Novatek's Yamal LNG and ARCTIC LNG 2 Project; and 2.3 million tons of coal (19 million tons in the Taybass basin in Taymyr Peninsula and four million tons in Syradasayskoye).[6] Yet, the Russian Accounts Chamber recently published a report to illustrate that the target of NSR's 80 million tons would not be achieved in time because of both insufficient ice-class transportation and

COVID-19 pandemic impacts.[7]

Korea is quite interested in cooperation in logistics and energy with Russia. Korea has manufactured most of the LNG shipping vessels for Russia's LNG development projects. The first 15 vessels were built by Daewoo Shipbuilding & Marine Engineering (DSME) and they will transport LNG from the Yamal LNG Project. Recently, Novatek and its partner shipping company Sovcomflot decided to order 10 Arc-7 Class LNG Carriers. Novatek signed a long-term lease agreement with Sovcomflot to proceed with fund raising and shipbuilding. These vessels will be built by Russian Zvezda Shipyard in 2023 and 2024 respectively and used for Arctic LNG 2 & 3 Projects.[8]

Zvezda Shipyard has agreed to manufacture 15 vessels, which reflects the Russian government's efforts to revitalize the country's shipbuilding industry. However, since advanced technology and expertise are necessary to build complex icebreaking vessels, Korea's Samsung Heavy Industries was selected last year as a project partner to give technical support for construction of icebreaking vessels. The first five ships will transport LNG for the Ob LNG Project and assist with shipping of LNG surpluses produced at Yamal. In September 2020, DSME received an order for six Arc-7 Class LNG carriers, and Novatek may place an order for another six carriers.[9] The deposit for 12 vessels will be up to $4 billion and they will be operated based on a joint investment of the Sovcomflot, MOL, and COSCO shipping groups. As the NSR continues to develop, Korea's interests and involvement grows. In fact, Korea had evaluated Russia as a market with great potential even before this development.

Developing a Strategic Korean-Russian Partnership

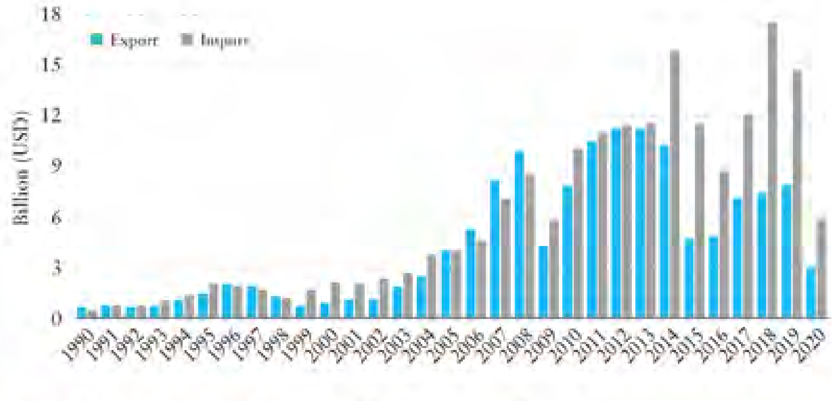
Diplomatic relations between Korea and Russia began at the end of the Cold War period. A first summit meeting occurred in 1990, and the two countries established firm diplomatic relations soon after. Since then, Korea-Russia relations advanced from constructive and complementary partnership to mutually trusted comprehensive relations and to strategically cooperative relations. Bilateral trade dropped sharply in the late 1990s due to the effects of the Asian Financial Crisis on Korea and Russia's declaration of a moratorium on some debt payments after the ruble was devalued. Yet, economic cooperation subsequently re-accelerated as Russia developed its Far East and enhanced cooperation with Northeast Asian economies. Korea, for its part, hoped to make inroads into Eurasia and obtain energy resources.

Bilateral trade jumped from less than $1 billion in 1990 to more than $25 billion in 2010. Other exchanges were promoted, and tourism reached an all-time high of 770,000 visitors in 2019. In addition, the two countries strived to reinforce collaboration in logistics and energy, including modernizing the Trans-Siberian Railway and building gas pipelines and power grids. As the Russian New Eastern Policy and the Korean New Northern Policy intersected, both countries constructed a strategic partnership.

Based on the New Northern Policy, the Korea government is preparing to conclude the FTA with Russia with regard service and investment sectors within 2020 and simultaneously to sign an expanded FTA including merchandise within the Eurasian Economic Union. Some expect that brisk trade expansion will act as a crucial economic momentum at a time when growing global trade disputes have prolonged an unstable external trade environment. With immense potential, Russia is seen as an alternative market for Korean exports. Korea is at the core of the Russian New Eastern Policy since Korea is the top trading partner for Russia's Far East.[11]

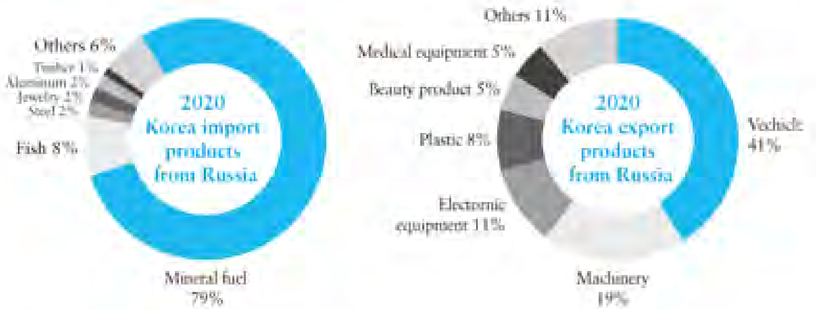
Bilateral trade increased more than 20 times from a small base in the first two decades, significantly more than Korea's total trade growth of 6.4 times during the same period. However, it fell by half after the 2009 financial crisis. In 2014, Korea's imports from Russia increased due to high oil prices and bilateral trade increased to $26 billion, the highest-ever. But trade decreased again because of economic sanctions imposed by the U.S. and Europe and the dive of oil prices. For the most recent three years (2017-2019), exports have been on the rise and imports jumped in value because of the recovery of international oil prices before declining again. In the first half of 2020, exports (27.9 percent) and imports (16.6 percent) alike have dropped year-on-year, affected by COVID-19.

Since 2004, Korea's biggest export item to Russia has been vehicles. In 2005, the export of ships and shipping products and in 2007 that of mobile phones increased and Korea temporarily had a trade surplus with Russia. But as imports of Russian mineral fuels considerably expanded after 2009, Korea has recorded deficits in bilateral trade. Against this backdrop, Korea has become a key trading partner for Russia's Far East. This area of Russia highly depends on Northeast Asian countries (China, Japan, and Korea), which account for 78 percent of its total trade. Though the trade value



Source: Resources from Korea International Trade Association 'K-stat'

Figure I.6 The status of trade with Russia since from 1990



Source: Resources from Korea International Trade Association 'K-stat'

Figure I.7 The proportion of trade with Russia in 2020

of Korea, China, and Japan is roughly similar every year, China is the number one exporter for the Russian Far East and Korea is the number one importer from that area. Since Russia's Far East mainly exports energy products, the trade between Korea and the Far East accounts for about 37 percent of the total Korea-Russia trade.

In contrast to trade, Korea is a small investment partner. With speedy growth of the Russian economy since the late 1990s, its foreign direct investment (FDI) inflow started to increase. Indeed, the Korean FDI in Russia began increasing after more Korean cars were sold there. However,

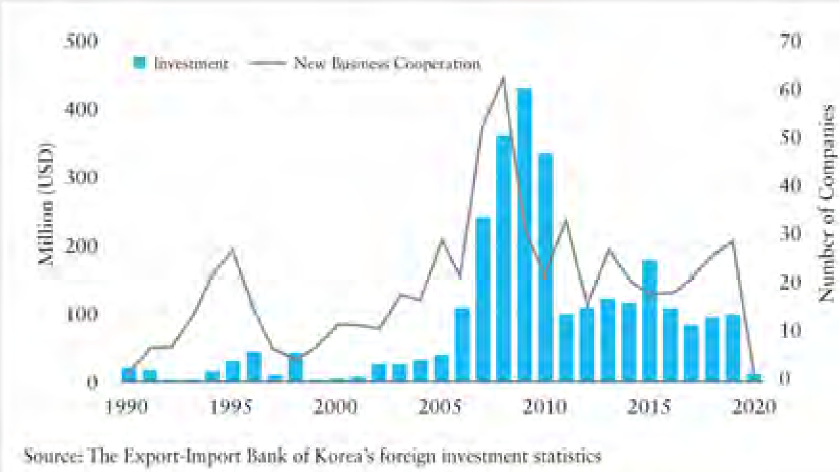


Figure I.8 The trend of Korean foreign direct investment in Russia

since 2010 the FDI to Russia has sharply plummeted to less than $100 million USD. According to the Bank of Russia, the total FDI from Korea is approximately $2.679 billion USD, which is about 0.69 percent of Korea's total FDI outbound amount and 0.66 percent of Russia's total FDI inbound one.[11]

Korean FDI in Russia features three periods. Immediately after establishment of diplomatic relations, many Korean companies invested in Russia, but on a small scale. In the 1990s, newly investing corporations numbered 112 and their total investment amount was about $200 million. In the second period, investment surged from 2008 with large-scale

Table I.3 The purpose of investment in Russian export products (million USD)

	Stage 1(1990-90)		Stage 2(2000-09)		Stage 3(2010-19)	
	Investment	Companies	Investment	Companies	Investment	Companies
Local Market Entry	32	4	671	107	1,070	144
Exploitation of Resources	49	14	154	37	221	24
Expert Promotion	22	38	336	33	31	21
Others	85	56	109	90	25	42
Sum	187	112	1,270	267	1,347	231

investments in the automobile industry. From 2000 through 2009, 267 companies were involved in $1.27 billion of investments. In the remaining period (2010-2019), the investment amounts rose slightly to $1.35 billion, but the number of new companies went down to 231.[12]

The main reasons Korean companies invest in Russia include gaining access to local markets, resources development, and export promotion. In the initial stage, they concentrated on manufacturing industries for wood products and mining industries, and in the middle stage, on cars and electronics aiming at market access. Recently, most investments are heavily focused on developing local markets.

Beginning in 1990, the Russian government showed much interest in Korea's experience in economic development and raising large-scale capital investments to develop Russian resources. The Korean government promoted cooperation in logistics and energy including developing the Far East gas, building gas pipelines and connecting power grids and railroads. However, those efforts were neither economically nor, as it turned out, politically feasible. As the Russian government strengthened national control over its resources, Korea's energy development efforts failed. Korea also sought to implement a rail project to link the Korean Trans-Korea Railway and Russian Trans-Siberian Railway based on trilateral cooperation among Korea, North Korea, and Russia. But political factors never aligned closely enough to move this forward.[13]

From the Korean perspective, there are two main risks in the Russian market. The first risk is an institutional risk. Because Russian laws and regulations such as tax and tariff laws are arbitrarily interpreted according to situational factors for the benefit of Russian parties and are often amended, even public servants in charge of enforcing them are sometimes unable to accurately interpret them. The second risk is an economic risk. The biggest economic risk for Russia is its excessive dependence on energy resources. But we can add inefficient state monopolies, lingering corruption, and a decrepit bank system.[14] Since Russia is relying so heavily on resource exports, it is structurally susceptible to changing external economic and political environments, including fluctuating international raw material prices and sanctions from Western countries. Consequently, investors could end up bearing the full burden stemming from Russia's unstable economic system.

Conclusion

Since Korea's interests in the Russian Arctic region are mainly economic and positive, Korea has generally regarded increased geopolitical tensions (which seem mostly focused on Russia's western areas) as a challenge to overcome. Korea regards the NSR as a potentially shorter avenue to Europe and is benefiting by constructing virtually all the vessels built for this route. It expects new business as a result of Russia's ambitious development plans in the Arctic and Russian Far East.

The change in U.S. administrations may help to alleviate some of the excesses in U.S. rhetoric and concern. Still, the development of the central and Far East areas of the Russian Arctic and the opportunities provided by the retreat of Arctic Sea ice can be expected to stimulate competition and rivalry. The Arctic of the future will probably be characterized more by cooperation and competition—especially compared to the 1990s vision of the Arctic as an arena defined by international cooperation.

Although Western sanctions have had some impact, Korea's economic relationship with Russia continues to deepen. As we have shown, the two countries' economies are quite complementary, as are their plans in for the Arctic. Therefore, under the leadership of both governments, the two countries will be able to actively work together in the economic field. In the political field, Korea also hopes to do its part, perhaps providing "icebreaking vessels" to help navigate a pathway through the ice of geopolitical rivalry for the benefit of all countries with interests in the High North.

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PART II

BERINGIA: THE FUTURE OF THE BERING STRAIT REGION

Rapid Socio-ecological Changes in the Bering Sea and Strait

Olivia Lee

The Bering Strait is a narrow ecological corridor linking the Northern Pacific Ocean to the Arctic Seas. The land bridge that once connected the U.S. and Russia was submerged around 10,500 years BP (Elias, Short, Nelson, & Birks, 1996). Despite the existing political boundary, many species still cross Bering Strait, reflecting a shared connection over land and water. The connectivity of biogeophysical fluxes that occur through this region today makes the Bering Strait part of the Northern Bering-Chukchi Sea Large Marine Ecosystem (PAME, 2013). The shallow waters of the Bering Strait region include only the shallow inner shelf domain (0-50 m depth). This makes it distinct from the Eastern and Western Bering Sea Large Marine Ecosystems, where deeper waters of the middle (50 – 100 m depth) and outer shelf (100-200 m depth) domains are found (Hermann et al., 2019; PAME, 2013). Observed changes in these ecosystems suggest that rapid and disruptive ecological shifts are occurring and are likely to continue cascading throughout human and non-human communities in the region. Changes in species distribution, ice cover, and migration patterns—as well as documented toxic algal blooms and unexplained mass mortality events involving birds and mammals—all suggest this region's ecology is in a state of accelerated flux, with unknown consequences affecting the food chain and beyond.

Major Changes in Seasonal Ice Cover, Winds, and Waters

A defining physical feature in the Bering Sea is the seasonal sea ice cover. First-year ice forms annually over Bering Strait by December, and the region is typically ice free in June (Figure 1). The seasonal sea ice plays a role in regulating primary productivity from ice algae and phytoplankton. This in turn affects food availability as energy is transferred to zooplankton and benthic invertebrates that support populations of fish, bird and marine mammal species. Many non-resident species such as gray whales and migratory birds travel through Bering Strait to reach summer feeding grounds in the Arctic. Hence, sea ice also plays an important role in influencing the timing of spring and fall migrations for many species. Sea ice can be an important barrier that prevents the encroachment of non-Arctic species into the Arctic, either directly as a physical barrier to movement or less directly by supporting the formation of a cold pool of water in the Bering Sea. This sub-surface cold pool of water helps to keep sub-Arctic fish species from migrating northwards. The cold pool is also an important refuge for cold-water fish species, allowing them to remain in the Bering Sea as the surrounding waters warm. A stable cold-pool forms as sea ice forms and ejects brine that sinks to depth. The melting sea ice that follows in spring creates a freshwater surface layer that helps create a stratified water column. As trends towards longer ice-free seasons are seen, this cold pool of water is shrinking (Stabeno & Bell 2019) with observable effects on fish distributions.

Despite predictable seasonal cycles of sea ice there are notable variations in the timing of sea ice formation and ice retreat each year. Until recently, sea ice in the Bering Sea generally did not show significant declines in ice extent compared to the Chukchi and Beaufort Seas (Frey, Moore, Cooper, & Grebmeier, 2015). This trend was abruptly reversed in the fall of 2017, with exceptionally low sea ice observed in 2018 and 2019. The anomalously low winter sea ice conditions were linked to more destructive fall and winter storms. Furthermore, coastlines that used to be protected by landfast ice became more vulnerable to coastal erosion. Ice-free waters observed by late April in 2018 were particularly unexpected, since models predicted that Bering Strait would remain primarily ice-covered in the month of April through the year 2050 (Wang & Overland, 2012). The low sea-ice conditions have been attributed to warmer ocean temperatures that delayed the formation of sea ice, as well as relatively long periods of warm winds from the south that pushed already low sea ice concentrations northward in spring (Stabeno & Bell, 2019). Under future scenarios of climate warming, it is anticipated that warmer surface waters and increasing frequency of winds from the south during spring could further reduce the duration of ice cover in the northern Bering Sea (Hermann et al., 2019).

There is also evidence of a trend for increasing northward water volume transport through Bering Strait (Woodgate, Stafford, & Prahl, 2015). Typically, there is a summer peak in northward transport of heat, freshwater, nutrients, and plankton that is largely driven by differences in sea surface heights, and not local winds (Moore et al., 2018). However, larger atmospheric conditions can also affect water flow through the strait. For instance, when the Aleutian low is displaced to the west and there is an enhanced Beaufort high, the northward flow in Bering Strait is stronger. Conversely, when the Aleutian low is displaced to the east and there is an enhanced Siberian high, the flow through Bering Strait is much weaker (Danielson et al., 2014). Predicting future patterns of atmospheric

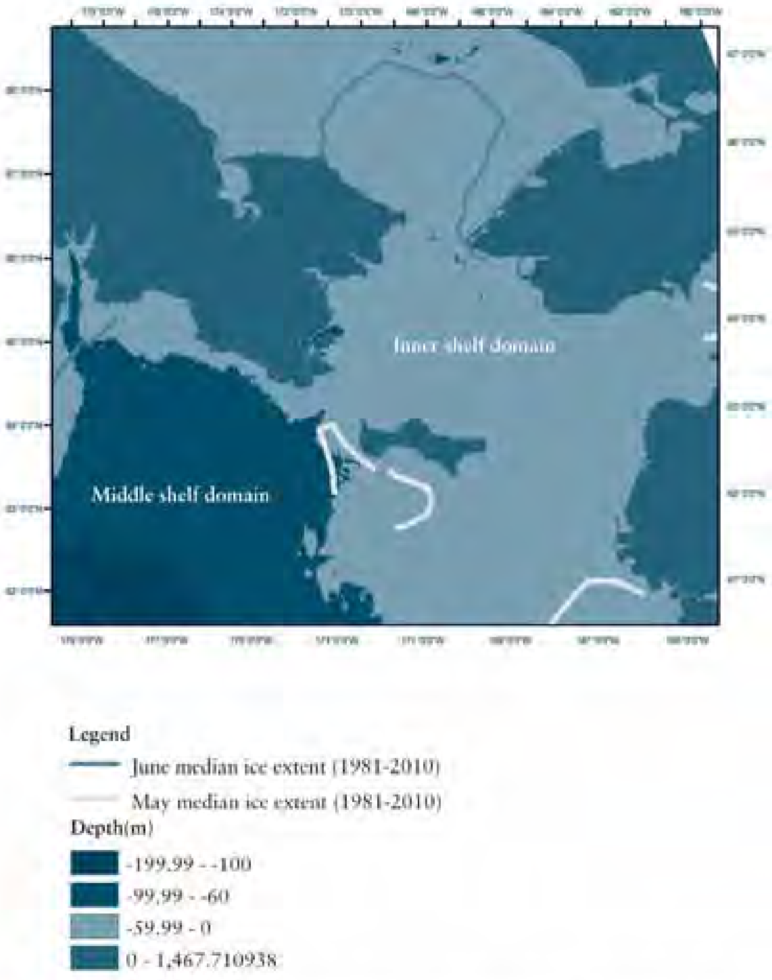

Figure II.1 Marine shelf domains and median ice extent for May and June over the Bering Strait change are therefore needed to understand how changes in water volume transported through Bering Strait may have implications for the distribution of heat, salinity, nutrients, plankton and larvae into the Arctic from the Pacific Ocean.

Water that flows into Alaska can also come from carbon dioxide-enriched waters of the Pacific Ocean. Exposure to colder surface temperatures supports greater dissolved carbon dioxide, and further enhances the potential for ocean acidification in the Bering Sea. Summer primary productivity can bring down pCO_2 of surface waters in the Bering Sea, but there are exceptions to this in areas of high freshwater flux and sea ice melt (Mathis et al., 2015). As a region already sensitive to ocean acidification, the Bering Sea is vulnerable to rising levels of atmospheric carbon dioxide. Other observed trends in the environment include changes to precipitation resulting in higher freshwater flux from rivers into the ocean, warming river waters that may be linked to higher rates of mortality for spawning salmon, and increasing noise from vessel traffic.

Some of these effects to living resources have been described, but there remains a lot of uncertainty in anticipating the short- and long-term effects of climate change because observational data are sparse. For example, fisheries surveys for the Northern Bering Sea have been conducted biennially rather than annually, in part because there are no active commercial fisheries in the Northern Bering Sea. Fisheries surveys conducted by NOAA between 2017 and 2019 have highlighted major changes in the distribution of Arctic and sub-Arctic fish species, but prior to the 2017 survey, the last survey in the northern Bering Sea was almost a decade old (NOAA 2010 groundfish survey). The lack of regular surveying makes it difficult for scientists to tell whether the observed changes were an abrupt response to sea ice change or a result of more gradual trends over recent years. A break in the United States-Russian cooperative surveying of ecosystem components across the strait (since the last RUSALCA survey) also highlights key missing data for looking at ecosystem change across the political boundaries of the northern Bering Sea.

Cascading Ecosystem Effects

As sea ice retreats earlier in the year, primary productivity in open waters of the Bering Sea has shown an increasing trend (Lee et al., 2018). However, this does not result in greater productivity across all components of the ecosystem. In warm years, early ice retreat in the Bering Sea is linked to a later summer phytoplankton bloom with a corresponding outcome of smaller, less lipid-rich zooplankton (Hunt Jr et al., 2002; Stabeno et al., 2012). Fisheries surveys conducted by NOAA in 2019 resulted in finding smaller zooplankton production that included copepods and krill (NOAA 2019). While the reduction in zooplankton production cannot be attributed to a single environmental factor, it is thought that this is a response to greatly reduced sea ice.

Changes in fish distributions throughout the Bering Sea also indicate an ecosystem under transformation. Commercial species such as walleye pollock and Pacific cod were observed to shift distributions further northward as the size of the cold pool diminished, and ocean bottom waters were anomalously warm. Jellyfish that feed on zooplankton and ichthyoplankton were also observed to shift distributions northwards, following the same pattern of fish that also feed on zooplankton. In contrast, more cold-adapted species like Arctic cod were unexpectedly low in number, and only a single Arctic cod was caught in the 2019 NOAA survey. Overall, the catch rates for groundfish in 2017 were higher in the Northern Bering Sea compared to 2010 (Stevenson & Lauth, 2019), while catch rates for some invertebrate species such as red king crab were greatly reduced in Bristol Bay (NOAA 2019). Other known changes in invertebrate distributions include higher biomass of purple orange sea stars in warmer nearshore waters. Given the speed with which commercially important fish species are changing their distributions in favor of more northern abundance, it is possible that there will be more pressure to open up northern Bering Sea fisheries, especially if there are reduced catches in more traditional fishing areas of the Eastern Bering Sea. While trawling remains closed in the U.S. northern Bering Sea, the lack of sea ice and the abundance of commercially valuable fish resulted in long-line fishing vessels remaining in the area through November 2019 (Gay Sheffield, personal communication). Meanwhile, fishing activity in Russian waters is already showing a major presence around Bering Strait (Figure 2), and Russia has announced plans to open up commercial pollock fisheries in the Chukchi sea for 2020 (Rosen 2020).

In addition to changing fish distributions, aerial and ship surveys as well as acoustic monitoring for marine mammals are also showing that some marine mammals are not spending winter months in traditional areas further south, and some individuals may be spending more time in the Arctic. Bowhead whales have been detected far north of typical wintering areas, and they have also been observed migrating north earlier in the season (Chou et al., 2020). Other marine mammals that don't typically travel into the Arctic, such as humpback whales, fin whales, and Steller sea lions have also been seen in areas farther north than they have ever been recorded in the past. At the moment, these seasonal incursions into the Arctic don't indicate a major change in population distributions, but they may be an early sign of changes to come.

Unusual Mortality Events

As might be expected from evidence of low zooplankton productivity and increasing competition from sub-Arctic species, many resident species have started showing evidence of food stress. Unusual mortality events (UME) have been described for sea birds, gray whales, and ice seals—with particularly large mortality events observed since 2018. The gray whale UME stretched throughout their migratory range and included strandings from California through Alaska. There are some indications that individuals were food-limited, but a single cause for this UME has not yet been determined. Other evidence of unusual gray whale behavior includes individuals seen feeding in the Tuktoyaktuk Peninsula in 2019. This is much farther east in the Beaufort Sea than they typically range and could indicate that animals are traveling longer distances on their migration. Combining longer migrations and reduced food availability could contribute to poorer body condition for any migratory species that might face future UMEs.

Large sea bird mortality events are now fairly frequently observed across the Bering Sea, with particularly large bird mortality events reported since 2017. The mass bird mortalities reported in May 2019 for the region included murres and puffins that feed primarily on fish. This was followed in July and August 2019 by mass mortalities of shearwaters that consume zooplankton. Other species such as auklets and black legged kittiwakes were also reported (National Parks Service 2019). Collected bird carcasses are being tested for toxins, such as those that might come from harmful algal blooms, but early results show that starvation may be a leading cause of death for many birds.

The ice seal UME involved bearded seals, spotted seals, and ringed seals that included adults and young individuals. There have been no records of stranded ribbon seals, but 2018 aerial surveys for ribbon seals found them absent in areas that they were expected to be seen. Since ribbon seals spend a lot of time in water far from coasts it is possible that their at-sea lifestyle makes them difficult to find washed up on beaches. Due to the state of decomposition of many reported seals, the cause of death could not be investigated for many animals. However, there is some evidence of starvation for some individuals.

Harmful Algal Blooms

The occurrence of harmful algal blooms (HABs) in the Bering Sea has been described for over a decade (Orlova et al., 2002), and it is monitored in Alaska by a network of collaborating entities through the Alaska Harmful Algal Bloom Network. Levels of the algae *Alexandrium catenella* were observed at high levels in the Bering Strait and Chukchi Sea in the summer of 2019, and this caused some concern about the safety of eating shellfish or marine mammals with high levels of saxitoxin that is produced by this algae species. Levels of saxitoxin and domoic acid have been detected in stomach contents and feces of marine mammals over the Bering Sea (Lefebvre et al., 2016), and the use of marine mammals for subsistence by indigenous communities is a cause for concern. Currently there is concern that the testing for toxin levels in subsistence foods may not be adequate to answer real-time questions about community food safety.

Ocean Acidification

The increasing carbon dioxide update by the oceans results in lowering the pH of seawater, which makes the acidic water corrosive to calcium carbonate. Marine species such as mollusks and shellfish have calcium carbonate shells that are vulnerable to acidic waters, and the impacts up the food chain could be significant. While studies emphasize the potential economic losses from ocean acidification to commercial fisheries and shellfish aquaculture, rural communities across the Bering Sea are also vulnerable from impacts of ocean acidification on subsistence fishing (Mathis et al., 2015).

Vessel Traffic

Increasing vessel traffic through Bering Strait could bring hazards of more underwater noise and marine pollution, which both negatively impact marine species. The narrow Bering Strait can also make it more difficult to avoid vessel collisions with sensitive species, which makes it a region of high vulnerability to vessel traffic for marine mammals (Hauser et al., 2018). The adoption of IMO-recommended vessel traffic routes through the Bering Strait is currently helping to restrict large vessels within established corridors to avoid conflicts with subsistence hunters, and it may also help to keep large vessels out of sensitive areas (Huffines, 2020). However, as the number of vessels transiting through the Strait increases, more stringent guidelines may become necessary to control impacts to marine ecosystems. Furthermore, there are few studies of how impacts of oil spills from vessels or use of dispersants may affect Arctic marine species, yet the projected increases in vessel traffic through Bering Strait highlights the likelihood of vessel-related spill impacts.

Implications to Coastal Communities

The human-ecosystem connection cannot be over-emphasized in the Bering Sea. As the physical environment changes, the declines in sea ice bring new challenges for Indigenous communities and their subsistence harvests. Often, it is not just that animals are less available because of changes in species distributions or UMEs, but conditions can also be more dangerous for hunters. For instance, hunters from St. Lawrence Island report traveling more than 50 miles to hunt walruses because the rapid sea ice retreat allows animals to move north earlier in the year. Some migratory marine mammals may also spend less time around coastal communities than they used to. In some years, unfavorable weather and ice conditions exacerbate problems with accessing walruses, and in 2014 and 2015 states of emergency were declared for Bering Strait communities with unusually low walrus harvests. In these instances, the emergency declaration provided communities with supplemental food to make up for the poor harvests.

Subsistence harvests remain important for the wellbeing of Bering Strait native communities, and the high cost of store-bought foods as an alternative further exacerbates the problem of food insecurity. As communities adapt to changing harvest conditions, they may also change preferred subsistence species. In one unusual circumstance, the community of Gambell harvested a gray whale that they did not have a quota to take. This whale was hunted instead of the traditional bowhead whale (and for which they receive an annual hunting quota) because their usual catch was so low. As result, this gray whale was reported as an infraction to the International Whaling Commission (Suydam et al., 2019).

Other direct impacts are experienced from greater exposure to fall and winter storms and coastal erosion that exacerbates damage to coastal infrastructure in the absence of protective landfast ice. The lack of thick, stable sea ice has also resulted in the inability to make an ice runway for aircraft in the community of Little Diomede, a community which has recently had to rely on the use of helicopters for air travel. This impact to winter travel and connectivity to hub locations for services make travel much more challenging and expensive.

The longer open water seasons that draw in more vessel traffic as well as cruise ship tourism could bring in positive economic benefits, but this has not yet been demonstrated as a stable economic benefit. Instead, more substantial economic activity in the region could come from interests in the commercial fisheries industry, which in 2017 was worth more than $2.5 billion for the Bering Sea groundfish catch alone. Regulating a sustainable large commercial fishing industry in the northern Bering Sea while the ecosystem is already showing signs of distress, however, could be one of the greatest challenges in preventing a major ecological disaster.

Collaboration to Support Ecological Research

Overall, the changing physical environment of ice, oceans, and weather has had measurable effects on wildlife and people. The cascading impacts from major ecosystem change on Indigenous communities and economic interests remains challenging to plan for, as changes are observed far more rapidly than ecosystem models can reliably predict.

The pressing research needs for the Bering Strait region continue to exceed available resources, and the research needed to monitor and predict ecosystem change would be most sustainable with international partnerships. Research networks such as the Pacific Arctic Group have demonstrated how successful international partnerships can share resources

Source: Marinetraffic.com

Figure II.2 Vessel traffic in Bering Sea on 24 June, 2020

in marine research. However, challenges remain in connecting Bering Strait community research interests and local community potential to support coastal research with larger research efforts. Bridging gaps in communication and knowledge generation will require time and resources to build lasting relationships and cannot be easily solved with high-level policy goals alone.

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Conservation in the Bering Strait Region

Henry P. Huntington

Key Issues

The Bering Strait region is one of the fastest-warming places on the planet. Loss of sea ice, warming of water, ecosystem transformation, coastal erosion, and industrial access are among the many changes underway here. I cannot speak for the entire conservation community, but there are enough troubling issues to concern every one of us. Determining which issues are most important is an exercise in judgment, best carried out with a wide range of expertise, especially including that of the region's Indigenous Peoples. I will simply describe some of the major concerns without attempting to assign priorities.

Indigenous Peoples of the Bering Strait region can, should, and do advocate for their rights and interests. Vera Metcalf's essay in this volume is an excellent case in point. I only point out the obvious: Indigenous Peoples are the ones most directly affected when things go wrong. Acknowledging the threats they face is a good place to start when considering conservation needs. In many respects, the natural environment has remained largely intact through the recent decades of ecological upheaval, providing one constant that people could rely on.

This is no longer the case. Sea ice is unreliable, animals appear at different times and in different places than the old patterns, harmful algal blooms threaten food safety, seals are dying for unknown reasons, and hunters face increasing risks as they go farther from traditional hunting and gathering areas in more marginal conditions to find food for their families and communities. Yet many hunters point out that they are good at dealing with uncertainty and change. The problem now is that environmental changes are compounded by societal changes, driven by a history of colonization and more recent unpredictability in government policies and programs. We are not leaving things the way they have always been; we are not even leaving hunters to fend for themselves. We are instead taking away their options by adding more commercial shipping, more commercial fishing, the prospect of increasing offshore oil and gas activity, restrictive regulations, the influences of long-range pollution, and more. Not to mention the hard-to-gauge cumulative effects of all of these disruptions. We are failing the planet, failing the Arctic, failing the Bering Strait region environment, and failing the Chukchi, Iñupiaq, St. Lawrence Island and Siberian Yupik, and Yup'ik who have lived there since time immemorial.

If our concern is sustainability, then cultural sustainability must be an essential component, too. This requires a wider conversation, led by members of the cultures in question. The concerns I raise next are those I see that concern the environment directly. These concerns are one piece of that larger conversation but are not by any means the final word.

Some aspects of commercial shipping in the Bering Strait area are managed already through the International Maritime Organization's Polar Code and by the IMO designating shipping lanes and areas to be avoided for reasons of maritime safety, developed with some concern for environmental and cultural well-being. Two shipping lanes are designated, one on either side of the Diomede Islands in the middle of the Bering Strait. These keep vessels away from coastal hazards and on predictable routes, and maintain freedom of navigation through these waters. These areas to be avoided help protect the cultures and environments of Nunivak, St. Lawrence, and King islands in the Bering Sea, while leaving plenty of room for ships to pass through. These are welcome measures. They do nothing, however, to limit the number of ships passing through the Bering Strait or regulate the types of cargoes carried. There is movement towards banning heavy fuel oil (HFO) in the Arctic, but it will likely be finalized with a number of exemptions that together will mean many ships will still use this tar-like substance, carrying risks of spills and contamination wherever they go. The areas to be avoided that have been designated so far are all on the U.S. side of the Bering Strait. Similar measures on the Russian side would help protect the species that move back and forth, and additional such areas could help avoid conflicts with migratory species. In brief, the management of commercial shipping has made progress, yet has a ways to go before enduring protections are in place.

Commercial fisheries are moving northwards in the Bering Sea, following shifts in the distribution of Pacific cod and other species. The U.S. does not allow bottom trawling in the northern Bering Sea, but fishing in the water column is allowed. The U.S. also does not allow commercial fishing north of the Bering Strait, apart from coastal fisheries for salmon, whitefish, and a few other species. These are welcome measures, but not permanent ones. As fishes move north, we are likely to see increased interest in commercial fisheries expanding northwards as well. The Russian response to such pressure is not yet clear. It is likely that fishermen and fisheries managers are watching closely as the biomass of walleye pollock and other species increases in the Chukchi Sea and are developing plans for fisheries there, consistent with Russia's emphasis on economic development in its Arctic lands and waters. It is tempting to say that Alaska fisheries are already well managed, which is true by the abysmal standards of fisheries management worldwide, and true even from the standpoint of short-term sustainability. Nonetheless, there are conflicts with other users of the ecosystems and open questions about the long-term viability of current approaches.

Offshore oil and gas activities were a major conservation concern through 2015, when Shell Oil failed to find commercially viable oil deposits in the Chukchi Sea. The current state of global oil markets suggests that interest in the region will not soon return, given high costs, high uncertainty, and a glut of other hydrocarbon sources. Nonetheless, offshore oil and gas cannot be written off completely, not in the long view. The extent of future development along northern Russian waters in particular remains a question. Oil activity in the Beaufort Sea, closer to existing industry infrastructure and pipelines stretching out from Prudhoe Bay, is continuing, meaning that industry supply vessels and other ships will continue to travel through the Bering Strait each summer. Alaska continues to seek interest in the vast quantities of natural gas on its North Slope, with a pipeline or liquefied natural gas tankers as the main options for transporting the gas to markets. This idea has yet to attract serious commercial investment, but again it would be unwise to count it out. If the tanker option is chosen, it could mean year-round shipping in ice-strengthened vessels with icebreaker support, adding to the volume and seasonal duration of existing shipping.

A major concern with all of these threats is that of their cumulative effects. The ability to assess cumulative effects remains poor, despite much scientific and management attention. Even if such effects could be assessed with some degree of reliability, there remains a major management challenge of determining how to regulate and restrict across different sectors. Should commercial fisheries be reduced to allow more commercial shipping? What tradeoffs should be imposed among different types of commercial vessels? Should industrial activities of all kinds be limited further during periods of especially rapid environmental change, such as 2017-19? It is fine to talk about cumulative effects and even to mention them in environmental impact assessments and the like, but this is only so much hand-wringing in the absence of effective ways to assess them and a willingness to take management action that will make a difference.

National and International Measures

The IMO governs commercial shipping worldwide, including Bering Strait shipping. Domestic regulations add more oversight and sometimes more stringent requirements. Fisheries management in Alaska is carried out by the North Pacific Fisheries Management Council for federal waters and by the Alaska Department of Fish and Game for state waters. Both are highly regarded, having been willing to restrict fisheries in the short-term in order to protect fisheries in the long-term. The U.S. and Russia cooperate on Bering Sea fisheries management and both are parties to treaties governing high seas fisheries in the Bering Sea and in the Central Arctic Ocean (CAO). Offshore oil and gas activities are regulated domestically by many agencies, with regard to human safety, environmental conservation, cultural protection, and other concerns. Arctic states have signed an oil-spill response agreement to help each other in case of need. From the Arctic Council to the Russia-U.S. polar bear treaty to the Iñupiat-Inuvialuit agreements on several species in the Beaufort Sea, there are many additional forums, treaties, agreements, and arrangements for addressing shared concerns in the Bering Strait region and beyond. So what more is needed?

Existing institutions can do more to take conservation concerns into account, especially considering existing climate change impacts that are only expected to increase in scope. We should be reluctant to add another layer of administration or oversight, lest we simply create more confusion and more demands on the time and attention of all concerned without necessarily achieving better outcomes. We should instead find better ways to make existing institutions work effectively. For example, the IMO has taken good steps to govern shipping and can take more, especially by giving greater weight to environmental and cultural protection. Fisheries management can also do more to include Indigenous Knowledge and to make sure traditional activities are not disrupted by fishing activity or by fisheries extractions from the ecosystem. This is especially important in areas where commercial fishing has not yet occurred, such as north of the Bering Strait. Offshore oil and gas activities should not proceed without stringent and tested accident-prevention and response mechanisms, authority that government agencies already have but may not fully employ.

By themselves, however, these measures will not be enough. Ultimately, the fate of the Bering Strait ecosystem depends on whether we choose to do something about global climate change. Here, too, the international mechanisms are in place, but they have fallen far short of what is needed. The U.S. and Russia could be powerful advocates for prompt action, but this seems unlikely. The election of Joe Biden as U.S. President provides one reason for increased optimism, though, especially with John Kerry designated as climate ambassador. Although the countries have cooperated on shipping and fisheries in the region, such efforts run against the tide of Moscow-Washington disputes and conflicts. When some see the loss of sea ice as opportunity rather than alarm bell, a commitment to action is all the more unlikely. We may instead have to focus our attention on managing within the effects of climate change, rather than managing to stop climate change. This is nothing short of a tragedy.

Managing ongoing climate change impacts just adds to the complexity of what we face already. Individual sectors can point to their governance structures and their choices and proclaim a commitment to sustainability. Cumulatively, however, our societies should not be so proud of themselves. As noted above, a major problem is that we may manage to reduce damage from any one activity, only to neglect damages caused by other activities in the same region. The statutes contain the right language and state that cumulative effects should be considered. In practice, however, it is hard to assess those effects, much less to summon the willpower to act on them. It is far easier to manage within our province and to leave other sectors to their own governance mechanisms or to blame those other sectors if something goes wrong. If we need new national and international measures, it is in the area of cumulative effects.

Scientists have taken some steps to address this challenge. From 2008-2013, the Bering Sea Project examined the ecosystem of the eastern Bering Sea, aiming to understand how the system functions and what is likely to occur with climate change. More recently, the North Pacific Marine Science Organization (PICES) has begun an integrated ecosystem assessment for the northern Bering Sea and Chukchi Sea. Various other efforts past and present have tried to understand and assess ecosystem structure and function, in part to improve our ability to understand the effects of disturbance. We have learned a great deal in doing so, but remain a long way from being able to sort out the entangled causes and effects of past shifts, to say nothing of predicting future ones. Expanding such efforts to include greater involvement of Indigenous Peoples and greater cooperation with Russia as well as other countries involved in Arctic marine research is a good idea. Organizations such as the Pacific Arctic Group provide a mechanism for communication and coordination. What is missing, however, is a strong connection between science and policy, not just to communicate science results to policymakers, but also to help direct scientific studies and assessments to the needs of policymakers.

In addition to stronger science-policy mechanisms, there is no clear mechanism for managing cumulative effects. In principle, this role is filled in the U.S. by Congress and the White House, which determine policies and funding and can allocate resources among sectors and interests, with greater power than any single agency. In practice, this is at best a clumsy mechanism subject to the rapid swings of partisan politics and the myriad distractions of other pressing governance needs, rather than a dedicated mechanism for assembling available information and determining how to achieve the larger goal of regional sustainability. How this mechanism would work is another question, requiring expertise far beyond my own, but without such a commitment we will not achieve sustainability merely by chance. Whether such an approach can be extended internationally may be an even more difficult question, but one that should at least be considered, lest we sacrifice the well-being of the Bering Strait region through a series of small cuts.

The Potential Role of Marine Protected Areas

One simple way to reduce or even avoid cumulative effects is to eliminate as many stressors as possible. Marine protected areas (MPAs) offer one means of doing so, if they truly limit human activity across multiple sectors. MPAs can also be controversial. In Alaska, for example, the designation of extensive protected areas on land in 1980 was regarded by some as a huge victory for conservation and by others as an unmitigated disaster for resource development and economic opportunity. As a result, additional conservation measures such as MPAs are often regarded as a threat to economic well-being from fisheries, oil and gas, shipping, tourism, and other industries. On the other hand, on a sectoral basis, Alaska already has many marine areas that enjoy protection of one kind or another. In the Bering Strait region, bottom trawling is not allowed in the Bering Sea and commercial fisheries are not allowed at all in the Chukchi Sea. There are three IMO-designated areas to be avoided in the Bering Strait region, reducing if not quite eliminating local disturbance from commercial shipping. Some offshore areas have been removed from oil and gas activities at times and opened again at other times, but the precedent exists for limiting the spatial extent of these activities in the ocean. The merits of these pro- and anti-MPA positions aside, spatial protections by any name offer a powerful conservation tool.

While some accounting methods include areas with restrictions of any kind in the total of MPAs, addressing only a single sector is an inadequate response in the face of multiple stressors. Climate change alone is causing huge effects in the Bering Strait region, and those impacts will not be ameliorated by even the strictest of MPAs. Leaving the door open for additional human activities that disturb the ecosystem will compound the effects of climate change. To be effective, therefore, MPAs will need to reduce or carefully manage human activities of all kinds. For example, Indigenous hunting activities pose little or no threat to species and ecosystem viability and can therefore continue under existing co-management regimes. The effects of industrial activities are far less clear, so these should be removed if any area is to qualify as an MPA. There may be limited exceptions, such as commercial vessel traffic to re-supply communities, as is the case for the area to be avoided around St. Lawrence Island.

MPAs may seem a blunt tool for management, but in the absence of reliable ways to measure and prevent cumulative effects, a blunt tool is the only one available. MPAs will also need to be extensive to be effective. Some scientists estimate that up to 30 percent of the ocean should be protected, and that the 30 percent cannot be carved out of remote and unproductive waters, but must include coastal and productive areas, too. The present state of the Bering Strait region, with abundant fishes, seabirds, and marine mammals, is in part the result of being a de facto MPA thanks to lack of access and modest amounts of human activity to date. Conserving the abundance of the region will require keeping it largely undisturbed through a combination of sectoral and cross-sectoral measures. MPAs are one promising tool for doing so, despite the inevitable challenges in both principle and practice. Management outside of MPAs is also necessary, as is continued action to reduce further climate change and global pollution. As already mentioned, the alternative is to watch the slow decline of the Bering Strait region into yet another marine ecosystem that becomes but a pale shadow of what it once was.

Geopolitics

So far, as described in other contributions in this volume, the Arctic has remained remarkably insulated from great power politics, and international mechanisms and institutions are working. Non-Arctic states respect institutions like the Arctic Council, 10 nations cooperated on the CAO Fisheries Agreement, the U.S. and Russia cooperate on shipping and fisheries management through established arrangements, and more. All of this could go horribly wrong, as discussed in other contributions, particularly if conflicts elsewhere in the world spill over into Arctic affairs. At the same time, there is growing concern in some circles about the ambitions and practices of non-Arctic countries when it comes to Arctic resources and Arctic affairs. The role of countries such as Korea, Japan, and China is increasingly recognized, for example in the Central Arctic Ocean Fisheries Agreement and their observer status in the Arctic Council. Their willingness to join existing international arrangements, however, is encouraging. Indeed, the record to date gives us some reason for optimism and some encouragement to keep working through existing mechanisms for governance, in collaboration with our colleagues from other countries. Cross-border cooperation by Indigenous Peoples, companies, non-governmental organizations, scientists, and others can augment high-level diplomatic and institutional ties. These proceedings provide one such example. The Bering Strait region and the Arctic as a whole are worth fighting for, together.

An Indigenous Point of View

Vera K. Metcalf

The Eskimo Walrus Commission (EWC) is a tribally authorized organization representing 19 coastal Alaska Native communities in Alaska, from Utqiagvik on the Chukchi Sea to Manokotak in Bristol Bay. EWC was formed in 1978 by these communities to represent their interests to the U.S. Department of Interior's Fish & Wildlife Services (USFWS), which has management responsibility for the Pacific walrus. In 1994, the U.S. Marine Mammal Protection Act was amended to include cooperative agreements between USFWS and Alaska Native organizations such as EWC to conserve marine mammals and provide for the co-management of food and cultural use by Alaska Natives.

When discussing the question of how to include Alaska Native input in regional governance, I must state that my comments are from my personal reflections and perspective based on what I've learned from my family, elders, Indigenous Knowledge (IK) experts, community members, and also from my work through the years in cultural and language documentation, in natural cultural resource management, and through working with governmental agencies, managers, and researchers. It is my sincere wish to contribute properly and respectfully an Indigenous perspective from the Bering Strait Region, but I am not speaking for the region as a whole. Importantly, engaging Indigenous People and communities in governance and management decisions must allow for multiple opportunities and paths to ensure important and necessary voices are heard.

This section, "Beringia: The Future of the Bering Strait Region," is both a daunting and hopeful one for me. Our stories recount that my home, Sivuqaq (or St. Lawrence Island) was made when the Creator squeezed a handful of earth and placed it in the midst of the rich natural environment of the strait. Like all Indigenous People, I believe that my homeland and waters are the most wondrous, special, and sacred place on earth. Indeed, my home sits in the middle of an extraordinary migration route for vast numbers of marine mammals: bowhead and other whales, walrus, all types of seals, and millions of seabirds and fish. This is an immense migration corridor, which includes the entire population of some species, such as walrus, and one that follows the sea ice retreat in spring and its expansion in the fall. For thousands of years, my ancestors thrived in this environment. Even when there were periodic climate and environmental changes throughout the millennia, the variety and quantity of these natural resources sustained us. This continues today.

What is daunting about this topic, the future of the Bering Strait Region, is the implication that our future may be in doubt. It is apparent to us that environmental changes are happening incredibly fast and in such fundamental ways, such as our dynamic sea ice conditions. The impact on our world is profound. These changes are not just an interesting research topic; they represent a seismic shift in the traditional rhythms of our communities. It is daunting because we have experienced oiled wildlife, Avian cholera and other large die-offs of seabirds, and HABs (harmful algal blooms). U.S. federal managers have declared multiple UMEs (unusual mortality events), the most recent for ice seals because of the unusually large numbers of carcasses found on Alaskan shores. The collapsing Bering Sea "Cold Pool" threatens the traditional Arctic marine ecosystem (Cornwell 2019) and, of course, the significant increase in vessel traffic through the narrow strait as the Northern Sea Route opens also increases the likelihood of contamination, marine debris, and accidents. It can be overwhelming to consider what impacts a changing Arctic might bring to us.

This session also indicates there are now others who also recognize the Bering Strait Region as unique and important. It is truly a marine and cultural crossroads, with waters connecting southern oceans to northern seas and the Arctic Ocean and the continents of Asia and North America nearly touching from east to west. Instead of viewing the strait as a "choke point," this session seems perhaps to be considering it as a connection point; one that connects varying interests in the realms of environmental concerns, economic opportunities, and political realities to their impact on the Bering Strait Region. This session brings me hope because it includes an Indigenous perspective to ensure the human connection is included in discussions about the future of the Bering Strait region. Arctic Indigenous People cannot be separated from our environment and natural resources. We are and always have been absolutely dependent on this intimate relationship with our environment and its gifts. To be grounded in this dependent relationship is a cultural strength. If our land, waters, animals and plants that live here with us are healthy, so are we.

The important question of examining what role local communities and Indigenous groups could have in the governance of shipping in the region raises several topics. First of all, I appreciate the recognition that local communities and Indigenous groups are different and are not equivalent. It is an important issue currently being (re)addressed by the Inuit Circumpolar Council (ICC), which is a non-governmental organization that works to advance the shared priorities of Inuit living throughout *Inuit Nunaat*, through research, advocacy, and representation. Inuit Nunaat is the Inuit homeland encompassing Inuit communities in Chukotka, Alaska, Canada, and Greenland. ICC has worked in partnership with other Indigenous Peoples and their representative organizations through a variety of domestic and international forums, as well as through intergovernmental organizations such as the UN Convention on Biodiversity (CBD), UN Framework Convention on Climate Change (UNFCCC), and UN Permanent Forum on Indigenous Issues. For example, ICC was pivotal in the development of the UN Declaration on the Rights of Indigenous Peoples as well as in securing participation by Inuit and other Indigenous Peoples in the Arctic Council. The Bering Strait Region Indigenous tribal communities and Alaska Native corporations belong to and are represented by ICC. (Draft ICC Policy Paper, October 2020.)

Specifically, the UN Declaration on the Rights of Indigenous Peoples recognizes "the urgent need to respect and promote the inherent rights of indigenous peoples which derive from their political, economic and social structures and from their cultures, spiritual traditions, histories and philosophies, especially their rights to their lands, territories and resources." This presents a distinctively different status than "local communities," which is the term generally used to describe the inhabitants of a geographic area. This necessity of ensuring the sovereignty of Indigenous communities to maintain our connection to the land and waters and to conserve its resources, which have sustained us for millennia, is what guides our role in contributing to the governance of shipping and development in the Bering Strait Region. The continued health and well-being of Indigenous communities will be our measure for the effectiveness of any governing or regulatory structure put in place.

Through both my work with the Eskimo Walrus Commission and the Inuit Circumpolar Council, I have the great privilege of working with our Chukotkan neighbors in Russia. The current cooperation between Bering Strait Alaska and Chukotka Native communities began when cultural exchanges resumed after a 1989 agreement was signed between Russia and the U.S. that opened the 50+ year Ice Curtain and created a visa-free travel program for residents close to the border. It was an emotional and life-changing event for St. Lawrence Island Yupiks. The door was open to discovering personal connections and inspiring a revival of our shared culture, language, and song. I am an example of those ties since my clan, the Qiwaaghmiit, originated in a village in Chukotka called Qiwaa. The U.S. National Park Service's Shared Beringian Heritage Program has funded many projects for cultural exchanges, for collaboration on Pacific walrus management and IK, and for Beringia Days, which was a conference that gathered regional residents, researchers, and government officials from both Russia and the United States. It was an extremely valuable program that helped build connections that remain today. Facebook is a common platform for sharing community news, documenting walrus observations, ship traffic, cultural documentation projects, personal updates, and more. We, both Alaska and Chukotka Native communities, know and feel that our natural resources are theirs, their natural environment is ours—and we both depend on these for our well-being: nutritionally, economically, culturally, and spiritually. We must maintain cross-border communications and exchanges despite the politics dividing us. Not only do we share the same resources and risks from shipping and development, but we also share family and cultural connections.

Again, my hopefulness in this session examining the future of the Bering Strait region is because of the inclusion of the Indigenous perspective and the question of what role Indigenous Knowledge (IK) can have in identifying and responding to increased human activities. As background, I suggest using the Inuit Circumpolar Council's definition of IK: "Indigenous Knowledge is a systematic way of thinking applied to phenomena across biological, physical, cultural and spiritual systems. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation." (Inuit Circumpolar Council-Alaska. n.d.) Under this definition, IK goes beyond observations and ecological knowledge. It is not something simply to be documented as data to be used by others for their purposes. Instead its true value is found when it is applied by IK experts and knowledge bearers to questions about the health and condition of their world, including the land, waters, air, and all who inhabit it. As they discuss together their shared knowledge and experience in their own way, their contributions will be most effective. It can offer a unique "way of knowing" that can help complete mankind's understanding of the Arctic that is valuable to inform public policy.

While there are certainly plenty of examples of how IK can contribute to improved natural resource management of geographic areas and traditional subsistence species, I will cite its use in Pacific walrus management. First of all, the member communities of the Eskimo Walrus Commission consider conservation of the walrus population its most important responsibility, as evidenced by resolutions concerning walrus haulout protections, marine mammal avoidance, and other environmental concerns affecting the waters we share (for example, shipping, oil/gas contamination, marine debris, harmful algal blooms, microplastics, and ocean acidification). Importantly, over many years the two communities on St. Lawrence Island have contributed considerable amounts of bio-samples (blubber, organs, teeth, and fluids), real-time observations of ice and walrus habitat, their unique knowledge of walrus and its behavior, and a description of their own traditional resource management practices to USFWS and researchers. IK experts have informed and greatly enhanced many research projects by improving methods of data collection, explaining walrus behavior to improve usefulness of population estimates and adaptation strategies, reviewing research results and conclusions, and confirming the condition of the walrus population for Endangered Species Act listing purposes. This collaboration among researchers, government resource managers, and IK experts is possible, but it requires trust and a long-term commitment to traveling to communities, to sharing results and proposals in community meetings, and to accepting contrary input and advice that would change or postpone research activities and alter resource management decisions. This long-standing cooperation and involvement by the communities allowed USFWS to accept the tribal governance of walrus harvest management by the communities. These ordinances are based on the traditional harvest management practices and Indigenous Knowledge of the communities, which are well known and well understood locally. It is remarkable evidence of the wisdom inherent in Indigenous traditional resource management practices that these remain effective today and are consistent with current safety and conservation standards.

For further evidence of the importance natural resource management has in Indigenous communities, the Inuit Circumpolar Council's *Food Sovereignty and Self-Governance: Inuit Role in Managing Arctic Marine Resources Report* offers a clear in-depth study. This report offers case studies of four management regimes in Canada and the United States. It explains, "Though this project looks at management through four case studies, it was made clear from the beginning that Inuit have a holistic view and approach, understanding the interconnections between all within an ecosystem. In fact, the single species approach to management emphasized by dominating cultures is one of the largest barriers to a co-management system that equitably includes Inuit, and that approach is often viewed to be harmful to animals." (ICC 2020. 14)

I would suggest that the combined roles of IK in environmental research and of measuring the effectiveness of governance by the health and well-being of Indigenous communities will offer the best outcome for governance decisions in the Bering Strait Region. By realizing that Indigenous Knowledge and cultural values recognize that we share the same water, land, and air with all living things, new perspectives and solutions can be incorporated. We are dependent on the health of our environment and on each other. For example, a fundamental cultural value is respecting and conserving the gifts the Creator provides us. Only by cherishing the blessing of a harvested walrus (whale or seal) are we worthy of continued successful hunting. Even our thoughts must be proper and respectful, because they reflect how well we are properly respecting and conserving what has been given. The cultural value of humbly sharing our harvest is an expression of this understanding. While it is beyond translation, this profoundest Indigenous Knowledge and way-of-knowing in my language is *Esla*. It encompasses and connects all things. I have been incredibly blessed to have listened and learned from the most amazing Indigenous Knowledge elder experts and am absolutely convinced this understanding can contribute powerfully to governance in the Bering Strait Region for the welfare of us all.

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Chinese Perspectives on International Cooperation and Geopolitics around Beringia

Jian Yang

The Bering Strait is an important, narrow passage connecting North Pacific and Arctic waters, flanked by Russia and the United States, the two largest and most influential countries in the Arctic. East Asian countries—including China, Japan, and Korea—rely heavily on overseas trade and energy and are concerned about Arctic shipping governance. For East Asian countries, the path that traverses the Bering Sea through the Bering Strait into the Chukchi Sea is the critical gateway to enter the Arctic Ocean and participate in Arctic activities. Asian countries have expectations for the peaceful use of the Bering Strait and the Arctic, but as non-Arctic states, they cannot replace the role of the United States and Russia in the governance and use of the Bering Strait.

The fate of the Bering Strait has been largely determined by the views and decisions of the United States and Russia regarding Arctic order and international cooperation in the Arctic. During the Cold War, the United States and the Soviet Union engaged in an arms race, and the entire Arctic, including the Bering Strait, had moved to the forefront of confrontation and became an arena of military competition between these two great powers. Since Gorbachev's Murmansk speech in 1987, however, the Arctic has seen an era of international cooperation devoted to environmental protection and scientific exploration. Former Norwegian foreign minister Jonas Gahr Støre characterizes this era of international relations in the Arctic as a period of "High North – low tension."

This low-tension international environment has played an active role in Arctic governance with regard to addressing global climate change, environmental protection, and other important issues. In 1990, the United States and the Soviet Union concluded the Maritime Boundary Agreement in the Bering Strait (known as the Shevardnadze-Baker Line). The agreement defines the parameters whereby the states exercise territorial sea jurisdiction or exclusive economic zone jurisdiction. The agreement also sets clear boundaries as to where each state has the right to manage fisheries and energy exploitation and development, as well as exercise jurisdiction in these maritime areas. It was designed to increase effective regulation of marine activities and to mitigate potential disputes between the two states. The agreement was ratified by the U.S. Congress but was not ratified by the Soviet Union or the Russian Federation after the collapse of the Soviet Union.

Despite the ratification being suspended, international cooperation in the North Pacific Arctic has been fruitful in the domains of scientific observation, shipping, and fishery governance over the past three decades. East Asian countries, especially Japan, Korea, and China, can participate in Arctic affairs related to the Bering Strait or Beringia through international cooperation.

International Scientific Cooperation in the Pacific Arctic Region

The Pacific Arctic Group (PAG) is a noteworthy example of scientific cooperation.[1] The PAG is a group of institutes and individuals with a Pacific perspective on Arctic science, with members from six North Pacific countries: Canada, China, Japan, Korea, Russia, and the United States. At the Arctic Science Summit Week (ASSW) held in Kiruna, Sweden in 2003, the above-mentioned six North Pacific countries reached a consensus to establish the PAG under the organization of the International Arctic Science Committee (IASC). In autumn 2007, the working group was finally established with a mission to serve as a Pacific Arctic regional partnership to plan, coordinate, and collaborate on science activities of mutual interest.

The PAG focuses on cooperation in the Arctic Pacific region.[2] Its main cooperative research investigations include seasonal and interannual ocean observations, oceanic and atmospheric processes, seafloor mapping of ice-covered areas, ecosystem and biological indicators of climate change, sea ice thermodynamics, heat flux throughout the Arctic, and associated biodiversity issues. Research topics also include the effects of Pacific water inflow into the Bering Strait on sea ice cover, halocline formation, and the carbon cycle.[3]

The PAG has been a very effective cooperation platform for non-Arctic states. Based on the information sharing emerging from research vessels of the six countries, the PAG formally proposed the Distributed Biological Observation (DBO) plan of this area in the working meeting held in Beijing in autumn 2010.[4] The DBO plan focuses on the Bering Sea and the Chukchi Sea, where all member state research vessels need to pass through before entering the Arctic and focuses on a limited number of five sections (as shown in the figure below). Each member state may undertake one or more sections according to its own investigative tasks. The PAG provides a set of unified criteria for the physical, chemical, and biological parameters to facilitate the member states' willingness to undertake DBO cross-sectional surveys without spending too much time and research resources while still implementing their own inspection projects and contents.

China's Arctic research expeditions are multidisciplinary and comprehensive, mainly in the Bering Sea, the Chukchi Sea, and the Canadian basin. Each voyage usually covers one to two DBO monitoring sections. Korea's annual arctic expedition focuses on the ecological environment, mainly in the Bering Sea, Chukchi Sea, and on the edge of the Chukchi Sea, undertaking the DBO monitoring section inspection. Japan's annual Arctic expedition focuses on physical oceanography, which is mainly concentrated on the edge of the Chukchi Sea.

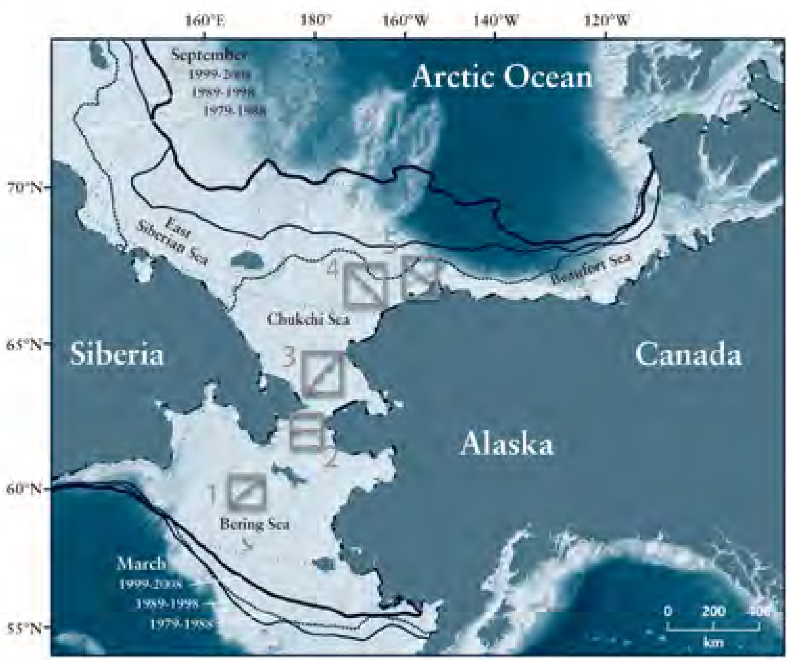


Figure II.3 Distributed Biological Observation (DBO) plan proposed by the Pacific Arctic Group (PAG) in 2010

In the spring of 2014, PAG published their joint observation and research results, "The Pacific Arctic Region: An Introduction."[5] As a product of activities during the 2007-2008 International Polar Year, this volume consists of 12 chapters that were coordinated by the PAG. These included meteorological status and projections of future changes, long-term and interannual changes of sea ice, physical ocean and shelf-sea basin interaction, Arctic climate and ice-sea processes, biogeochemistry, biodiversity and biogeography of the carbon cycle in the Western Arctic Ocean, and more. This collection of papers makes a systematic summary of the previous research in the Arctic Pacific region. The topics range from atmospheric and physical sciences to chemical processing and biological responses to changing environmental conditions. Physical and biogeochemical modeling results highlight the need for continued data collection together with interdisciplinary modeling activities to track and forecast the changing ecosystems of the Pacific Arctic in response to climate change. This work plays an important guiding role in designing follow-up projects and scientific research.

Cooperation in Arctic Fisheries and Shipping Governance in the Bering Strait

China, as one of six parties (China, Japan, Poland, Russia, Korea, and the United States), signed the "Convention on the Conservation and Management of Pollock Resources in the Central Bering" in 1994 and ratified it in 1995. The 1980s and early 1990s witnessed the depletion of pollock resources from overfishing in the Central Bering Sea, a high seas area of the sub-Arctic. With joint efforts from coastal states and distant-water fishing states, the establishment of governance rules, and the implementation of management measures of the convention, these efforts have provided better protection of pollock resources in the Bering Sea. The establishment of an international mechanism has made contributions to promoting the conservation and storage management of fishery resources and other living marine resources in the Bering Sea.

The Bering Strait is critical to international sea transport. According to the United Nations Convention on the Law of the Sea, the Bering Strait connects the high seas of two oceans, and there is no other route of similar convenience with respect to navigation and hydrographical characteristics between two oceans, as there are no high seas or exclusive economic zones at the narrowest point of the Strait that can provide full freedom of navigation for potential passers. This characteristic meets the convention's geographical criteria for "*straits used for international navigation*."

The Bering Strait is the shortest route between the North Pacific coasts and the Arctic Ocean coasts and plays an important role in the use of the Arctic shipping routes. The articles on icebound Areas of UNCLOS 234 give coastal states the right to adopt and enforce unilateral non-discriminatory laws and regulations for the prevention, reduction, and control of marine pollution from vessels in the ice-covered areas, which is the legal basis for coastal states to manage the Arctic sea areas and the Arctic shipping routes.

China respects the sovereignty of the United States and Russia in the relevant area of the Bering Strait and their jurisdiction in accordance with relevant international law. We believe that the United States and Russia have the opportunity and basis to reach a consensus on Bering Strait passage rules.

On the platform of the International Maritime Organization (IMO), representatives of East Asian maritime countries, Arctic countries and other important shipping countries join forces to promote the adoption and implementation of the Polar Code. China, Japan, Korea, together with Greece, Italy, Norway, Panama, the Russian Federation, the United Kingdom, and the United States belong to the Category A Council members. The 10 countries with the largest interest in providing international shipping services support the Polar Code with the concept of goal-based governance, led by IMO Secretary-General Mr. Koji Sekimizu of Japan and Mr. Kitack Lim of Korea.

Asian countries are pleased that Russia and the United States are cooperating on the IMO platform. On May 21, 2018, the IMO Maritime Safety Committee approved the Bering Strait shipping plan proposed by the United States and Russia. The document became the first internationally recognized transport plan approved by the IMO in polar waters. The system envisages six two-way routes in the Bering Strait with a width of four nautical miles and approaches to it from the U.S. and Russian sides as well as six precautionary areas. The routes are positioned parallel to each other across American and Russian parts of the Strait, which allows vessels to choose the most convenient passage through the Strait, taking into account weather and ice condition as well as the ship's destination.

In addition, the joint United States-Russian proposal facilitates safer and greener shipping in the Bering Strait. These routing measures will be helpful to keep large vessels from navigating too close to ecologically sensitive underwater habitats.

As far as I know, Chinese scholars and officials from the Ministry of Transport and the Ministry of Foreign Affairs have expressed their appreciation for the joint United States-Russian proposal. What they appreciate is not only the content itself, but also the way that Russia and the United States consulted with each other and made a joint proposal, an approach displaying the spirit of peace and cooperation.

Concerns about the Impact of a New Arctic Cold War on International Cooperation around the Bering Strait

Before tensions arose due to the Crimea crisis, United States-Russian relations had shown signs of improvement during the Obama administration. The United States and Russia had promoted and expanded cooperation in the Arctic, including enhanced dialogue, environmental protection, Indigenous cooperation, maritime search-and-rescue exercises, intelligence-sharing mechanisms, and other efforts in the North Pacific maritime cooperation. But all these were put on hold because of the Crimea crisis.

In recent years, there have been signs of a new Cold War in the Arctic. While Russian-U.S. relations have not made any improvement, a strategic confrontation between the United States and China has emerged globally. Recently, the United States has even projected its global strategic confrontation with China into the Arctic region. Arctic governance and international cooperation are being tested by these geopolitical tensions. In the first half of 2019, the U.S. Secretary of State made critical remarks about China's and Russia's Arctic policies, while the U.S. Coast Guard released the Arctic Strategic Outlook and the U.S. Department of Defense released the Arctic Strategic Report. Both documents show the implications of the United States' emphasis on geopolitical confrontation. The documents define China and Russia as challenging players that seek to undermine international rules and norms. The Coast Guard report combines environmental, economic, and security factors, taking regional cooperation, environmental governance and geo-security into account. The Department of Defense (DOD), on the contrary, emphasizes global strategic significance and pays attention to strategic security. The DOD report calls for the establishment of early warning and awareness mechanisms, the strengthening of military operational capabilities, and the maintenance of rules-based order in the Arctic. The DOD report takes the Arctic as a potential corridor for strategic competition and calls for knowledge of all kinds of activities of other countries in the Arctic, including information on atmospheric environment and ice observation data, marine resource environmental assessments, vessel traffic and traceability, the growth of human activities, economic infrastructure, and passing ships.

The detente in United States-Russia relations directly affects China's participation in economic and governance activities in the Arctic. In 2013, China became an observer state of the Arctic Council, which was closely related to the fact that the U.S. government treated Arctic affairs in the framework of addressing global climate change. At that time, the United States and Nordic countries hoped to persuade the Chinese government to take greater responsibility to address climate change and environmental protection.

Chinese scholars worry that once the Arctic order deviates from its focus on science, environment, and climate change that it has organized around since 1988, it will return to a Cold War state of confrontation and military deterrence between the two camps. The achievement of the Arctic Council as the main platform dealing with climate change and sustainable development could be destroyed. As an important exit/entrance to the Arctic shipping route, the Bering Strait would be likely to change its function from a commercial shipping route to a passage for global military conflict. Once the Arctic is dominated by geopolitics again, China will face new challenges for its involvement strategies. China can fully demonstrate through its actions and attitude that its Arctic policy is peaceful and constructive. China would support Arctic countries and relevant non-Arctic countries in establishing mechanisms to jointly enhance the transparency of Arctic activities, including Arctic shipping and other economic activities.

Expectations for International Cooperation around the Bering Strait

As the two proximate coastal countries, the stances of the United States and Russia on management or cooperation around the Bering Strait will directly affect the future of the Arctic. United States-Russia relations have the characteristics of competition in high politics and cooperation in low politics in the Bering Strait area. The international community should encourage the normalization of relations—especially cooperation in the Arctic—between Russia and the United States. It is important to consolidate United States-Russian cooperation at the local level and in the low political field. Although relations between Russia and the U.S. have not yet been normalized, the two countries have cooperated in biological resources, environmental protection, visa convenience for tourism, and maritime transportation in the region.[5] Relevant countries attach great importance to cooperation in scientific research, search and rescue, and vessel supervision in the Bering Strait.

All parties should be wary of the challenges posed by a new Arctic Cold War but should not be dragged into a self-fulfilling prophecy. Climate change remains the world's greatest governance need. We should not deviate from the direction of addressing climate change and other needs of governance that have dominated over the past two decades. We support goal-based governance and encourage tentative exploration, and continue to follow the path of Arctic fisheries governance, Arctic shipping governance, and North Pacific cooperation. These efforts should not be interrupted.

Supporting governance of the Arctic Ocean based on the United Nations Convention on the Law of the Sea and other international laws, China will continue to attach great importance to cooperation with Arctic countries and Asian countries such as Japan and the ROK in addressing climate change, scientific monitoring, fishery governance, shipping and sustainable development of the Arctic.

China insists on considering the Arctic issue in the context of the common governance goal of tackling climate change, so as to reduce geopolitical interference. Major powers should restrain their words and deeds and reduce geopolitical pressure on this region. The situation in the Bering Strait is an indicator of direction; whether the Arctic is heading for "peaceful cooperation" or "Cold War confrontation." International cooperation in the Arctic has been undermined by Washington's move to shift the focus of Arctic affairs from climate to geopolitics.

China's Arctic policy is peaceful, environmentally friendly, and sustainable. China can take more actions to prove it. It is time for the United States' new administration to make an assessment of the core value of its Arctic policy, whether it is dealing with climate change or geopolitical competition.

Chinese shipping experts are relatively optimistic about the future of Arctic shipping. They hope to build regular Arctic trade routes, especially new container transit hubs on the Pacific side, through international cooperation with countries in the North Pacific and joint efforts by China, Japan, Korea, Russia, the United States, and Canada. For example, realizing this vision would require international cooperation among Shanghai Yangshan Port in China, Kwangyang Port and Busan Port in Korea, and Hokkaido Tomokomai Port in Japan. There is an expectation that the United States or Russia can be integrated into the network of North Pacific ports and rebuild and expand their existing ports into hubs near the Bering Strait. The capacity of China, Japan, and Korea in smart port equipment may contribute to the main lines and branch lines in the North Pacific shipping system. Promoting the construction of deep-water ports in the Far East will help to further facilitate regional development and prepare for shipping prosperity brought by the next industrial revolution.

Notes

1. For PAG's Mission, Vision and Activities, please refer to its website, arcticportal.org
2. The Pacific Arctic Region is loosely defined by PAG as the area lying between Russia and Alaska (Bering Strait) and extends northward including the Beaufort Gyre and Arctic Ocean and south including the Bering Sea. The area also includes seasonally ice-covered seas. PAG activities may extend beyond these boundaries based on project objectives.
3. For PAG 10 principle science themes, please refer to https://pag.arcticportal.org/component/content/section/9?layout=blog
4. He Jianfeng, "In-depth Scientific Research in the Arctic through Regional Cooperation-- Taking PAG as an Example," in Yang Jian ed., Asian Countries and the Arctic Future, Beijing: Current Affairs Press, 2015, p. 263.
5. Grebmeier J.M., Maslowski W. (2014) The Pacific Arctic Region: An Introduction. In: Grebmeier J., Maslowski W. (eds) The Pacific Arctic Region. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-8863-2_1
6. https://www.highnorthnews.com/en/imo-approves-new-shipping-corridors-

bering-sea-improve-safety

7. Recognizing the unique Arctic ecosystem of Beringia, a sensitive area located along the Bering Staite, President Obama and President Medvedev agreed to enhance cooperation in the field of environmental protection and the study of climate change in 2012.

8. Walter A. Berbrick, Strengthening U.S. Arctic Policy through US-Russia Maritime Cooperation, Leif Christian Jensen and Geir Hønneland (eds.) : Handbook of the Politics of the Arctic, Cheltenham UK: Edward Elgar Publishing, 2015.

PART III

THE NORTHERN SEA ROUTE AND ARCTIC MARINE TRANSPORTATION

Russian Arctic Energy Development, Sustainability and the Northern Sea Route

Tatiana Mitrova

Introduction

This paper provides some Russian perspectives on the overall development of large-scale, non-renewable resources in the Arctic with respect to the commercial, political, environmental, and social considerations of the Northern Sea Route (NSR), Russia's national Arctic waterway. During recent years the Russian Arctic has emerged into a booming resource-producing region with destinational shipping dominating use of the NSR and the Northeast Passage (NEP). Investments in icebreakers and the NSR infrastructure, which has been focused on support for the Yamal LNG project, have resulted in substantial improvements in Arctic navigation reliability and predictability. Traditionally the NSR's active utilization was mostly constrained by severe ice conditions, and high ice-class vessels were required for safe navigation. However, lower ice class and Arc4 ice class vessels (under the Russian Register of Shipping) are now in use along the NSR and entire Russian maritime Arctic during the navigation season.

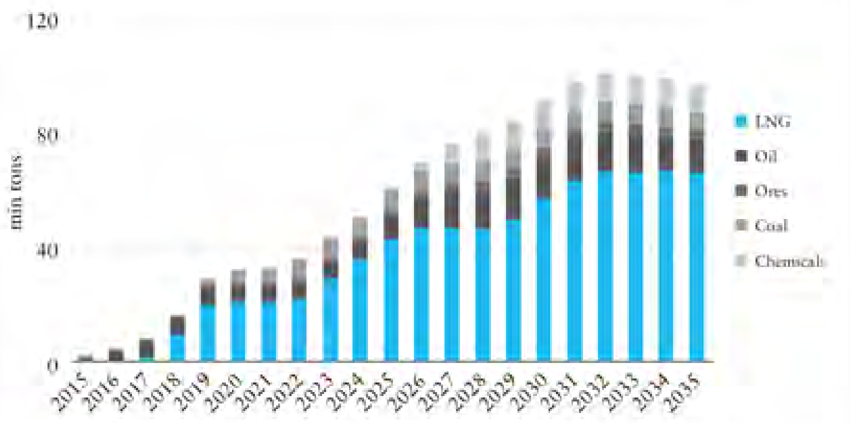
The NSR is defined in Russian law as the set of marine routes between Kara Gate in the west to the Bering Strait in the east. This legal definition does not include the Kara Sea. The reduction of the average NSR passage time from 15 days in 2014 to 9.7 days in 2018, a second critical factor (after the completion of the Yamal Project) has led to improved Arctic navigation. The average passage time along the NSR improved to 9.5 days, based on 2019 navigation data. However, further reductions are unlikely since the passage time has been reduced to its shortest given the current level of NSR navigation development. The passage time is expected to vary between nine and 10 days in the future.

While most of the ships using the NSR are on cabotage (internal to Russian waters) and on destinational voyages (carrying Russian Arctic natural resources out of the region to global markets), it is important to note which cargoes and what numbers of ships have recently been on trans-Arctic (ocean to ocean) voyages using the full NSR and the Northeast Passage. For 2019, NSR Administration data indicates 26 ships with cargoes (chief among them were oil, iron ore, and fertilizers) sailed on trans-Arctic voyages; 11 additional ships sailed in ballast (without cargo). In 2019, NSR became the only global transport corridor where alternative fueled vessels (LNG for NSR) moved significant cargo volumes. In 2019, LNG-powered vessels accounted for 43 percent of the trans-Arctic cargo carried (with full NSR transits); the NSR during the period was the leader for all global marine routes in cargo tonnages carried by LNG-powered ships.

Natural Resource Developments and NSR Cargo Tonnages

The Russian Presidential Decree, *On National Goals and Strategic Objectives of the Russian Federation until 2024*, set an 80-million-ton benchmark for Northern Sea Route cargo tonnage to be achieved by 2024. The resource production plans are ambitious (Figure III.1) and the amount of economically recoverable reserves are uncertain for these planned volumes, especially considering the volatility in energy and commodity prices the world experienced in 2020.

No new project launches are expected in the next two years, except for the Yamal LNG Line 4 that will add approximately one million tons (gas condensate and LNG) to the cargo tonnage. Cargo tonnages will depend on



Source: Authors' estimate based on NSR Administration data

Figure III.1 Cargo tonnages forecast for the natural resource projects in the Russian Arctic in 2019/2035 newly launched LNG production projects, oil delivery from the Novoport field, and cargo supplies for the second wave of Arctic mega-projects: LNG production (Arctic LNG-2, Obsky LNG; and, oil production (Vostok Oil). Coal projects are very uncertain and, without large-scale prospecting, are unlikely to be implemented.

Reviews based on reports of the commissions leading the main Arctic field developments and interviews with mineral resource users reveal an alternative production schedule that envisages 50 million tons annual carried along the NSR in 2024, a worst-case NSR scenario (Table III.1).

Table III.1 NSR cargo tonnages forecast to 2035 (Millions of tons)

Year	2019	2020	2021	2022	2023	2024	2025	2030	2035
LNG	19.46	20.90	20.67	21.75	28.89	35.81	42.78	56.57	66.15
Oil	5.77	5.43	5.45	5.78	5.77	5.90	7.85	14.42	11.35
Ores	1.31	1.34	1.35	1.42	1.64	1.68	2.05	3.51	3.51
Coal	2.20	4.50	5.50	7.00	7.00	7.00	7.00	7.00	6.15
Chemicals	-	-	-	-	-	-	1.00	10.10	10.10
TOTAL	28.74	32.17	32.97	35.95	43.30	50.39	60.68	91.60	97.25
NSR national project targets	26	29	30	32	45	80			

Source: Authors' estimate

The large difference in estimates relates to the high developmental uncertainty of all mining, oil and gas production projects. Such uncertainty is related to industrial project implementation difficulties and the global commodity markets for LNG, oil, and coal. A majority of ship traffic carrying these large increases in tonnages will be on destinational voyages carrying Russian Arctic resources to global markets.

An energy transition and growing consumption of carbon-free energy types (such as a hydrogen economy) may boost Arctic gas production, used in the processing and production of carbon-free ammonia with CCU and blue hydrogen. In the Russian Arctic, carbon dioxide derived from hydrogen or ammonia production can yield some economic benefit, for example, to increase oil recovery in the depleted oil and gas fields. Natural gas processing into chemicals enables medium-size natural gas fields to be operative.

By 2035, the Northern Sea Route (NSR) is likely to become an all-year-round and safe transport corridor. Rosatom, the state nuclear corporation and leading NSR manager, is working on a plan to develop the Arctic

Table III.2 Potential NSR cargo types to 2024 and 2035

	Up to 2024	Up to 2035
Planned cargo on destinational voyages	LNG coal ores and metals	LNG coal ores and metals oil
Possible cargoes on destinational voyages	oil	ammonia hydrogen methanol olefins and polyolefins liquefied hydrocarbon gases ethane /ethylene
Transit or trans-Arctic cargos	ores coal one-off container transportation fish pulp	regular container transportation LNG from the U.S. and Canada to the European market ores coal fish pulp fertilizers

Source: Author's estimate based on the NSR Administration data

Table III.3 Operational businesses and beneficiaries of NSR navigation

1	**Icebreaker escort**	Rosatomflot, Rosmorport
2	**Bunkering**	Producers of fuels, including LNG
3	**Port services and charges**	Rosatomflot (in the NSR water area), ports of Providenyia, Arkhangelsk, Indirga, Murmansk
4	**Navigation services**	To be specified
5	**Insurance**	To be specified
6	**Vessel owners' income**	Sovkomflot, Rosatomflot Cargo

Source: Alexander Klimentyev's Economic Laboratory

route and coast. As planned, three institutions (Rosatom, the Ministry of Transport and the Ministry for the Development of the Russian Far East and Arctic) will be actively engaged in NSR development. The plan is divided into three implementation phases. In 2019-2024, the primary official goal is to increase the cargo tonnage along the NSR to 80 million tons and to increase ship traffic to the east along the Route. By 2030, all-year-round navigation along the entire NSR is planned, which includes building new atomic icebreakers and improving port infrastructure. At the final stage, in 2035, the cargo tonnage is planned to increase to as high as 130-170 million tons.

Development of large-scale non-renewable resources with maritime logistics in the Russian Arctic is also associated with numerous political, environmental, and social considerations. Russian Arctic development has to be placed in the context of global geopolitics. Also, the NSR transit income generated by Russian companies and the number of newly created jobs is of great significance. Budget revenues at all levels must be considered.

A slight downward trend in cargo tonnages is likely in 2020. Afterwards (up to 2024), expectations are for progressive increases in cargo tonnages to approximately 60–65 million tons. The key problems that may arise in NSR utilization are associated with the decline in global demand and prices for energy resources due to the COVID-19 pandemic. Arctic projects are quite expensive, and their launches are likely to be postponed during the global pandemic.

NSR use by the oil and gas industry is related to future, promising field development. If prices and demand for oil and gas rise, planned indicators of increased cargoes are possible in the mid-term. A certain NSR utilization decline can be expected in connection with LNG gasification of Russia's remote regions, a topic actively discussed nowadays. In this case, LNG will be supplied partly to the domestic market by non-marine transport. However, the heaviest cargo volume shock will come from changes in the mining plans under the Vostok Project that had been estimated to ensure 25 percent of NSR use in 2024. However, just five million tons (instead of 20 million tons by 2024) of coal are expected to be produced through the project by 2025. Notwithstanding this worst-case scenario, the total maximum loss in NSR utilization will be approximately 20 million tons in 2024.

Three Arctic LNG-2 (Utrennee) lines capable of transporting 6.6 million metric tons per year (mtpa) are planned for commissioning before 2026. Moreover, up to two million tons of condensate are to be shipped by 50,000-ton deadweight tankers. LNG and condensate tankers are to be built at Zvezda Shipyard (VBRC). The total output, together with condensate, is expected to reach 21 to 22 mtpa in 2025. Sea transshipment facilities of 20 mtpa each are to be built in the Murmansk Region and the Kamchatka Peninsula in 2019 to 2023. These terminals will maximize the Arc7 Arctic class icebreaking gas carriers on Arctic-only voyages. After 2025, construction of lines 4, 5, and 6 of 6.6 mtpa each will be possible on the Arctic LNG-2 site. Thus, the aggregate LNG and gas condensate output will shape cargo tonnages in 2024: the three projects are expected to yield 38 mtpa, and Novatek plans to rise its LNG output up to 57 to 70 mtpa in the Ob Bay by 2030.

Major Russian Arctic Natural Resource Development Projects

NOVATEK's Arctic Projects

The Yamal LNG (Sabetta) Project became a trigger that launched a new stage of Russian Arctic economic development. Three LNG lines of 5.5 million tons capacity each produce a total of 16.5 million metric tons per year (mtpa); commissioning of the fourth 0.9 mtpa line was scheduled for late 2019 but was postponed to 2020. Production may be as high as 17.5 mtpa in three lines and 1.0 mtpa in the 4th line. Fifteen Arc7 icebreaking LNG carriers, all non-Russian flag service Sabetta, began service in 2019-2020.

Gas condensate is a by-product of gas and LNG production. The output reaches 1.5 mtpa, which is carried from Sabetta by 20,000- to 50,000-ton deadweight tankers. Overall, Yamal LNG shipped 20 mtpa cargo tonnages in 2020.

A plan exists to build the five mtpa Obsky LNG facility based on the Sabetta port infrastructure in 2024 and 2025. Implementation of the Obsky LNG Project will enable the additional production of 500,000 tons of gas condensate. The launch of NOVATEK's five mtpa liquefied natural gas (LNG) plant, Obsky LNG, is postponed for two years. However, the company has confirmed that two LNG transshipment terminals, one in Murmansk and the other in Kamchatka, will be commissioned in 2022. The launch time, 2023, of the first stage of 19.8 mtpa Arctic LNG2 plant (three lines of 6.6 mtpa each), which is much greater than Obsky LNG, remains unchanged.

GazpromNeft and Mys Kamenny

Shipment of the oil produced at the Novoport oil field from the Mys Kamenny terminal officially began in summer 2014. In 2019, 7.7 mtpa output was achieved; the output is expected to peak at more than eight mtpa in 2020 and then to gradually decline to 6-7 mtpa by 2024. Gazpromneft's fleet of six Arc7 icebreaking tankers and two Arc5 icebreaking tankers (all Russian-flagged) is used for oil transportation. The tankers shuttle oil to a Murmansk-based storage facility.

Severnaya Zvezda and Dixon

The Severnaya Zvezda LLC Project is a former joint venture of Norilsk Nickel and BHP Billiton and is currently owned by Roman Trotsenko's Cyprus-based Inpatenixo Holdings Ltd. The Company plans to develop the Syrdasaysk coal mine in the Taymyr coal basin and build a four to 10 mtpa coal shipment terminal. The field development project projects an output of five million tonnes, with coal being shipped year-round by conventional and Arctic class bulker carriers. To reduce logistics costs, coal transshipment from ice class vessels to conventional vessels in the port of Indiga has been considered.

VostokUgol, Chaika and Sever

A project to develop the Lember group of anthracite fields in the Taymyr coal basin, near Dixon Island, has been planned by the Arctic Mining Company LLC (VostokUgol Management Company); the project status and implementation prospects are highly uncertain. Russian Arctic coal-related projects are considered sustainable on the global market, even given the global energy market transformation, because they are known for high quality and low cost—and are mostly applied in industrial processes rather than for power generation. However, these coal projects, which could contribute to high tonnages to the national goal of 80 million tons per year, will be challenged by many sensitive environmental and mineral resource issues.

Nornickel and Dudinka

Since Berth 2, with up to three mtpa capacity, was commissioned in the Port of Murmansk in 2016, Norilsk Nickel's annual cargo tonnages alone have risen from 0.8 to 1.3 mtpa. In addition, some products are supplied directly by ship to global markets, a prime example of destinational use of the NSR from the port of Dudinka. A change in Norilsk Nickel's production chain related to the ore processing system would result in growing nickel matte and gas condensate shipments, and the cargo tonnages may increase to three million tons. To support its shipments, Norilsk Nickel has a fleet of five icebreaking container ships and one Arc7 class tanker with 91,127 ton deadweight. All vessels carry the Russian flag.

Moreover, it is possible to engage several Arc4 (general cargo) vessels from Arkhangelsk, if necessary.

Neftegazholding and Sever

The Neftegazholding JSC Project (before 2017, NNK JSC, hereinafter NGH) that envisions development of the Payakhskoye and North Payakhskoye fields, with shipments via the Tanalau terminal, has been postponed several times since starting in March 2018. It has undergone changes both in the shipment point (from the Cape of Tanalau to the Sever Bay) and in volume (an assessment rose from 18 million tons in 2017 to 50 million tons in 2019); production is to start in 2023 at four to five mtpa and is to peak after 2030. Initially, shipments by Arc7 class icebreaking tankers with the total deadweight of approximately 414,500 tons were planned. All vessels must carry the Russian flag. Arc7 class Aframax tankers with 120,000 deadweight are likely to be used for 50 mtpa shipments.

In summer 2019, the executive director of Rosneft Oil Company PJSC suggested a scenario of Arctic oil production development up to 100 million tons and of oil transportation from the Vankor fields via the NSR. The total investments are to exceed USD $150 billion (RUB 11 trillion), of which USD $35 billion (RUB 2.6 trillion) are tax rebates, and $115 billion (RUB 8.5 trillion) are Rosneft Oil Company's investments.

Khatanga and Tomtor Field

Development of the Tomtor rare metal field is strategically critical for support to Russia's high-technology industries. High rare metal concentrations in ores enable them to be shipped without prior cleaning. The Tomtor field development project will secure the 150,000-200,000 ton cargo tonnages for the Port of Khatanga and shipments to Arkhangelsk.

Baim Group

Greater NSR cargo transportation reliability and icebreaker fleet expansion can mitigate cargo transportation risks and enable boosting output for new development projects. Early in 2019, the Baim Group (KazMinerals) cargo tonnage was forecast at fractions of a ton by 2024; however, the estimate rose to 0.5 million tons by mid-March and reached 1.5

to 2 million tons by the end of March. The Arctic carriers have not yet been determined.

Development of the Baim Group of fields in Chukotka will necessitate commissioning of significant electricity generation capacities, up to 190 MW. Even the *Academician Lomonosov*, the floating nuclear power plant that is being commissioned, will be insufficient to supply energy for that project in Pevek. Additional LNG floating power plants are viewed as a potential solution. In this case, LNG will be supplied from the Yamal Projects to serve as a vivid example of synergy of needs in Russian Arctic development.

Climate Change Impacts on the NSR: Russian Understanding and Planning

In the Russian view, the NSR, together with the Kara Sea, create the shortest marine route between Europe and Asia. Global warming is causing profound Arctic sea ice retreat, which creates greater marine access, which in turn enables more active use of the NSR. A shorter route during the navigation season (with minimal ice) reduces passage time, saves propulsion fuel and, consequently, leads to fewer greenhouse gas and pollutant emissions. NSR environmental advantages will become even greater with a transition to new fuels for powering ships. This may bring new customers and lower risks of environmental pressure on carriers. Thus, global trends in climate, environmental regulations, and a global energy transition are regarded as positive factors that enhance the NSR's appeal as a future marine traffic corridor.

Table III.4 Main global trends and their impact on NSR

Trends	Contents	Impact on NSR
Energy transition	Reduction in fossil fuel consumption	positive for gas negative for oil and coal
Climate policy	Reduction in greenhouse gas emissions	positive
Toughening of environmental requirements	Reduction in pollutant emissions	positive
Geopolitical ambitions	Intensification of geopolitical competition	negative
Scientific and technical development	Navigation improvement	neutral

Source: Alexander Klimentyev's Economic Lab

However, the Arctic's ecosystem vulnerability has caused many companies to voluntarily forego using the NSR based on environmental considerations. Container operators that were the first to announce this decision include: CMA CGM (France), Hapag-Lloyd, and MSC. Norway is also conducting its own investigation into environmental safety along the NSR. NSR navigation risks related to potential oil spills have led to a campaign of voluntary refusal to use the NSR for environmental reasons. This campaign is coordinated by Ocean Conservancy and Figure 4 indicates the diverse firms that have embraced this strategy.

The *Basic Principles of Russian Federation State Policy in the Arctic to 2035* take this organized discrediting of Russia's operations in the Arctic as a challenge. Russian officials regard such a display of so-called "environmental responsibility" as not being accompanied with real actions or not relying on facts such as the benefits of "greener" operations. These actions damage the NSR's reputation as a marine route and discourage consignors and ship owners from using the NSR. Russian authorities argue that actual NSR use indicators demonstrate a significant decline in the fuel volume required for cargo transportation and, consequently, in resulting pollutant and greenhouse gas emissions. The total reduction is estimated to 20 percent less as compared with the Suez Canal.

There are conflicting opinions from other maritime nations and companies that have used NSR for shipments. For instance, Anders Hermansson, Vice President, Swedish Association of Shipowners, regards NSR as a positive for the global climate. Private companies that have been navigating the NSR keep records of their respective navigation-related emission reductions and emphasize the climate and environmental efficiency

Source: https://oceanconservancy.org/protecting-the-arctic/take-the-pledge/

Figure III.2 Global companies voluntarily refusing to use NSR of NSR. Indeed, there is so-called "Arctic Paradox," related to the fact that the NSR is becoming more navigable because of anthropogenic climate change, largely driven by the burning of hydrocarbons. By opening up more hydrocarbon development, the shipment provides further fuel, so to speak, that contributes to the acceleration of climate change. At the same time, the alternate argument used by the proponents of the NSR development is that the route provides shorter distances to the hydrocarbon consumers who would in any case consume as much oil, gas and coal as they consider economically attractive. The voyage made by *Oldendorff* to transport coal from Vancouver (Canada) to Raahe (Finland) in 2016 illustrates a trans-Arctic use the Russian maritime Arctic. The company estimated the voyage to be 12 days quicker than the Panama Canal route. The route acceleration by 24 days saved 504 tons of fuel and enabled the ship to reduce CO_2 emissions by 1,325 tons. A voyage made by COSCO Shipping Specialized Carriers to transport 30,000 tons of pulp from Helsinki to Qingdao via the NSR serves as another example. The route time decreased threefold, and fuel costs by 40 percent. A reduction in greenhouse gas emissions was also noted. Such signals suggest that ship owners choosing the NSR as their navigation route will be put under special environmental pressure as part of a global competition among carriers. Mineral and hydrocarbon production projects are also likely to be influenced by such pressures. Sustainable, long-term positioning of NSR as an environmentally clean route becomes a key factor and a real challenge for the NSR's development.

The Russian Arctic has emerged as a region of large-scale economic development, focusing on the mining and export of natural resources. Marine navigation plays a critical role. With IMO deciding a prohibition on bunker fuel (HFO) use in Arctic waters, a wrong strategic fuel choice for certain new vessels may cause multimillion-ruble losses. Ship owners and fleet operators in the Russian Arctic face a rather uneasy strategic choice: the use of distillate fuels would push up operating costs immediately, while a scrubber installation may be a wrong investment, if a prohibition on use of residual fuels in the Arctic is introduced. Ship owners undertake even greater risks with new ship construction, as it requires high capital investments. LNG use could ensure fleet operations in the Arctic until 2050 and new, more stringent, environmental requirements will neither affect these operations nor entail additional capital costs within a vessel's lifecycle. Russian LNG projects can also reliably supply fuel to the fleet. Thus, in theory, LNG may become a "soft power" element for the monitoring of

Arctic navigation by continuously providing fuel supplies for vessels.

Russia is also embarking on active LNG use for several industrial projects. The Baim ore field project is a good example of Russia's business approach to environmental responsibility and sustainable development. A power source of up to 350 MW is required for copper and gold mining. The scenario of electricity supplies from the Arkagalin coal, new nuclear power plants, or LNG power plants has been considered; LNG has become the final choice.

Another particularly important issue for the Russian Arctic is the growing greenhouse gas emissions from thawing permafrost, a process that will accelerate as the climate warms. Permafrost covers up to 65 percent of the country's territory (which is approximately 30 percent of the total world permafrost area). Under the RCP 8.5 climate scenario, a significant (by 30 to 99 percent) reduction in near-surface permafrost is expected throughout the Arctic by 2100. This would cause the emission of 10 to 240 billion tons of carbon in the form of CO_2 and methane into the atmosphere, and further accelerate the pace of climate warming.[1] Recent American and Canadian Arctic research institutes show[2] that some 20 percent of the onshore Arctic permafrost is vulnerable to abrupt thaw. This may lead to a threat of a one-off "explosive" emissions scenario. Complex simulation of emissions and greenhouse gas absorption in the permafrost area in the 21st century is at an early stage of development, and there are no well-defined quantitative assessments of these processes. But there are already warning signs that this process could affect both pipeline infrastructure and transport infrastructure stability as well as durability of any buildings and structures in the Arctic.[3]

Assessment of NSR today and forecast for 2030/2040, including an outlook for state-owned container shipping operations between transshipment ports

NSR transit (trans-Arctic) shipments peaked in 2013 when 1,356,000 tonnes were transported. Future transit potential can be estimated, provided that two conditions are met simultaneously: technical feasibility (ice concentration and thickness); and economic feasibility (as compared with the Suez Canal). The following limitations should also be taken into account: physical (climate scenarios, sea ice distribution, distance between ports, depths in the route); economic and political factors (economic development of various countries and the scale of traffic flows, fuel efficiency); NSR use tariffs (fees for icebreaker support); and specific regulations of foreign civilian and military vessel passage via the NSR.

An assessment of the NSR transit (trans-Arctic) potential, conducted for President Vladimir Putin, revealed a 450,000 TEU transportation potential, which is equivalent to approximately 10 mtpa. A major container ship transit through the NSR took place for the first time in September 2018 when a Maersk container carrier delivered frozen fish cargo from Vladivostok to St. Petersburg (3,600 containers). The establishment of the Petropavlovsk Kamchatsky-Murmansk-Arkhangelsk-St.Petersburg container route for fish transportation from the Sea of Okhotsk is being assessed. Two voyages of the nuclear container carrier *Sevmorput* (1,336 TEUs) took place along the same route in 2019. Several LNG vessels that departed from Asian wharves to operate in the Baltic and Northern Seas passed the across the Russian maritime Arctic in 2018. Rosatom is considering construction of 5,000 TEU nuclear container carriers to support trans-Arctic operations.

Trans-Arctic navigation across the Russian maritime Arctic provokes lively debate. The NSR is unlikely to be able to compete with other routes using the existing logistics models for cargo transportation, but it might attract niche cargoes from customers who are sensitive about the carbon footprints of cargo transportation or the speed of delivery. Container route development has largely concerned transit (trans-Arctic) navigation via the NSR. The possibility of container transportation of products produced in Russia on destinational NSR voyages has not been fully discussed even though it is reasonable, as is containerization for supply of the Russian North. With this approach, Arctic container operations look more sustainable.

Year-round shipping on the NSR is possible if the support fleet comprises at least three *Leader* class mega, nuclear icebreakers that are planned for construction. NSR transit schemes until 2030 may develop through seasonal voyages that do not require mandatory transshipment in Russian ports.

Thus, the possibilities to expand NSR voyages without ice class vessel designation (in compliance with Russian law) or low ice class vessels with icebreaker escort could be assessed for the period up to 2035. All vessels will also conform with the mandatory IMO Polar Code.

Table III.5 Containerization possibilities in NSR cargo transportation and transshipment

	Westwards	Eastwards	Containerization possibility
Container transportation (for reference)	Indefinite, most probably Murmansk	Petropavlovsk Kamchatsky	YES
		LNG	
NOVATEK projects	Murmansk	Petropavlovsk Kamchatsky	NO
Pechora LNG	Indiga	–	NO
		Oil	
Novy Port	Murmansk	–	NO
Varandey	Murmansk	–	NO
Payakha	Indefinite	indefinite	NO
		Ores and metals	
Pavlovskoye Tomtor	Arkhangelsk	–	YES
Norilsk Nickel	Murmansk	–	USED
Baimskaya		Providenie	YES
		Coal	
Coal transshipment	Indiga	–	NO
Chemicals			
Ammonia	Indiga	Providenie	NO
Methanol	Indiga	Providenie	NO
Hydrogen with CCS	Indiga	Providenie	NO

Source: Alexander Klimentyev's Economic Lab

Table III.6 Possible future NSR trans-Arctic shipping patterns

Development stages	Seasonal	All-seasonal
Year	Until 2035	After 2035
Fleet	Arc4 and below	Arc8 Arc4 and below
Ports	Development based on industrial projects; coal, oil, LNG and ore transshipment ports	Development for transshipment of containers and all-seasonal cargo transit
Transshipment	No need	Ports: Providenyia, Petropavlovsk Kamchatsky
Bunkering	Petropavlovsk Kamchatsky Sabetta Arkhangelsk Murmansk	Providenie Indiga
Fuel types		
Oils	MGO, MDO, LSHFO	MGO, MDO
Reduced footprint	LNG	LNG, MeOH
Carbon-free		NH3

Source: Alexander Klimentyev's Economic Lab

Broad Perspectives on the Future of Arctic Shipping

Environmental requirements for all modes of transport have become more stringent in recent decades. Sea transport remained without robust emissions regulations for a long time, but on January 1, 2020, IMO global requirements to reduce sulfur content from 3.5 percent to 0.5 percent for vessel fuels took effect.

The strictest requirements have been made to the emission control areas (ECA) created according to Rule 14 MARPOL, Annex VI (Regulation of SO_X Emissions and Solid Particles). The delineation of the Baltic Sea area and the Northern Sea area have been created in Europe. There is also a special Antarctic area, not formalized as an ECA, where fuel oil use is prohibited in the area to the south of 60° southern latitude. The prohibition was introduced in 2011; the IMO Convention MARPOL has already banned heavy fuel oil (HFO) use in the Antarctic.

No ECAs are yet planned in the Arctic; however, the prohibition on HFO use as vessel was approved by the IMO in November 2020. Given the IMO's goal to reduce greenhouse gas vessel emissions by up to 50 percent, four key methods are used to achieve this goal.

The Arctic has entered the list of global LNG production centers in the last few years. Total LNG output in the Russian Arctic and the Circumpolar North may exceed 60 million tons by 2030. This level of production will

Table III.7 Principal ways to achieve climate and environmental goals in navigation

	Content	Impact on navigation	NSR opportunity
Reduced speed	At low loads, pollutant and greenhouse gas emissions decrease	Growth in the number of vessels	By reducing the distance; no need to use
			The NSR fleet should be created; the most advanced vessels will be used
Route improvement	Digitalization of navigation; route forecast given weather changes	Reduction in fuel consumption, other conditions being equal	Great effect illustrated by Gazpromneft's system
Higher fuel requirements	Use of fuels with high environmental parameters	Increased operating costs	Manufacturing of all most promising fuels, LNG, ammonia, methanol, hydrogen, is possible in the Arctic
Energy efficiency	Reduction in fuel consumption due to more efficient engines	Increased capital investments	An NSR fleet should be created; the most advanced vessels will be used

Source: Alexander Klimentyev's Economic Lab

enable not only the export, but also LNG use as a bunker fuel in Arctic seas and local consumer supply in the Arctic. LNG production facilities for vessel bunkering are also planned in Vladivostok and Arkhangelsk. Thus, not only will the production and export of energy products be conducted, but also cost-efficient energy supplies (of high environmental standards) will be possible for domestic consumers. For ship owners, alternative fuels will ensure operations are sustainable in terms of air pollution in the long term.

The Russian Arctic is one of the few regions where fuel production can be evenly distributed along the entire transport corridor. Significant reserves of natural gas, availability of major LNG production facilities, and large-scale plans to manufacture methanol, ammonia, and hydrocarbons (key fuel types for navigation decarbonization) create favorable conditions for Arctic navigation security. The Arctic is a global energy supplier and it is logical that LNG produced in Arctic fuels can power the Russian fleet. Existing LNG production facilities and the planned construction of LNG terminals on the Arctic and adjacent coasts could provide for safe vessel bunkering.

Russian Arctic LNG and Global Markets: LNG Shipping out of the Russian Arctic

The Russian Federation claims a significant role in the global LNG market. Early in April 2020, the Russian Government approved the *Energy Strategy of the Russian Federation up to 2035,*[4] which envisages comprehensive efforts comprising legislative, regulatory, infrastructure, and technology elements for LNG industry development. Included in the strategy are:

(a) creation of legislative and regulatory/legal conditions, including tax and customs duty incentives, and economically efficient and well-balanced development of LNG production (with transportation, storage, sales, and use within the overall gas industry development);

(b) further facilitation of LNG export, while establishing a mode of control over and elimination of competition that is prejudicial to the Russian Federation's economic interests with regard to external markets for natural pipeline gas and LNG;

(c) upgrading and construction of auxiliary infrastructure (port, transport, electricity etc.) based on public-private partnerships;

(d) creation of an LNG cluster on the Yamal and Gydan peninsulas;
(e) establishment of special LNG transshipment, storage, and trade hubs in the Russian Arctic; implementation of the Kamchatka and Murmansk terminal construction projects; and
(f) development of low-tonnage LNG production and shaping of the domestic LNG market on this basis, as an energy security tool for territories remote from a single gas supply system.

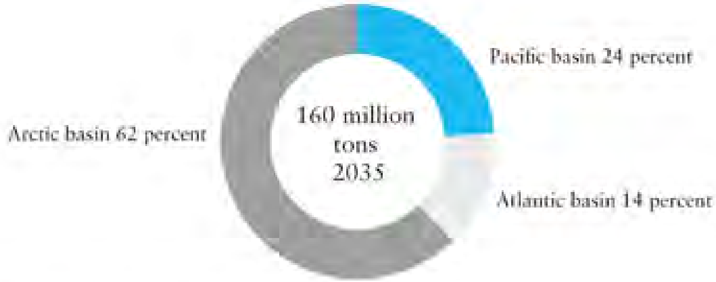
An output of 80 to 140 million tons by 2035 is set as the quantitative benchmark for the Russian LNG industry. As a result, the role of LNG in the Russian gas sector is to increase from 4.2 percent in 2018 to 22.4 percent by 2035.

Including both implemented and planned projects, Russia will be able to produce up to 158 mtpa of LNG in different regions of the country by 2035. These regions can be classified geographically, by ocean basins where

Table III.8 LNG role in the Russian gas industry

Indicator	UoM	2018, reporting year	Forecast			
			2024		2035	
			Lower	Upper	Lower	Upper
Gas, production	bcm	727.6	795.1	820.6	859.7	1000.7
LNG	mln tons	18.9	46	65	80	140
LNG share	%	4.2%	9.3%	12.7%	14.9%	22.4%
Gas w/o LNG	Bcm	697.36	721.5	716.6	731.7	776.7

Source: Alexander Klimentyev's Economic Lab, based on the Energy Strategy of the Russian Federation up to 2035



Source: Alexander Klimentyev's Economic Lab

Figure III.3 Russian LNG production breakdown by basins

LNG is supplied to consumers (Figure III.3).

The Russian Arctic is transforming into a global LNG production hub; several projects in different parts of the Arctic are being implemented. LNG production projects fall into different segments, from world-scale production facilities to small- and medium-scale projects. In the context of growing competition on the global LNG market (and between LNG and pipeline gas), LNG oversupply on the market is clear. During these market conditions, not only does fierce price competition drive prices down to $1.5-2/MBtu, but all types of non-price competition factors (environmental,

Table III.9 Qualitative analysis of the Russian Arctic project production chain

	Advantages	Drawbacks	Potential competitiveness improvement methods
Feed gas	High quality and low cost of feed gas	Poorly developed infrastructure and high development costs	Special tax treatment; site concentration of production facilities Regulatory framework: - lifting barriers to licensing and accessing licenses
Liquefaction	Taking advantage of external low temperatures	Inadequate infrastructure and high construction costs	Improvement of gas liquefaction technologies Use of climate features: cost cutting or output increase in volume terms
LNG transportation		The need to use ice class gas carriers Limitation on navigation by flag	More complex logistic patterns: - creation of terminals in Murmansk/ Kamchatka; - reduced use of high ice class gas carriers; - LNG terminals in Indiga port /Pechora LNG. Regulatory framework: - navigation of gas carriers under the Russian flag; - operations of LNG transshipment terminals.
Transshipment	LNG accumulation and trade hubs	Extra costs	Third party access (TPA) Gas hubs based on storages
Sales			Use of the domestic market openings and increase in supply volumes: - involvement in inter-fuel competition; - new projects in Chukotka and Pevek; - navigation and global regulation of navigation. Regulatory framework: - export permit; - VAT on terminal LNG turnover, including storage services.

Source: Russian Small and Medium Scale LNG. Regional Series: Arctic. Volume 2, A.Yu. Klimentyev, T.A. Mitrova, S.A. Kapitonov, et al. Moscow School of Management SKOLKOVO, Moscow, December 2019.

climate, political) also influence price fluctuations.

A project's use of production facilities in the Arctic, in remote locations, is a major challenge for their implementation, leading to higher capital expenses across the entire production chain and higher risks to timely project completion within budget. However, low external temperatures enable the production of additional products. Russian large tonnage LNG projects demonstrate this advantage and indicate growth in productivity from seven percent to 10 percent (for Yamal LNG) to 17 percent (Sakhalin 2). High quality and extensive resource sources allow for production scaling up by building additional LNG production lines under brownfield, previously developed conditions. Active site infrastructure makes a key difference in the efficiency of the entire LNG production facility. For example, placement of the Yamal LNG T4 production line has resulted in an efficiency increase of the Yamal LNG Project by three percent to four percent. Usage of gravity-based platforms for the new LNG projects will also result in an approximately 30 percent reduction in construction costs.

As noted, the Russian Arctic projects will make a major contribution to overall LNG production growth in Russia. These projects enjoy broad governmental support in the form of tax relief, special tax treatment, governmental investments in infrastructure, and governmental project financing. All Russian projects are integrated and comprise natural gas production and liquefaction within a single company.

Given the above, the Russian Arctic projects show a high competitiveness on the global LNG market. It remains unclear how fast the global economic recovery will happen after the COVID-19 pandemic, nor it is clear at what speed an energy transition will happen in the post-pandemic world. But the outlook is for a growing global gas demand, which creates robust opportunities for Russian Arctic LNG to find its market niche.

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The Northern Sea Route: Challenges and Opportunities for Arctic Indigenous Peoples

Mikhail Pogodaev and Anders Oskal

Since time immemorial, the Arctic has been home for many Indigenous Peoples, who have adapted to harsh climatic conditions and created a unique circumpolar civilization based on the sustainable use of natural resources. Their livelihoods are traditionally based on reindeer herding, fishing, hunting and gathering. In a rapidly changing Arctic, they face challenges in adapting to climate changes and globalization. While traditional economies served as the foundation for their lives for millennia, during the past century there have been major changes in models of economic development for the Indigenous Peoples of the Arctic that have frequently been imposed from the outside. Attempts were made to transform the economies of many Arctic Indigenous People by introducing "Western" models; from capitalism to socialism. This jeopardized the very existence of these peoples because changes in the traditional structure of the economy and social organization of Indigenous Peoples was undermined by erroneous theories and ideas that were very often implemented as *socio-economic experiments*. As a result, the traditional civilization of nomadic Indigenous Peoples today is endangered (Oskal, Pogodaev et al. 2019).

A key driver of Arctic change is the increased impact of human activities from outside the Arctic, including shipping and marine activities. According to Russian officials, cargo traffic along the Northern Sea Route (NSR) will reach 120 million tons by 2030 and 160 million tons by 2035. The NSR runs along the northern shores of Russia. According to experts' calculations, the route makes it possible to reduce travel time from the largest ports in Asia to Europe by 10-30 percent during the summer navigation season. But port infrastructure remains to be developed and equipped, according to Taisiya Shepitko, director of the Institute of Track, Construction and Structures of the Russian University of Transport. Many uncertainties about these projects remain, notably including the impacts of any proposed infrastructure on traditional ways of life along the NSR. These impacts require thoughtful consideration and are often left out of traditional economic and political analyses.

By 2024, a number of measures should be implemented to develop port infrastructure along the NSR, including the construction of the liquefied natural gas (LNG) and gas condensate terminal "Utrenniy" in the seaport of Sabetta. This will feature underwater hydraulic structures, ice protection structures, navigation safety facilities, and reconstruction of the navigable approach channel to the port. The federal Northern Sea Route project will increase the capacity of Russian seaports by 21.6 million tons. In addition, four LNG-powered icebreakers are to be built to enhance the icebreaker service fleet, enabling year-round LNG shipment from Sabetta to global markets (Российская газета - Федеральный выпуск № 266 (8024)).

Cargo traffic on the NSR is mostly related to shipping natural resources, including oil, gas, and industrial minerals. Transportation of other goods and products, including traditional products of Arctic Indigenous Peoples, is currently an insignificant component of total shipping along the route. At the same time, development of off-shore and on-shore infrastructure along the NSR impacts traditional livelihoods of Indigenous Peoples (Magga et al, 2011). For example, reindeer herding areas and migration routes are located along the shoreline of the Arctic Ocean. Traditionally, reindeer herders migrate and follow their reindeer to summertime pastures in the coastal areas to protect reindeer from heat of the sun and insects and to use special grazing areas. These areas are very important for reindeer husbandry. Today the largest reindeer husbandry in the Yamalo-Nenets Autonomous Okrug in the Russian Arctic faces challenges associated with oil and gas development in the region. One of the megaprojects in the Russian Arctic, the Yamal-LNG plant and seaport Sabetta, is located in this region. Development of on-shore infrastructure such as seaports, oil and gas terminals, roads, powerlines, pipelines, settlements of shift-workers and other human activities block migration routes of reindeer herds and represent significant impacts on herders' traditional livelihoods. (Magga et al,

Source: Centre for High North Logistics (CHNL), Nord University, Norway

Figure III.4 Overview of ship transits by the North Eastern Sea Route in 2018

2011, Degteva A. 2012).

In the Sakha Republic (Yakutia) there are still no megaprojects under development in its Arctic territory, but there are other challenges related to the long distances, lack of infrastructure, and extreme climatic conditions. Sakha Republic encompasses a vast territory of more than three million km^2, five times that of France. There are five Indigenous Peoples in the regions: the Even, Evenki, Yukagirs, Chukchi and Dolgans. All of them are engaged in reindeer herding, fishing, hunting and gathering. More than two thirds of the reindeer population is grazed in the Arctic districts of Sakha Republic. Before 2019 there were only five of these districts along the Arctic Ocean coast: Anabarsky, Bulunsky, Ust'-Yansky, Allaikhovsky and Nizhnekolymsky. But on May 14th 2019, President Vladimir Putin signed a decree recognizing an additional eight districts of the Sakha Republic as "Arctic zones of the Russian Federation" under new criteria that also included land-locked districts north of the Arctic Circle. These are Oleneksky, Zhigansky, Verkhoyansky, Eveno-Bytantaisky, Abyisky, Momsky, Verkhnekolymsky, and Srednekolymsky. (http://www.kremlin.ru/acts/bank/38377)

In Sakha Republic there are only two Arctic sea ports, which are part of the NSR infrastructure: Tiksi in Bulunsky district and Chersky (Zeleny Mys) in Nizhnnekolymsky district. Since in both districts there are large reindeer herds, the ports could potentially serve to export reindeer products to international markets using the NSR. In addition, there are several

Figure III.5 Number of domestic reindeer in Sakha Republic

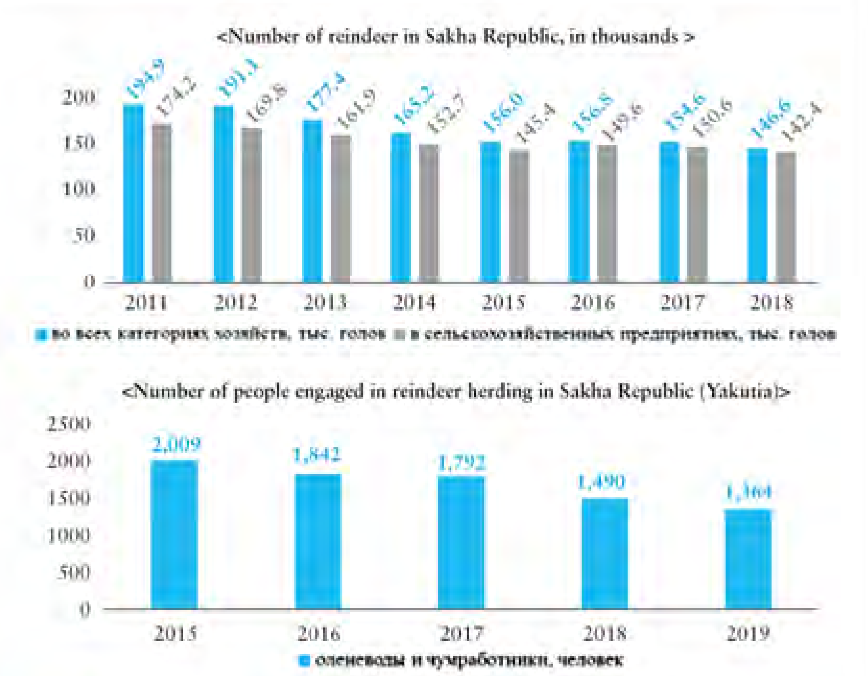

Figure III.6 Dynamics of reindeer husbandry in Sakha Republic 2011-2018

reindeer herds in Anabarsky, Ust'-Yansky, Eveno-Bytantaisky and Momsky districts, which herders believe may provide the potential to develop export-oriented businesses. Currently, herders in these districts face major challenges in getting their products to markets. Due to challenging logistics and lack of transportation infrastructure, they face problems selling and moving their products to domestic and foreign markets.

Therefore, development of the NSR provides an opportunity for Indigenous Peoples to promote and sell their products to international markets, including reindeer and fishing products that utilize modern technology for slaughtering and processing.

Sustainable Reindeer Husbandry in the Circumpolar North

Reindeer have always been and remain the foundation of reindeer herding peoples' lives. Reindeer provide shelter, food, clothing, and security—and are at the center of herding peoples' universe as well as being the foundation of their cultures, languages, worldviews, and ways of knowing. Reindeer are also the basis of herders' economies.

Reindeer pastoralism represents a model of sustainable exploitation and management of northern terrestrial ecosystems based on experience accumulated over generations, and which have been conserved, developed, and adapted to the climatic and political/economic systems of the north (Magga et al, 2011). It also represents a human-coupled ecosystem, which has developed a historical high resilience to climate variability and change (Turi, 2008; Magga et al, 2011; Arctic Council Arctic Resilience Interim Report, 2013).

More than 20 different Arctic peoples owe their existence to reindeer herding, collectively grazing 2.5 million head of domestic reindeer. These herder communities are distributed in areas of Norway, Sweden, Finland, Russia, Mongolia, China, Alaska, Canada, Scotland, and Greenland. In the Russian Federation, 16 Indigenous Peoples of the North are engaged in reindeer herding, for whom reindeer is not only the basis of their economies but also the main symbol of their culture, worldview, folklore, rituals, holidays, folk pedagogy, and traditions. As such, it is central to their lives and identities.

Reindeer husbandry is a model for sustainable management of infertile Arctic lands, informed by the experience of many generations. Today reindeer herders face many challenges, such as the effects of global changes on local communities, loss of pastures due to industrial development, and climate change in the Arctic. The development of the Arctic region must be consistent with ensuring the sustainable development of Indigenous Peoples of the North, including their traditional economic activities.

Reindeer herders have their own understanding and vision of the economy of reindeer husbandry, which are often different from those of the mainstream society and Western scientific tradition. Western scholars have always interpreted the economic categories in reindeer husbandry in accordance with the ideas and practices of Western economic science (Turi 2013). This world view does not always conform with an Indigenous viewpoint. Herders, for example, do not regard reindeer simply as a means of production. One of the reasons, as mentioned above, is that the reindeer are associated with all aspects of their lives.

Wealth, according to the traditional understanding, is not only expressed by quantitative characteristics, but rather also in quality. For example, a "beautiful herd" (*čappa eallu* in the Sámi language) expresses the concept that the structure of the herd is purposely adapted to the available grazing conditions and pasture diversity, as well as to the changing climatic characteristics of the territory concerned. In other words, a herd is beautiful when it takes into account the cyclical nature of environmental and climatic changes. This reveals a much more advanced and complex understanding than simply the aesthetic meaning of the term itself (Sara 2009).

In reindeer herders' understanding, good pasture conditions (*ealát* in the north Sámi language) are the foundation for the reindeer herd (*eallu* in Sámi), and the reindeer herd is the foundation for the life (*eallin*) of reindeer herders (Magga et al, 2011). Thus, while none of the Indigenous reindeer herding peoples are known to have the term "sustainable development" in their languages, an understanding of this concept is embedded in their languages. While "sustainable development" might implicitly presuppose the maximizing of production, the herders´ traditional thinking is better expressed by, for instance, the Sámi term *birgen*: If you have enough to manage or cope (*birget*), you have enough. Economy is therefore integrated into reindeer herders´ own core understanding of their livelihood, though often with its different departure points, and is expressed by traditional knowledge manifest in Indigenous languages and ways of organising (Sara 2009).

And herein lies what we believe is the essence of this experience: an economic model unable to acknowledge and value the *whole* system of traditional activity, such as reindeer herding, is not appropriate. This is especially worrisome because the changes observed and projected in the Arctic are fast and profound, with significant impacts on Indigenous Peoples' cultures, knowledge, youth, food traditions, economies—and their futures.

In his 1944 book "The Great Transformation," political economist Karl Polanyi argued that capitalism had to create three "fictitious commodities" (i.e. not originally for sale on a market) in order to function, none of which were present in pre-capitalist societies: labor, land ownership, and money. While it is easily understood that there are differences between Indigenous and non-Indigenous societies, just *how* different they really are may perhaps be illustrated through this example.

The economic situation of reindeer husbandry in the Nordic countries is significantly different from that in Russia, though in many respects the basic changes in the management of reindeer husbandry that occurred in the Nordic countries are remarkably similar. In the 20th century in Fennoscandia, there was also an attempt to "modernize" reindeer husbandry. The authorities utilized economic applications of scientific research to improve the "efficiency" of reindeer herding, focusing on meat output, for instance, in Norway. Today we can certainly say that reindeer husbandry in Fennoscandian countries is the most "modernized." Reindeer herders use mechanized transportation, have a developed production system and good social infrastructure, and there are significant external markets for their products. However, the conceptual approaches introduced by researchers in Fennoscandia were not devoid of the shortcomings inherent in the planning and administration of the Soviet period of Russia's economic development. Reinert (2006) for instance states that in 1976 agricultural principles and a "planning paradigm" were introduced to reindeer herding in Norway. Subsequently, slaughtering and marketing—the most profitable activities in the value chain—came under government regulation and non-Sámi ownership.

A common feature of public policy in Russia and some of the Nordic countries is the desire to maximize the productivity of reindeer husbandry and introduce ideas of mass production, what Erik Reinert calls "Fordism" in reindeer herding (Reinert, 2006). However, due to the specifics of reindeer husbandry, natural cyclicality, and significant differences of reindeer herding from agricultural production, these changes might actually render reindeer herding more vulnerable to challenges of climate change and globalization (Reinert 2006).

In political economy, the concept of "sustainability" of management emerged in the second half of 19th and the first quarter of the 20th century in Western Europe. According to the theory of "sustainability of small peasant farming," small-scale production has advantages over large-scale enterprises, and therefore is more viable. The progenitors of this theory were economists Klawki, Hecht, Puzor and Brentano. In Russia, prominent representatives of this theory included M.I.Tugan-Baranovsky, P.B. Struve, S.N. Bulgakov and others (Nosov V. 2005). According to them, the owners of small farms and their inherent greater diligence, hard work and thrift favored efficiency and produced products at lower costs than large farms.

Correspondingly, it would seem that reindeer husbandry should also develop along the path of small-scaled, family businesses using Traditional Knowledge and modern technologies. If so, it is necessary to revise the concept of the "development" of reindeer husbandry and develop new approaches and models for reindeer husbandry, which could fit with specific family-based nomadic reindeer husbandry and fluctuations in the natural and climatic conditions of the Arctic and Sub-Arctic. (Oskal A., Pogodaev M. 2019)

Herders also rely on a *diversity* of resources in their economic adaptation, including traditional activities such as hunting, fishing, gathering, and more, as well as combinations of the above. Reindeer herders´ adaptation strategies would seem to be focused on flexibility (ARR, 2013), constant adaptation to changing conditions (following Turi, 2007), risk-reduction, and sharing through diversity in social organization, economy, and an understanding biological diversity (following Magga et al, 2011; ARR, 2013). This is inconsistent with a planned-economy paradigm of maximizing output based on specialized monoculture production, which some argue is exactly the model that was introduced and perpetuated in Sámi reindeer herding in Norway through public incentives over the last 30 years. The so-called Lenvik model (see Reinert 2014), with its focus on slaughtering reindeer calves to maximize meat production, reduced diversity in herd structure and led to less efficient use of pastures, types of slaughter animals, industry structure, reindeer product types, product value chains, and so on. Taking all this into account, the contrast between these two ways of thinking and knowing is clear.

A New Hybrid Model for Reindeer Husbandry

A fundamental challenge, then, is that even today there is no theoretical-empirical economic model adapted for, made for, or genuinely suitable for reindeer herding as a traditional, family-based, nomadic livelihood in cyclical and highly variable natural environments. The economic models that are often used originate from the agricultural sector, as Reinert (2006) points out, and simply do not apply easily to traditional herding economies. Stanford economist Moses Abromowitz famously quipped in 1993, "…It ain't what we don't know that bothers me so much; it's all the things we do know that ain't so." Translated to our situation: If the economic logic of family-based reindeer herding is not fully understood; what we believe we understand by reason of our models may miss the realities.

What would an adapted model for reindeer herding look like? In our opinion, first it should recognize that reindeer herders have real economic freedom and are themselves in a position to be able to utilize new opportunities arising from changes in the North, on their own terms, based on their own needs, resources, knowledge base and societies, so that the opportunities of our changing North can be real opportunities for all.

Very often reindeer herders´ rich understanding and knowledge base of food and crafts has not been fully utilized for economic development in and by their societies. There is also a need to recognize that revitalizing traditional products for modern markets—on reindeer herders´ own premises and by reindeer herders themselves—can be a good approach for innovation and strengthening reindeer herders´ economies.

Climate change is also about what we are going to eat in the future. There is a need for *food security* for reindeer herding peoples based on a number of pillars: equitable access to and possibility to select their own resources; food empowerment through utilization of traditional Indigenous Knowledge; sustainable use of all resources in accordance with their traditional food systems; food safety regimes adapted to realities and Indigenous cultures in the circumpolar north; a focus on health and well-being; and local economic development and value-added goods and services from within their own societies.

The new model for reindeer husbandry should utilize every resource from reindeer and create a true circular economy. It should ensure that everyone in the family has a role in reindeer herding to prevent outflow of people and that all knowledge is into account. At the same time there is a need to make sure that the system will allow one to take only what one needs, in contrast to the dominant paradigm that values maximizing growth over all other goals.

The new model also should take into account the reality and undeveloped state of the local economy, unique geography of reindeer husbandry, enormous distances, weak infrastructure, communication, and other challenges. There are also other important aspects which need special attention. These include providing an economy of scale as a fundamental factor for any economy while also fostering the creation and maintenance of motivation for individuals and society at large to thrive. Finally, the new model has to be innovative, and in this regard the transfer of knowledge and skills is essential.

Conclusion: The NSR as an Opportunity for Indigenous Communities

NSR development is both a challenge and opportunity for Indigenous Peoples of the Arctic. It will interfere with traditional herd migrations and fishing or hunting activities. But it also will bring new opportunities to develop Indigenous economies by improving access to domestic and international markets.

The economic development of reindeer herding peoples is possible if Traditional Knowledge of these peoples is used for the sustainable, rational use of natural resources. The traditional cuisine of the Indigenous Peoples of the North is unique and diverse. They can offer the world unique products, including meat and fish products, delicacies, berries, mushrooms, other wild plants, recreational ethno-tourist services, and much more.

To increase the profitability of reindeer herding, it is necessary to provide comprehensive processing of reindeer products and organize transportation, storage and marketing of these products to profitable markets abroad, including the United States, Asia-Pacific countries, and the European Union.

This chapter is in part based on Oskal and Pogodaev (2019).

This overlays the NSR on a map of reindeer communities produced by the International Center for Reindeer husbandry (ICR) and asks in Russian whether they will be indignant over the route.

Source: International Centre for Reindeer Husbandry (ICR), Norway

Figure III.7 The Northern Sea Route and the World Reindeer Herding Areas

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A Chinese Perspective on New Opportunities and Challenges of International Cooperation on the Northern Sea Route

Long Zhao

In recent years, Arctic shipping has developed rapidly under the impetus of the energy industry, showing a good growth curve of shipping volume. According to the Northern Sea Route Administration, a total of 31.5 million tons of goods were shipped on the route in 2019. Over the last three years, NSR volumes have hiked by more than 430 percent.[1] In the first quarter of 2020, freight volume achieved year-on-year growth of 7.7 percent. The transportation of liquefied natural gas (LNG) constitutes the majority share of the volume; a total of 20.5 million tons of LNG was sent out from the natural gas terminal Sabetta in Yamal. A vast majority of the marine traffic is destinational, via trans-Arctic voyages. The NSR seems gradually moving towards the goal of 80 million tons of transportation by 2024 set by Russian President Vladimir Putin. However, great power politics and competition in the Arctic affairs have increased significantly and the impact of the COVID-19 pandemic is shifting expectations for the global energy market, trade, and shipping. In this context, Russia is accelerating the development of its *Arctic 2035 strategies* by strengthening long-term policy planning, commercial use, and international cooperation of the NSR. All these plans are facing new opportunities and challenges.

New Opportunities

Russia's long-term strategic planning process has become an important booster for NSR development. In December 2019, Russia published the *Comprehensive plan for infrastructure development of the NSR for the period 2020-2035* (Comprehensive Plan 2035). The document covers 11 topics for development along the NSR, including: port infrastructure and terminals; search and rescue; navigational and hydrographic support; development of icebreaking capabilities; stimulation of cargo traffic and international transit shipment increases; aviation and railway network development; safety and communications network development; electricity generating capacity to support infrastructure; training and skills development; domestic shipbuilding for Arctic shipping; and ecological safety. On 6 March 2020, President Vladimir Putin approved the *Basic Principles of Russian Federation State Policy in the Arctic to 2035* (Basic Principles 2035), which defines Russia's Arctic interests, goals, and mechanisms of implementation.[2] On May 7, the Ministry for the Development of the Russian Far East and the Arctic submitted to the Russian Government a draft of the *Arctic Development Strategy until 2035* (Strategy 2035),[3] which determines the main directions and tasks of the development of the Russian Arctic zone, including development of the NSR.

Enhancing the support capability, commercial attractiveness, and the linkage of inland and port infrastructure are priorities for future development of the NSR. According to Comprehensive Plan 2035, Russia is aiming for a three-stage development of the NSR:

1. By 2024, the plan envisages accelerated development of year-round extraction, refining, and transportation of raw materials from ports of the Kara Sea to the west, assigning funds to renovate the icebreaker fleet, and modernizing port infrastructure.
2. By 2030, Russia plans to build dozens more ice class vessels, including at least 13 heavy icebreakers, nine of which would be nuclear-powered,[4] to provide year-round navigation throughout the NSR and increase cargo carried along the NSR to 90 million tons.
3. By 2035, it anticipates the creation of an international latitudinal transport corridor.[5]

The above-mentioned documents appear to be a response to accumulated criticism and uncertainty related to the NSR, especially in the areas of SAR, navigational safety, communications, ecology, and predicting weather and ice conditions.[6]

To strengthen the domestic consensus on NSR development, Russia seeks to increase the local development dividend to respond to the social demands of local residents with a comprehensive infrastructure system. For instance, the development plan includes a mechanism for streamlining the social infrastructure called the Arctic Social Development Fund. This will make it possible to return up to 50 percent of taxes derived from new investment projects to the budgets of Arctic territories and to use these sums for building or renovating schools, hospitals, and kindergartens. Other examples include: construction of the Obusskaya-Sabetta railway transport corridor, which would connect the seaport and LNG terminal in the northern coast of the Yamal peninsula; reconstruction of airports in the Yamalo-Nenets Autonomous Region, the Chukotka Autonomous Region, and the Republic of Sakha Yakutia; and the launch of the Arkhangelsk-Perm of the Belkomur Railway Project to establish a three-dimensional (Air-Land-Sea) transportation network around the NSR.

As one of the major commercial users and investors of the NSR and related energy projects, Chinese COSCO Shipping Specialized Carriers Co., LTD. completed 31 voyages via NSR/Northeast Passage from 2013 to 2019 and continues to boost numbers of regular transits. Sovcomflot and a joint venture of COSCO Shipping Group and Mitsui OSK Lines (MOL) will own and operate twelve ships ordered by NOVATEK for Arctic LNG 2 and Ob LNG projects. The implementation of Russia's ambitious NSR infrastructure plan would be unrealistic without further attracting external investments and deepening its cooperation with countries outside the region, primarily with China. According to Alexander Krutikov, Russian Deputy Minister of the Development of the Far East and the Arctic, Russia and China held a meeting of the Russian-Chinese working group on the development of the Arctic in August 2020. Russia is planning to develop transparent rules and intensify international cooperation to meet its national interests listed it its Arctic 2035 strategies.[8] Although detailed rules of the standard are not yet clear, Russia's policy orientation to expand the scope and content of international cooperation of Arctic development involving Asian partners such as China, Japan, Korea, Singapore, and India to contribute to the implementation of Comprehensive Plan 2035 has become more obvious.

New Challenges

Great power competition in the Arctic is reshaping the political normal of the region.

The United States has begun upgrading its Arctic non-military capabilities, including the construction of infrastructure such as icebreakers and deep-water ports. Russia and China have also taken long-term views of the region and expanded their footprints. Due to its previous Arctic policy stagnation—mainly in the economic realm—the United States now is attempting to intensify competition among major powers as a response to the expanded military and economic footprints of Russia in the Arctic and the widening gap in Arctic activity capabilities between the United States and Russia. At the same time, despite the fact that China is one of the major contributors of international cooperation on Arctic climate and environmental management, science and technology development, and sustainable use, the relationship between the United States and China in the Arctic follows a trajectory of worldwide strategic competition between two countries. China's engagement with Russia on Arctic shipping and energy cooperation was interpreted by some scholars as building a spider web across the Arctic, along with the development of the Polar Silk Road, strategic deployment of scientists, possible military utilization, and exploring for oil and gas opportunities.[9] Since the end of last year, the U.S. Department of Defense, Coast Guard, and Air Force have respectively developed the *Arctic Strategy Report*,[10] *Arctic Strategic Outlook*,[11] and *Arctic Strategy*,[12] positioning China and Russia as long-term threats to U.S. Arctic security and challengers of the rule-based Arctic order. The U.S. government drew a direct connection between Chinese civilian research and a "strengthened Chinese military presence in the Arctic Ocean, which could include deploying submarines."

The negative effects of this great power competition are at risk of spreading. Nordic foreign ministers received the 2020 Nordic Foreign and Security Policy report, subtitled "Climate change, hybrid and cyber threats and challenges to the multilateral, rules-based world order," which stated that "China's presence and strategic interest in the Arctic will have security policy implications." The report also noted that the Chinese military has now begun to strengthen its knowledge of the Arctic, and China's broad interest in the Arctic underscores the importance of well-functioning, multilateral cooperation, where Arctic states must assume responsibility and play a key role in the interests of the Arctic environment and its societies. It is hoped that Nordic countries will aim to formulate a common Nordic policy that facilitates partnerships with states that share similar views on the implications of increased Chinese Arctic involvement.[13]

The impact of the COVID-19 pandemic is shifting expectations on Arctic shipping

A sharp decline in domestic consumption, tourism and business travel, spillovers from weaker demand to other sectors and economies, supply-side disruptions to production and trade, and shifts in health care expenditure are some of the channels through which the COVID-19 pandemic has affected the demand side of the global energy market. As a result, the price of oil has sunk to levels not seen since 2002 and greater uncertainty has accrued regarding the future of the Arctic energy shipping industry. Although global shipping is not significantly affected by the downturn of energy markets and the total volume of transportation via NSR in 2019 reached a historical record, figures from the Russian Association of Sea Trade Ports show that north Russian seaports and terminals from January to July 2020 handled 10.2 percent fewer goods than in the same period last year.[14] Recently, Novatek, the major user of the NSR, postponed for two years the commissioning of Ob LNG II. This was to be the first stage of the plant, with a planned capacity of 2.5 million tons of LNG per year that was to be put into service in 2024.[15] With this postponement, projections for transportation demand weakened further.

On the other hand, due to the variability of ice conditions, lack of navigation and communication facilities, trans-Arctic shipments still constitute only a minor share of current Arctic shipping. A total of 37 ships carrying around 700,000 tons of cargo conducted trans-Arctic voyages connecting European and Asian markets in 2019.[16] In addition, the Mediterranean Shipping Company (MSC) has joined fellow shipping giants CMA CGM and Hapag-Lloyd in refusing to use the NSR due to concerns about how increased shipping activity in the Arctic could impact the environment.[17] As the major body responsible for the development of NSR, ROSATOM has now officially requested the Ministry of Transport to lower ambitions by 25 percent, setting up 60 million tons of cargo as the new shipping target for NSR instead of 80 million tons by 2024.[18] Even this revised target for Arctic shipping volume may not be met due to new uncertainties, unrealistic expectations, and new forecasts regarding the NSR. These shifting expectations and projections attracted attention from all potential users, raising concerns about the reliability of long-term planning strategies.

Growing tensions in Arctic security reshape policy orientation

Driven by geopolitical competition, some Arctic countries are speeding up their military deployments and joint exercises. For example, U.S. troops alongside NATO allies have continued to participate in large-scale exercises such as "Arctic Edge"[19] and the Norwegian-led "Cold Response,"[20] both held in early 2020. For the first time since the end of the Cold War, the U.S. Navy and the British Royal Navy are making regular voyages above the Arctic Circle, with the four-ship patrol sailing in the Barents Sea,[21] and NATO-allied maritime assets also operate in the Arctic. The U.S. Air Force will soon be deploying fifth-generation combat fighters in Alaska to project military power and protect its interests in the Arctic Ocean.[22] The Army Corps of Engineers and the City of Nome, located on the southern coast of the Seward Peninsula facing the Bering Sea, recently have been engaged in a cost-sharing, collaborative port-modification feasibility study and environmental assessment for expanding the Port of Nome. This may be a strategic first step in providing the United States with a timely and visible port presence in its maritime Arctic to support its national security and economic interests.[23] The former Trump administration's Arctic policy had been overwhelmingly military in focus, and attention has centered on catching up with Arctic competitors. The June 2020 White House Memorandum on Safeguarding U.S. National Interests in the Arctic and Antarctic Regions called on executive departments to devise a plan to launch three heavy icebreakers by 2029 and establish two domestic and two international support bases.[24] Early signals from the incoming President Joe Biden administration suggest a less aggressive military stance and an increased diplomatic approach to Arctic issues.

Meanwhile, Russia is expanding its military facilities and upgrading radar and electronic warfare systems capabilities by deploying the S-400 system to Novaya Zemlya.[25] While others worry about the ongoing Russian military build-up, President Putin's March 2020 announcement of "Basic Principles 2035" portrays Russia's own concerns over the increasing military presence of foreign countries and the related growing conflict potential in the Arctic as challenges for its national security. The document states that new U.S. activities in the Arctic and North Atlantic pose a direct challenge to Russia's military and maritime doctrines.[26] In addition, the Security Council of Russia has established a special commission that promotes Russian national interests in the Arctic, including an analysis of the military-political situation in the region, which is led by former prime minister and acting Deputy Head of the Security Council Dmitry Medvedev.[27] As a response to its security concerns, the Russian government has developed rules for the passage of foreign warships on the

NSR, requiring that foreign military vessels notify Russia of their plans 45 days in advance and take Russian pilots aboard,[28] which may escalate the mistrust and suspicion between Russia and NATO, ultimately affecting the commercial development of the NSR.

Recommendations

Fostering the principle of sustainable development is the key to multilateral cooperation in the development of the NSR. "Together Towards a Sustainable Arctic" is the main theme of Iceland's Arctic Council Chairmanship for 2019-2021, which reflects Iceland's commitment to the principle of sustainable development and refers to the necessity of close cooperation between the states and peoples of the region and beyond.[29] Russia's senior Arctic official, Nikolay Korchunov, also emphasizes that sustainable development, especially finding the right balance between environmental protection and socio-economic development, will be the main task for Russia's Arctic Council Chairmanship starting later in 2021.[30]

In the future, international cooperation regarding the development of the NSR would be enhanced if related projects could be integrated into the framework of sustainable development. This could include better articulating the importance of the supportive functions and positive spill-over effects that infrastructure investment can provide to the social development of local residents, and also to raise the profile of corporate social responsibility.

The changing trends of the Arctic geopolitical and security situation, post-pandemic global demand deficits, and fluctuations in the energy and shipping markets need to be fully considered. According to the IMF, nearly $90 billion in investments have flown out of emerging economies during the outbreak, and more than 90 countries so far have applied for assistance from IMF's funds.[31] The WTO indicates that in a pessimistic case, the volume of global goods trade could drop by as much as 32 percent this year with the possibility of a 24 percent increase next year. In this situation, world GDP could shrink by as much as 8.8 percent in 2020 and expand by 5.9 percent in 2021.[32] Under the "new normal" that includes low demand, lack of investment, and low mobility of people and goods in international economics and trade, the reassessment of progress and priorities of the NSR and its related energy projects are needed.

A number of factors are essential for long-term development and commercialization of the NSR. These include the implementation of Comprehensive Plan 2035, establishing a list of prioritized sectors for foreign investments, creating more detailed rules and principles for international cooperation, identifying clear criteria for project bidding, and creating dialogues among local governments, enterprises and experts.

From a Chinese perspective, it's critical to seek points of convergence between the joint construction of the Polar Silk Road with Nordic countries and Comprehensive Plan 2035. New topics of discussion could include actively stimulating the advantages of Chinese enterprises in the digital economy and new business forms, exploring cooperation in Arctic scientific, and technological innovation, and improving communications and inland transportation infrastructure to improve social development of the Russian Arctic region.

Finally, Russia-China cooperation in the development of the NRS is encouraged to pay more attention to producing public goods. For example, the "Yamal+" cooperation model could be submitted to Arctic Economic Council as one of the best Arctic commercial practices. Based on the ROK-Japan-China Trilateral High-Level Dialogue experiences, Asian stakeholders could also be more coordinated in their cooperation in NSR issues with European and other partners, using track 1.5 or track 2 dialogue to reduce strategic mistrust between Arctic countries and countries outside the region.

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Japanese Interests in the Northern Sea Route for Trans-Arctic Commercial Shipping

Natsuhiko Otsuka

Introduction

Because of the COVID-19 pandemic that began in 2019, Japan's Gross Domestic Product (GDP) from April to June 2020 was 7.8 percent less than in same quarter in 2019 (Cabinet Office of Japan, 2020). Maritime cargo volumes usually follow GDP trends, and the pandemic's effect on maritime transport to and from Japan remains uncertain. The number of permissions issued by Russian administration for ships entering the Northern Sea Route (NSR) as of the end of August 2020 exceeds that of 2019 (NSRA). Russia is studying and potentially preparing for container service between the Murmansk and North Pacific ports. However, many uncertainties remain in the operation of the NSR. This paper discusses the determinants of commercial shipping along the NSR, including COVID-19 impacts on the NSR, with special reference to Japan.

Determinants of NSR Commercial Shipping for Japan: What is Happening?

After 2014, when trans-Arctic (Northeast Passage [NEP] and NSR) shipping steeply declined, trans-NSR shipping activity between Europe and Asia has been gradually recovering, reaching approximately 700,000 tons, approximately half of the 2013 record (Figure III.8). However, this shipped cargo volume is too small to support a stable international commercial shipping route. Before 2014, ore and liquid bulk were the majority of trans-NSR cargoes. Subsequently, general bulk cargo gradually increased in COSCO Shipping's shipping service by ice class multipurpose bulkers. Under these circumstances, trans-NSR shipping between Europe and Japan has continued (Table III.10). As shown in Table 1, the transported cargoes and destinations gradually diversified. Additionally, although by spot contract, starting in 2020, Japanese liquefied natural gas (LNG) customers have utilized Yamal LNG. These operations precede future LNG

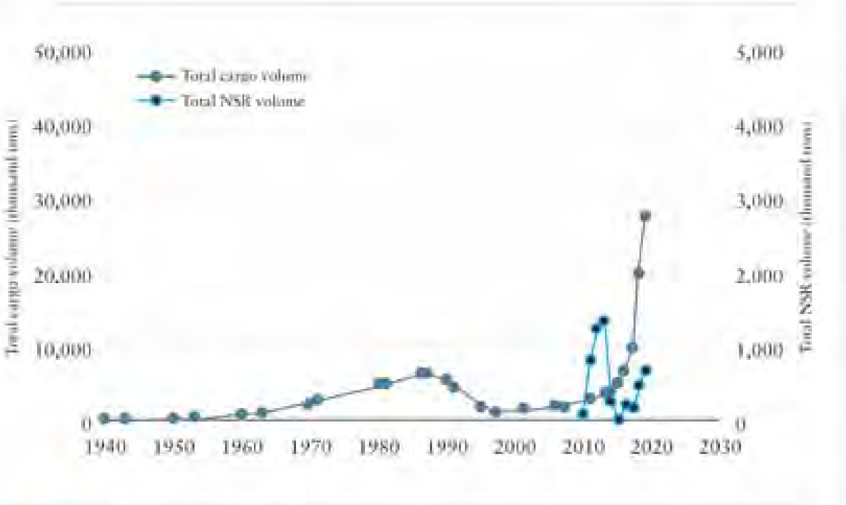

Figure III.8 *NSR cargo volume*

Table III.10 *Trans-Arctic shipping voyages (Northeast Passage and Northern Sea Route) to and from Japan (as of September 2020).*

Year	Ship details	Origin port	Destination port	Cargo
2012	Ob River, 84,682 dwt	Hammerfest	Tobata	LNG
2013	Propontis, 117,055 dwt	Mongstad (Norway)	Mizushima (Japan)	Naphtha
	SCF Yenisei, 47,000 dwt	Murmansk	Iwakuni, Toride etc. (Japan)	N/A
	Arctic Aurora, 73,920 dwt	Hammerfest	Futtsu (Japan)	LNG
2015	Winter Bay, 2,050 dwt	Hafnarfjordur (Iceland)	Osaka (Japan)	Whale meet
2016		Hafnarfjordur (Iceland)	Osaka (Japan)	
2017		Hafnarfjordur (Iceland)	Osaka (Japan)	
	Tian Le, 37,994 dwt	Norway	Tomakomai, Kushiro, (Japan)	Forage
2018	Clean Planet, 89,848 dwt	Niigata (Japan)	Sabetta	Ballast
	Tian Hui, 37,130 dwt	Hamburg	Kushiro, Tomakomai, Hakata	Forage
	Haaga, 23,650 dwt	Sakaide (Japan)	Oxelosund (Sweden)	Coke
	Viiki, 25,532 dwt	Sakaide (Japan)	Hammerfest (Norway)	Coke
	Azure Coast, 2,050 dwt	Hafnarfjordur (Iceland)	Osaka	Whale meet
2019	Atlantic borg, 11,885 dwt	Finland	Kinuura (Japan)	N/A
	Tian En, 37,125 dwt	Helsinki	Tomakomai (Japan)	Container, 40 TEU
2020	Vladimir Rusanov, 96,844 dwt	Sabetta	Ohgishima (Japan)	LNG
2020	Eduard Toll, 96,840 dwt	Sabetta	Ohgishima (Japan)	LNG

Source: ROSATOM FLOT, Center for High North Logistics (CHNL), and satellite AIS tracking by the author procurement from the Arctic LNG II project together with an anticipated LNG transshipment hub on the Kamchatka Peninsula.

Trial Container Shipping Via the NSR and NEP

An assumption is that most of the cargo shipping to and from Japan via the NSR/NEP has been conducted with approximately the same shipping costs as the Suez Canal route, but with shorter shipping times in the summer season. In addition, the origin and destination ports are suggestive of a pairing of Northern Europe and Japanese ports in terms of commercial linkage via the NSR. This activity is not rapidly increasing, but the shipping sector might be slowly accumulating the necessary experience and knowledge to utilize the NSR more consistently.

For example, Tomakomai Futo Co., Ltd, a logistics company and so-called forwarder located in the Tomakomai Port in Hokkaido, Japan, conducted a container-shipping trial from Finland to the Tomakomai Port in September 2019 (a month with minimal adverse sea ice conditions along the NSR/NEP). In this trial, 20 of the 40-foot containers with cargo of Finnish lumber for housebuilding successfully transited the NSR and arrived at Tomakomai Port in 26 days, approximately half the shipping time of the regular container service via the Suez Canal. Because the shipping time decreased, cargo owners could respond to the seasonal local house-building market before winter (Otsuka, 2020). In this regard, the consignee of this trial highly valued the quick service. However, this success is because of a sequence of fortunate conditions, including timely ice-class ship schedules and cargo demand, advance preparation of container boxes, favorable sea ice conditions, and a subsidy for port dues to offset the higher shipping costs compared to the regular service via the Suez Canal. From this trial shipping, we can point out the determinants of favorable NSR container shipping as follows:

- Because the NSR shipping operation is currently limited to tramp service, NSR commercial shipping cannot be achieved without matching the ship and cargo owners' schedules. Good availability of ice class cargo ships and a sufficiently long navigational period might be desired from cargo owners. Moreover, sufficient cargo volume and stable periodical demand might be desired from shippers.
- A container carrier is mostly occupied in a liner service network, even

in the case of an ice class vessel; thus, it is difficult to find an ice class container carrier for a nonregular trans-NSR/NEP shipment. As a result, for tramp liner shipping of containers, a multipurpose bulk carrier must be found that has a similar schedule and destination for its cargo.

- In the case of container shipping via the NSR/NEP by tramp liner shipping, shipping costs are not competitive compared to existing regular service via the Suez Canal. To profit from NSR container shipping, a volume of cargo that enables covering the differential costs is indispensable.
- Longer navigational periods could increase the opportunities for matching ships and a cargo owner's schedule.

Growing Japanese Shipping Sector and Governmental Interest in the NSR

Because major shipping companies in Japan have few ice class cargo vessels, they must build, buy, or charter an ice class vessel to start regular shipping through the NSR. Additionally, their business target would be the destination shipping of bulk cargoes, and they currently have little interest in Arctic container shipping. However, the port authority in the Hokkaido region and the Hokkaido Regional Government, with its geographical advantage as the northeastern gateway between Asia and the NSR, have a strong interest in encouraging use of the NSR. Moreover, at the national level, Japanese government ministries have been holding periodical intragovernmental meetings to share information on trends of the NSR and similar sessions to share perspectives with business enterprises, municipalities, and researchers. Under these circumstances, bulk cargoes are gradually shipped between Europe and Japan as destination shipping, and awareness of NSR is increasing among cargo owners in Japan. Additionally, shipping companies and Japanese society have become increasingly aware of the environmental impacts and safety risks of shipping activity in the Arctic Ocean.

In the Japan's Arctic studies field, a new five-year national Arctic research project, *the Arctic Challenge for Sustainability II* (ArCS II, 2020), was launched in June 2020, funded by the Ministry of Education, Culture, Sports, Science and Technology. ArCS II is tasked to promote sophisticated observations of the Arctic environment, improve weather and climate prediction, assess the impacts of Arctic environmental change on Arctic societies, implement research achievements, and provide scientific knowledge to become the basis of legal and policy responses for the formation of international rules in the Arctic. With these strategic goals, the project strengthens the fields of engineering, the humanities, and social sciences by examining the safety and sustainability of ice navigation, analyzing the interrelation between the international maritime transport network and the NSR, and examining the economic and social impacts of the NSR.

Determinants of Trans-NSR/NEP Commercial Shipping

Between 2010 and the end of 2019, more than 300 trans-NSR voyages were conducted between Atlantic and Pacific Ocean ports. All these voyages were temporal destination shipping, and mainly bulk cargo was transported. Most were completed without notable delays or problems; among them, three involved trial container shipments. Through these experiences, the shipping market might gradually gain practical knowledge of the NSR for their businesses. Additionally, the author's interviews with stakeholders and press reports in Japan on the feasibility of the NSR route (Furuichi and Otsuka, 2018) found that the determinants of trans-NSR commercial shipping are as follows:

- Continued sea-ice retreat enables an expansion of the summer navigable period and an opportunity to match time-dependent cargo demand and shipping schedules of ice class ships. Despite the plan for year-round navigation to Asia by using icebreaking LNG carriers, finding an advanced ice class cargo vessel that can sail the NSR in winter at competitive shipping costs will be difficult in the near term. Thus, year-round shipping of general cargo should only be considered in a strategic, long-term context.
- Fuel price is a key element of the NSR shipping costs. The higher the fuel price, the more competitive the NSR shipping costs are compared with the Suez Canal route. Additionally, the strength of the Russian ruble affects icebreaker assistance fees, because this cost is considerable and is denominated in Russian rubles.
- The availability of Russian nuclear icebreakers is often questioned, but this is not a serious issue under recent sea ice conditions from midsummer to autumn. However, if shipping activity expands into the season while ice still exists and the number of ships increase using the

NSR, this could become a serious issue and uncertainty surrounding navigation would increase.

- Reliability of ice and weather forecasts are improving in Russian information services, non-Russian commercial services, and academic research. Reliability of satellite monitoring of sea ice by organizations such as Arctic Data archive System (ADS) and ICE EYE is also improving, but there are still many issues to be overcome to improve reliability.
- Thus far, based on Japan's experience in trans-NSR/NEP shipping, positives include quick delivery and absence of a piracy threat, but the route still lacks cost-effectiveness after the collapse of the freight market since 2014.
- Regarding container transport between hub ports on the Atlantic and Pacific sides, the availability of a feeder network on both sides will be an important issue to maximize the advantage of quick delivery through the NSR.
- Considering these issues, highly motivated organizations and individuals in the shipping industry can be initial risk-takers to drive further utilization of the NSR. For example, Russia is planning to develop a trans-NSR container shipping business between Murmansk and a Far-Eastern port, called the Northern Transit Corridor Project (Neklyudov, 2020). The port of Tomakomai in the Hokkaido region, Japan, is also a pioneer, using its location and planning objectives to maximize use of the NSR for bulk and container transport between Japan and Europe.

Effect of COVID-19 on Commercial Shipping of the NSR

In September 2020, the Organization for Economic Cooperation and Development (OECD) reported the impacts and projections of the COVID-19 pandemic on the world economy (OECD, 2020). In the report, global GDP is projected to decline by 4.5 percent in 2020, while the 2021 projection suggest a recovery of +5.0 percent per year to reach the same level as 2019. However, there would be considerable differences by country. For example, the G20 has made similar projections: for China, +1.8 percent and +8.0 percent in 2020 and 2021, and Japan, -5.8 percent and +1.5 percent.

According to the projection of Transport Intelligence Limited (2020), COVID-19 has amplified pre-existing troubles in the global container freight forwarding market, such as capacity surpluses, reduced freight prices, and the United States–China trade conflict, causing a contraction of 1.1 percent under a best-case scenario and 7.3 percent in severe conditions by market value in 2020. Sea freight market growth is projected to contract 12.1 percent, 8.2 percent, and 5.7 percent by region in the United States, European, and Asia Pacific markets, respectively.

Shibasaki (2020) analyzed the impact of COVID-19 on cargo ship activity, specifically arrivals and departures in Japan, China, North America, and Europe, by monitoring satellite Automatic Identification System (AIS) until mid-June 2020. The number of ships arriving in Japan decreased from the end of January through March 2020 and then recovered to the same level in 2019. The number of ship calls from the western coast of the United States to Japan demonstrated the same variation. The number of ship calls from China to Japan also decreased in January and February, then recovered to the same level in 2019. Within this shipping figure from China to Japan, container carriers and bulk carriers showed the same tendency as observed in the prior case, but car carriers decreased after April. By contrast, ship traffic between Europe and Japan has been considerably less than that in 2019. From this report, as of June, the impact on Japan's maritime transport is limited. By contrast, the number of ships from China (i.e. Shanghai, Hong Kong, and Shenzhen) to Japan, Korea, India, Europe, and the United States mostly decreased in container carriers, bulker carriers, Liquefied petroleum gases (LPGs), and cruise ships, except for bulk carriers to the European Union.

The world maritime transport volume has a strong correlation with world GDP growth. Because of the downturn of the world economy caused by the initial outbreak of the COVID-19 pandemic, the shipping sector has been showing a similar downward trend to GDP growth in the freight market and in the number of ships entering and leaving major ports in the world. If the OECD's projection of global GDP recovery in 2021 occurs, with China's growth at eight percent, the shipping sector could recover to its 2019 level. However, because all these projections include considerable uncertainty, it is better to focus less on projections than the possible longer-lasting impacts on the shipping sector, especially in a region projected to experience a considerable downturn, including Japan. Furthermore, even if global GDP does recover to pre-pandemic levels by as early as 2021, there are larger questions of possible shifts in the character of global supply chains, including decoupling of current trade flow between China and rest of the world and locating production bases closer to points of consumption. The long-term impact could happen gradually.

Today, NSR is used for limited cargoes as a niche shipping route, partly because depressed freight markets and inexpensive fuel prices narrow any advantages of NSR commercial use. Thus far, destination shipping of crude oil and LNG from the Russian Arctic coast has not decreased. However, except for LNG, there are no regular cargoes using the NSR for transport between Europe and Asia. Thus, although the global stagnation of maritime transport might decrease prospects for commercial shipping on the NSR, NSR shipping may experience a plateau rather than another large dip in cargo demand. However, if structural shifts occur in the international specialization of manufacturing and maritime transport triggered or augmented by this pandemic, those promoting trans-Arctic trade through the NSR, such as the Hokkaido region and Tomakomai Port Authority, will be required to review and redevelop their ambitious plans for port and maritime transport.

Summary

On the basis of the records, trial attempts, feasibility studies of NSR shipping, and interviews, the author reviewed the determinants of commercial use: sea ice retreat, fuel prices, availability of Russian icebreakers, the Russian ruble exchange rate, quality of ice and weather forecasts, quick delivery, extent of future feeder networks from hub ports on the Atlantic and Pacific side, and individuals' ambition. Additionally, in the context of the COVID-19 pandemic thus far, world maritime transport will be damaged if projections of world GDP contraction are accurate. And although the analysis and projections indicate a rapid recovery of global maritime transport, substantial uncertainty remains and world maritime transport could be affected by the continuing global COVID-19 pandemic. This pandemic will also cause NSR shipping to reach a plateau. Moreover, if the pandemic triggers or enhances broad structural shifts in the international specialization of manufacturing and associated use of maritime transport, plans to use the NSR would need to be redeveloped.

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Russian Policies for the Development of the NSR: An Assessment of Recent Developments and Their Implications for International Users[1]

Arild Moe

Introduction

The Russians government's ambitions in the Arctic have changed. The successful completion of Yamal LNG and the Novy Port oil projects demonstrated that the potential for resource extraction with maritime logistics was greater than thought just ten years ago. This insight matured at the same time as it became clear that international transit shipping would not take off as anticipated in 2010-12. Very ambitious plans for development of resource projects along the Siberian coast have become a cornerstone of state policy.

The new goal is to establish year-round navigation on the NSR (Northern Sea Route), including toward the east to facilitate exports to Asian markets. To do this requires a substantial increase in the number of icebreakers as well as investments in other infrastructure. The basic rationale of the Russian plans is now opposite of the view prevailing before 2012. At that point, it was thought that the opening of the NSR for international transit would generate revenue to help pay for new infrastructure, including icebreakers. Now it is clear that international shipping companies will not start to seriously consider using the NSR unless stable year-round navigation serving resource extraction projects in the Russian Arctic has been established.[2] Thus, for international shipping, key questions concern whether infrastructural development plans are realistic. A central, related question is whether Russia will really have enough icebreakers available to support a substantial increase in international transit use, and in what time frame.

Simultaneously, the increasing role of destination shipping has also meant that Russia can unilaterally set the terms for the most dynamic segment of Arctic shipping. How have international shipping companies been affected?

Increased Russian interest in Arctic development, and the NSR in particular, led to a re-evaluation of the organizational structure and an internal struggle for authority over the sea route. How should the outcome of this struggle be interpreted and what are its implications for shippers?

The Icebreaker Construction Program

Russia currently has four working nuclear icebreakers, operated by Atomflot, a subsidiary of the state nuclear energy corporation Rosatom. Construction of the *Arktika* series of three new 60 MW icebreakers began in 2014. The first started undergoing final sea trials in June 2020, and the completion of the two others is expected in 2021 and 2022. Accompanying the more recent, ambitious plans for industrial development in Russia's Arctic, it has been decided to build two more such vessels, to be delivered in 2024 and 2026.[3] By then, three of the four currently operating icebreakers would likely be taken out of service.

A decision was also made in early 2020 to build a 120 MW super-icebreaker Lider (Leader)-class vessel, which is twice as powerful as the Arktika series, at a cost of some USD $1.7 billion (120 billion rubles), fully financed by the federal budget.[4] It is designed to break through 4.3m-thick ice and open a channel 50 meters wide, which means it would be capable of navigating the whole NSR any time of the year and escorting very big ships. Construction started at the new giant yard Zvezda in the Far East in the summer of 2020 and completion is expected in 2027.

A formal decision to build two additional Lider-class vessels has not yet been taken, but their construction is included as a goal in Russia's new Arctic strategy, published in October 2020.[5] Rosatom has presented a sketch, indicating that the vessels could be delivered in 2032 and 2034, respectively.[6]

Atomflot has also launched plans to construct a series of 40 MW icebreakers powered by LNG. In the most recent plans for deployment of Atomflot's icebreaker fleet, the LNG-powered icebreakers would take care of the western sector of NSR, whereupon all the nuclear icebreakers would be moved into the eastern sector.[7]

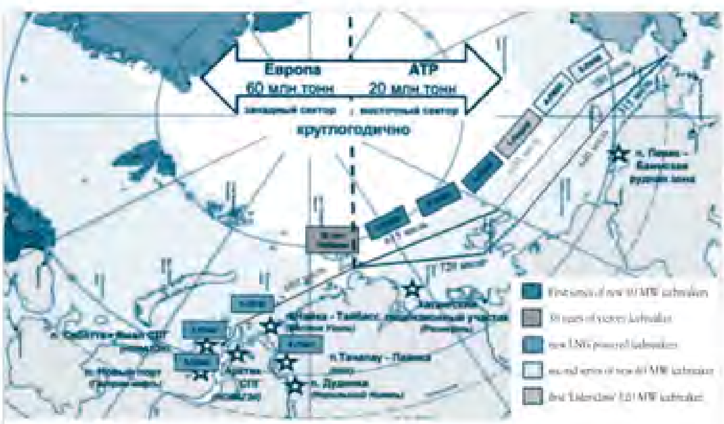
Adding Up Investments

Calculating the cumulative expenditures for icebreaker construction presented above is fraught with complications. The numbers include already committed sums and planned expenses, as well as uncommitted budget allocations and estimated costs. Most of the sums have been announced in the period 2017-19 and do not include any adjustments. But the budget for the first three 60 MW icebreakers was made in 2014 and has been adjusted in line with later reported price increases.

Altogether this nuclear icebreaker construction program amounts to at least some USD $9-10 billion (597 billion in 2019 rubles). If all the icebreaking needs in the western part of the NSR (Ob Bay, mouth of Yenisei, Kara Sea), are, as announced by Rosatom, covered by new LNG-powered icebreakers, then logically all the costs of building new nuclear icebreakers must be attributed to development of the eastern direction of NSR and the establishment of year-round passage. This raises the question of whether the investments are likely to be repaid by income from services to increased traffic in the eastern direction on NSR.

To estimate annual capital costs, we calculate accumulated investments starting in 2020, assuming that icebreakers have a 30-year service life during which the investments are depreciated linearly, i.e. 3.3 per cent per year. We add a social discount rate (interest) of 3.2 percent, in line with recommendations from the literature.[5]

Following these assumptions, the annual capital cost will grow from nine billion rubles in 2021 to 39 billion in 2034, corresponding to USD $120 million and USD $520 million at an exchange rate of 1:75. In



Source: Atomflot, 2019.

Figure III.9 Projected deployment of Atomflot's icebreakers 2025-2030

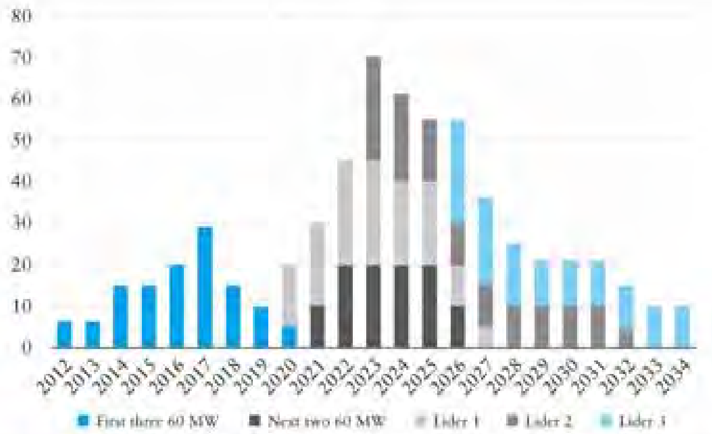


Figure III.10 Projected budgets for construction of nuclear icebreakers (bill. 2019 rubles)

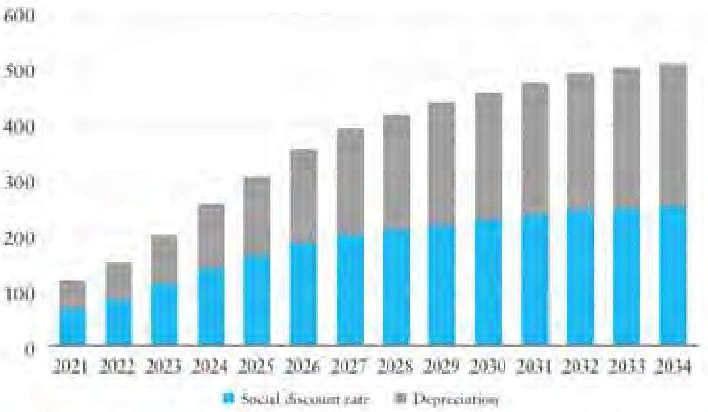


Figure III.11 Estimated annual capital costs for new nuclear icebreakers in million USD

addition to these costs there are of course operating costs, which are hard to calculate because of lack of data.

Income

The icebreaker construction program is based on an assumption of rapidly growing traffic on the NSR. According to Atomflot, in the period 2025-30 cargo shipped eastwards on the NSR to the Asian market will grow to 20 million tons annually, compared to 60 million tons shipped westwards to Europe. After 2030 Atomflot believes cargo flows eastwards should increase to 70 million tons, reflecting the expected increased icebreaking capacity (three "Liders"), whereas westward flows should drop to 30 million tons.[9] An overwhelming share of this cargo will be LNG from projects in the Ob Bay area.

How much will the cargo owner pay for icebreaking? As reported by Vedomosti, referring to Novatek, transporting 21.1 mill. tons of LNG eastwards to Asian markets via a trans-shipment facility in Kamchatka represents an annual saving of USD $225 million compared to the western route.[10]

The specially designed icebreaking LNG carriers for Yamal LNG and Arctic LNG-2 (and other planned LNG projects) will not require icebreaking assistance for the whole year, however. In principle a cargo owner is unlikely to pay for the service in more or less ice-free periods. Thus, the question becomes, "What might be the income from servicing voyages in the ice-infested season?" One can envisage hard negotiations on this point. But if we assume that icebreakers are needed two thirds of the year and that Novatek is willing to pay almost all the savings obtained in these months, it would amount to $150 million. That sum would cover approximately a third of annual capital costs when the first Lider-class vessel is put into operation in 2028. If the volume is doubled by 2034 when three Liders are in operation, the income would cover 60 percent of the annual capital cost.

These assumptions are very crude and can be challenged, but it looks like the implementation of the icebreaking program will amount to a substantial subsidy to LNG projects that may use the eastern route year-round.

Cargo owners other than Novatek may also be interested in the eastern route. Indeed, in the cargo scenarios for NSR it is assumed that a series of export-oriented projects will be implemented, some of which will target Asian markets. But whereas it can be attractive to sail east in the ice-free season, it may be more costly when icebreaking and payment of accompanying fees is required. Some cargo is not time sensitive and may be stored until the ice melts. We can also not assume that the expected projects always will have a better market in Asia than in the Atlantic basin and that consequently more cargo will go west even if the eastern route is open. Importantly, there is considerable uncertainty about the realization of several projects, notably big coal developments on the Taymyr Peninsula. The opening of all-year traffic on the whole NSR remains tightly connected to development of LNG exports.

Many will argue that this calculus is too narrow, and that year-round icebreaking capacity has a value for Russia beyond the potential direct commercial benefits, including military security and the ability to move anywhere in the Arctic, including supporting scientific research. It can also be argued that the icebreaking capacity should be regarded as general public infrastructure that will bring benefits to communities and industrial projects along the northern Russian coastline. Atomflot argues that the existence of a year-round corridor will attract transit shipping in the future, which will increase the income base, even though it cannot be accurately estimated today.[11]

If we follow this line of thinking, the cost of constructing new icebreakers is more like an expense, not an investment. An implication is that the focus will be on the annual operating costs compared to income. That has been the usual approach in discussing "NSR economics." Even if we have not included operating costs here, scattered information suggests that they will be covered even under a modest cargo scenario.

But looking at construction costs as an expense makes it appropriate to consider the numbers in the context of annual state expenditures. The sums are not trivial. According to the investment schedule presented above, annual outlays in this decade will hover between 20 and 70 billion 2019 rubles, or between $267 and $933 million USD, just for icebreaker construction. Other infrastructure costs will also be substantial.

In the short term there may be delays in construction caused by capacity constraints, cost overruns and financial problems at the shipyards. But the preconditions for implementation of the full icebreaker construction program are mainly determined by federal policy and politics. The program needs to enjoy high political priority and the state must be able to transfer sufficient funds.

As of today, the Russian government's willingness to sponsor icebreaker construction has seemed limitless. However, if the overall economic situation becomes more challenging, trade-offs in budget allocations are likely to become more visible—and contentious. If the development of most of the new icebreakers is explained by improved markets for LNG exports, and these improvements appear marginal, then it will be asked if the heavy state investments are justified. If international prices for LNG are less than expected, Novatek may negotiate for lower escort fees. The volatile international energy markets witnessed in 2019 have already affected the speed of the build-up of LNG projects. Technological improvements in the next generation of icebreaking LNG carriers could reduce the need for icebreaker support further.[12]

Such developments could result in a re-evaluation of the icebreaker program, which would also have consequences for the potential for year-round transit shipping.

New Framework Conditions and Policies[13]

Recent Russian protectionist tendencies have added an additional layer of complexity to the calculus of Arctic shipping economics. In 2018, Russia introduced regulations mandating that all oil, liquefied natural gas, and coal loaded from within the Northern Sea Route area could only be transported on Russian-flagged ships to the first point of destination or transshipment.[14] More restrictions were adopted soon after; after 2019, transportation of hydrocarbons out of the NSR area would be reserved for vessels *built in Russia*.[15]

It was obvious that the new regulations could not be implemented immediately. The fleet of carriers built in Korea for Yamal LNG already delivered or under construction were all planned to sail under flags of convenience. Exceptions from the new rule were made, reluctantly. A bigger challenge was the obligation to build the next series of LNG carriers, destined to serve Arctic LNG 2 in Russia. Until now no LNG carrier has been built in Russia., The president of Novatek, the company responsible for developing the Arctic LNG projects, and protested openly, arguing that insisting on Russian-built carriers from now on would risk halting the progress of LNG development and make the ambitious projections of NSR cargo increases even more uncertain. Again, exemptions have been granted, and foreign-built vessels will also be allowed to transport LNG from trans-shipment hubs outside the NSR area on Kamchatka and near Murmansk to foreign markets. The protectionist measures do not conflict with international law, and they apply only to a segment of NSR shipping, namely destination shipping, but they may be read as a sign that Russia is increasingly looking at NSR as an exclusively domestic affair.

Another major development was the transfer of key functions in the management and development of NSR to Rosatom. Rosatom now has control over current operation of the NSR and is in charge of navigational and hydrographical services. Moreover, it manages state property and assets in ports; in addition to overseeing the icebreakers, it coordinates and distributes state investments and collects state income. Rosatom's new role as "infrastructure operator" commenced in 2019.[16]

For potential foreign users of the sea route the key parameters are commercial terms, predictability, and safety. Centralization of infrastructure in the hands of Rosatom may enhance coordination and better services, but if the consolidation of functions within this structure means less transparency, users may become more sceptical about investing for the long term. Many will find it problematic that Rosatom is a de facto monopoly provider of icebreaker services as a business activity at the same time as it is the de facto authority. In addition, Atomflot is starting to offer its own freight services, in competition with ordinary shipping companies. A plan to establish its own international container shipping business represents another widening of Rosatom's activities.[17] If such plans are realised, Rosatom may have less interest encouraging other users and instead build up a transit monopoly.

Summing Up

This paper has looked at three interrelated issues: icebreaker construction, protectionist legislation, and centralization of NSR development and operations. These are parts of a massive political enterprise to develop the Russian Arctic, where state priorities are intimately involved in plans and investments made by industrial actors. The overarching question has been how developments can be interpreted from outside.

All in all, the impression is of a more inward-looking NSR development than the expectation had been when international navigation started a decade ago. Encouraging international transit shipping on the NSR continues to be official Russian policy and declarations about the NSR's potential as an international waterway can still be heard, but it is now a task for the longer-term future, some ten years or more from now. International shipping would need years to prepare in any case. Obviously, a series of factors connected to freight markets and competing routes, logistics, and more will play a major role, but have not been discussed here. Still, conditions established by Russia—in the form of infrastructure as well as legal framework and organization—are extremely important. Official declarations will not be enough to convince investors. What counts for them is the *perception* of trends in framework conditions and organization as well as the reliability and predictability of these frameworks over time.

Notes

1. Research for this paper was financed by the Research Council of Norway through the SIRAW project, grant. No. 287576
2. «Вячеслав Рукша: 'Росатом должен обеспечить российские мегапроекты в Арктике' [Vyacheslav Ruksha: «Rosatom must facilitate Russian mega-projects in the Arctic»], Rosatom (source Novosti), 9 April 2019. https://www.rosatom.ru/journalist/interview/vyacheslav-ruksha-rosatom-dolzhen-obespechit-rossiyskie-megaproekty-v-arktike/?sphrase_id=840187
3. "Росатомфлот подписал договор на строительство третьего и четвертого универсальных атомных ледоколов проекта 22220» [Rosatomflot signed contract for construction of the third and fourth universal nuclear icebreaker of project 22220], Rosatom press release, 23 August 2019. https://www.rosatom.ru/journalist/news/rosatomflot-podpisal-dogovor-na-stroitelstvo-tretego-i-chetvertogo-universalnykh-atomnykh-ledokolov-/?sphrase_id=828033
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6. K. Yu.Knyazevskiy, «Развитие атомного ледокольного флота для обеспечения крупнейших национальных Арктических проектов» [Development of the nuclear icebreaker fleet to facilitate large national projects]. Atomflot, Presentation, St. Petersburg 20-21 June 2019.
7. Вячеслав Рукша, op.cit.
8. Tatiana Kossova and Maria Sheluntcova: Evaluating performance of public sector

projects in Russia: The choice of a social discount rate. *International Journal of Project Management*, Volume 34, Issue 3, April 2016, Pages 403-411. https://www.sciencedirect.com/science/article/abs/pii/S0263786315001891?via%3Dihub

9. K. Yu.Knyazevskiy, op. cit.

10. «Строительство СПГ-терминала «Новатэка» на Камчатке начнется через год» [Construction of Novatek's LNG terminal on Kamchatka begins I one year], *Vedomosti*, 19 March 2019. https://www.vedomosti.ru/business/articles/2019/03/19/796814-spg-terminala-novateka

11. Вячеслав Рукша, op. cit.

12. Malte Humpert, "New Powerful Arc7 LNG Carriers Could Eliminate Need for Icebreakers on Northern Sea Route", *High North News*, 29 October 2020. https://www.highnorthnews.com/en/new-powerful-arc7-lng-carriers-could-eliminate-need-icebreakers-northern-sea-route Arc7 roughly corresponds to Polar Class (PC) 3-4.

13. A more extensive analysis is provided in A. Moe (2020) "A new Russian policy for the Northern sea route? State interests, key stakeholders and economic opportunities in changing times," *The Polar Journal*, DOI: 10.1080/2154896X.2020.1799611

14. Federal Law. "О внесении изменений в Кодекс торгового мореплавания Российской Федерации и признании утратившими силу отдельных положений законодательных актов Российской Федерации." [About amendments in the Code for merchant navigation and recognition of expiration of some provisions of legal acts of the Russian Federation] No. 460.F3, December 29, 2017, *Rossiyskaya gazeta*, December 31, 2017. https://rg.ru/2017/12/31/fz-460-dok.html

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16. "О внесении изменений в отдельные законодательные акты Российской Федерации." [On amendments to some legal acts of the Russian Federation", Federal Law No. 525-F3, 27 December 2018. https://rg.ru/2018/12/29/fz-525-dok.html

17. «Севморпуть оставят в прежних границах, но транзит по нему будут развивать» [The Northern Sea Route will be left within its former boundaries, but transit on it will develop], *Rossiyskaya gazeta*, 16 July 2020. https://rg.ru/2020/07/16/reg-szfo/sevmorput-ostaviat-v-prezhnih-granicah-no-tranzit-po-nemu-budut-razvivat.html

Contrasting Trends in Regional Arctic Destinational and Transit Shipping

Frédéric Lasserre

Ever since the impact of climate change on Arctic sea ice began to be discussed in international forums at the turn of the century, several comments were published to the effect that diminishing sea ice would quickly translate into the development of massive transit routes across the Northwest Passage (NWP), the Northern Sea Route (NSR) and the Arctic Bridge linking Churchill on the shores of Hudson Bay and Murmansk. Twenty years later, Arctic shipping did indeed expand significantly, but the actual picture is significantly different from what analysts projected. Destinational traffic appears to be the driver of Arctic shipping expansion, while transit traffic remains marginal. What are the main features of Arctic shipping presently, and how did the industry adapt, depending on the area? Results show contrasting evolutions along the NSR, in the Canadian Arctic, and in Greenlandic waters.

This chapter is based on the analysis of figures from three different sources, which implies methodological issues since the data does not display the same elements (Lasserre and Alexeeva, 2015; Lasserre 2019). In the Russian Arctic, data about vessel movements and characteristics were gathered from the Northern Sea Route Administration[1] and from the Center for High North Logistics.[2] For the Canadian Arctic, the Ministry of Transportation agency for the Northern Canada Vessel Traffic Services Zone Regulations provided the author with annual detailed ship movements. For Greenlandic waters, data was provided by the Danish Joint Arctic Command based in Nuuk.[3]

A Definite Increase in Arctic Shipping

Figures below indicate that vessel movements are definitely increasing substantially in the Arctic. From 2009 to 2019, traffic was multiplied by 1.92 in the Canadian Arctic; by 1.97 in Greenlandic waters; and by 1.58 between 2016 and 2019 in waters of the Northern Sea Route.[4]

Table III.11 Vessel movements in the Canadian Arctic, number of voyages, Nordreg zone

	2009	2011	2013	2014	2015	2016	2017	2018	2019
Vessels cumulated dwt, million metric tons	1.02	1.28	1.39	1.43	1.8	2.79	3.54	4.38	5.16
Voyages	225	319	348	302	315	347	416	408	431
Of which:									
Fishing boats	65	136	137	119	129	131	138	139	137
Cargo or barges	109	126	127	108	120	147	188	197	223
Of which:									
General cargo	23	38	35	32	34	36	50	48	59
Tanker	23	30	28	25	27	23	24	29	28
Dry bulk	27	23	27	33	36	53	72	89	106
Tugs and barges	36	33	36	18	23	35	42	31	30
Pleasure crafts	12	15	32	30	23	22	32	17	19
Cruise/passenger	11	11	17	11	18	20	19	21	24
Government vessels (icebreakers, navy)	21	20	17	23	16	20	22	18	20
Research vessels	7	11	20	10	9	6	13	13	8
Others					3	3	6	3	

Source: figures compiled by the author from data submitted by Nordreg, Iqaluit.

Table III.12 Voyages to and from Greenlandic waters

	2009	2011	2013	2014	2015	2016	2017	2018	2019
Container, general cargo	159	184	141	155	135	150	151	113	146
Passenger, cruise	96	113	130	122	105	222	249	372	241
Bulk	12	0	0	2	1	88	132	155	188
Tankers	57	60	24	29	22	20	31	36	40
Fishing vessels	54	145	124	120	123	144	142	168	149
Research vessels	62	44	20	31	24	32	33	20	10
Other ships	59	73	48	88	122	131	143	209	228
Offshore	0	61	6	0	0	0	0	0	4
Government vessels	12	17	12	13	13	13	19	5	3
Total	511	697	507	559	564	800	900	1078	1009

Source: Joint Arctic Command, Nuuk

Table III.13 Vessel movements in NSR waters, number of voyages

	2016	2017	2018	2019
Volume transported, million metric tons	7.265	10.713	20.18	31.53
Voyages in NSR waters	1 705	1 908	2 022	2 694
Of which:				
Tanker	477	653	686	799
LNG tanker		13	225	507
General Cargo	519	515	422	546
Container	169	156	150	171
Icebreaker	58	101	232	231
Supply		57	104	169
Research	91	87	85	93

Source: CHNL

Within the general and substantial increase in vessel traffic in these three areas, contrasting trends can be observed from these figures.

In the Canadian Arctic, growth in traffic was mainly driven by fishing vessels (+106.2 percent between 2009 and 2019) and cargo ships (+122 percent), of which dry bulk experienced the fastest expansion (+288.9 percent), driven by mining activities, and general cargo (+156.5 percent), driven by community supply.

Bulk traffic has benefited from the exploitation of Arctic or subarctic mines such as Voisey's Bay (Labrador), Raglan (Quebec), and Mary River (Baffin Island, Nunavut); this traffic has largely made up for the drying up of traffic to and from Churchill since the port closed down in 2016 before reopening up in 2019. For instance, Baffinland Iron Mines shipped 920,000 tons of ore from its mine in Mary River through its port of Milne Inlet the first year of activity in 2015, then 4.1 million tons in 2017 (*Maritime Magazine*, 2018) and 5.1 million tons in 2018 (Debicki, 2019). The company eventually intends to reach an annual volume of 12 million tons.

In Greenland, cruise traffic (+151 percent), fishing (+176 percent) and bulk traffic (+1,467 percent) largely drove traffic expansion, whereas container and general cargo stagnated. Research vessel traffic decreased 83.9 percent and offshore vessel traffic decreased 93.4 percent from 2011 to 2019, anticipating a decline in interest for offshore oil and gas development.

In Russia, tanker traffic increased 67.5 percent between 2016 and

2019. LNG tanker went from nil to 507 voyages, and icebreaker voyages increased 238 percent. Tanker traffic experienced a sustained growth with the oil and gas developments in the Kara Sea (Prirazlomoye and Varandey oil terminals) (Agarcov et al 2020) and on the Yamal peninsula and Ob Bay, with Sabetta and Novy Port main terminals and the impending opening up of Arctic LNG 2 terminal (Staalesen, 2018; Katysheva, 2020). With the programmed opening of coal and lead and zinc mines, bulk traffic should experience a fast growth in the Russian Arctic as well, whereas fishing, concentrated in the Barents and Bering Seas, does not appear in these statistics.

It is apparent that the main driver for the expansion of shipping in the three areas is natural resources exploitation, including mining, oil and gas, and fishing. Community resupply in Canadian waters and cruise ship traffic in Greenland also experienced sustained growth.

However, contrary to popular belief and widespread expectations, transit traffic remains very limited along Arctic passages in Canada and Russia.

Transit Traffic Remains Weak

Despite the ongoing melting of sea ice, transit traffic remains rather limited along the Northwest Passage and the Northern Sea Route, here again with differentiated pictures.

In both cases, there is a definite trend towards an expansion but with differentiated details. Transit numbers across the Northwest Passage were higher at the beginning of the period, experienced growth until 2012, witnessed a moderate decline, expanded again until 2017, then collapsed in 2018, only to recover in 2019. Figures show that both in terms of voyages and tonnage, transit represents a very small share of total traffic along the NSR, despite the recent increase in tonnage in 2018 and 2019. Transit traffic was initially very moderate, then expanded up to a high of 71 voyages in 2012, then collapsed to 18 in 2014 to recovery gradually to 37 in 2019. This decline, and later stagnation at low levels in transit traffic along the Northern Sea Route, is clearly out of step with media forecasts announcing the advent of heavy traffic along Arctic routes. This is due to several factors (Balmasov, 2016; Doyon et al. 2017):

- The decline in oil and fuel prices, which makes the search for possible

Table III.14 Transit traffic along the Northwest Passage, 2006-2019

Vessel type	2006	2008	2010	2011	2012	2013	2014	2016	2017	2018	2019
Icebreaker	2	1	2	2	2	2	4	3	2	2	1
Cruise	2	2	4	2	2	4	2	3	3		5
Pleasure boat		7	12	13	22	14	10	15	22	2	13
Tug	1		1		2				3	1	1
Cargo ship		1		1	1	1	1	1	2		5
Research	1	1		1	1	1			1		
Other								1	4		
Total	6	12	19	18	30	22	17	23	33	5	25

Source: figures compiled by the author from data submitted by Nordreg, Iqaluit

Table III.15 Transit traffic along the NSR, 2006-2019

	2006	2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Icebreaker				2	3	2	2	1	2		1	
Government ship				1	0	1	1	3	1			
Cruise			1	1	0	1	3	1	1			
Tug, supply vessel		1	4	4	5	1	1	4	4	1	2	
Commercial		2	6	31	38	64	24	15	11	24	23	32
Research			2	2	0	2	0	0				2
Fishing										2	1	3
Total official transit	0	3	13	41	46	71	31	18	19	27	27	37
Volume transported, million metric tons			0.11	0.82	1.26	1.18	0.27	0.04	0.21	0.19	0.490	0.697
Total volume handled in the NSR, million metric tons		2.219	2.085	3.225	3.75	3.914	3.982	5.432	7.265	10.73	20.18	31.53

Source: CHNL data compiled by author

reductions in transit costs less attractive for shipping companies.

- The decline in commodity prices, which makes Arctic resources less attractive, both for exploitation and for initial investment for transport with specialized vessels. The impact of this element may decrease as new oil, gas, and mining sites open along Siberia's Arctic shore.
- The continuing global decline in both bulk and container freight

rates, which discourages shipping companies facing overcapacity from investing in new ice-bound vessels.

- The priority deployment of Russian icebreakers to infrastructure projects, notably the terminals linked to the oil and gas project on the Yamal Peninsula or Ob delta. The lower availability of icebreakers has dissuaded some carriers from hiring their vessels for lack of guaranteed escort.
- A confusing tariff schedule for the services of the Northern Sea Route, sometimes considered opaque by maritime carriers.

The composition of this traffic also differs by region. Commercial cargo ships represent the largest share of transit traffic along the NSR, whereas transit along the NWP is largely composed of pleasure boats, with commercial vessels comprising between zero and two units (except for five in 2019). Among the elements that explain this very weak interest for transit traffic along the NWP, let us mention a higher ice concentration in summer (NSIDC, 2019), the absence of promotion of the NWP as opposed to a very proactive stance in Russia, and a higher level of equipment and infrastructure along the NSR, including ports that can harbor ships in cause of damage. Icebreaker support also varies greatly, with Canada having only nine Arctic-capable icebreakers as opposed to Russia's five nuclear and 37 diesel icebreakers.

This comparison between total and transit traffic underlines the fact that destinational traffic (ships going to the Arctic, stopping there to perform an economic task and then sailing back) remains the driving force in Arctic shipping. This destinational traffic is fueled by the servicing of local communities, the exploration for natural resources and their exploitation, including mining, oil and gas, and fishing.

Another feature of Arctic traffic is the recurrent seasonality. Most traffic takes place between June and October, inclusive.

Table III.16 Share of voyages carried out between June and October included, percent of total

	2013	2014	2015	2016	2017	2018	2019
NSR				69.8	68.7	64.1	61.2
Canadian Arctic	86.5	88.7	86.7	87.1	88.5	89.2	88.2
Greenland	77.7	77.5	80.7	84.5	71.5	86.6	87.5

Source: compiled by author from Nordreg, CHNL and JAC data

The seasonality is less pronounced and is declining along the NSR, in large part because several oil and gas projects included investments in high ice-class vessels for year-round shipments, especially from Varandey oil terminal as well as Sabetta port. In 2019, 1,245 out of 2,694 of transits (46.2 percent) were carried out by ships with an ice class Arc 6 or greater (Polar Class 5), of which 1,032 were carried out by commercial ships and 214 by icebreakers (CHNL, 2020); among these voyages, 866 were carried out by tankers or LNG tankers. This clearly underlines the business model resting on year-round shipping developed by the oil and gas industry with regard to Arctic hydrocarbon development. However, for now other segments of the shipping industry have not really developed year-round activity in NSR waters and thus maintain a seasonal approach, as is very obviously the case in Greenland and Canadian Arctic waters.

Towards a New Business Model?

The literature abounds with cost analyses that pledge Arctic commercial transit shipping is profitable, although several other articles state the contrary (Theocaris, 2018, 2019; Lasserre, 2019). There is an increasing discrepancy between academic research, with an emphasis placed on transit shipping, and the reality where destinational shipping is on the rise but transit shipping remains very weak. This has led some authors to suggest that shipping companies analyse the market more broadly, and not merely on a single-trip cost basis. This should come as no surprise since it is a basic principle in business management that strategic analysis does not rest exclusively on a cost-based approach (Porter 1991; Lorange 2009; Stopford 2009). Authors (Buixadé Farré *et al* 2014; Lee and Kim 2015; Lasserre 2019; Lasserre et al, 2011, 2016; Sarrabezoles et al, 2014) have underlined that shipping companies also take into account strategic business elements such as:

- The high financial risk for bulk carriers, working on a tramp basis, stemming from the difficulty to secure long-term contracts to make up for higher ice-class construction and exploitation costs.
- The high commercial risk for liner shipping (container, general cargo) to develop seasonal and ice-prone routes given their major just-in-time business constraint
- The non-tariff barriers to entry imposed by insurance companies

regarding ship equipment, ice class, crew experience, now enshrined in the Polar Code.

A way to circumvent these business constraints would be to build transshipment hubs at both entry points of Arctic passages, where cargo could be loaded onto regular ships, while enabling shipping companies exploiting Arctic routes to consider investing in ice-class vessels with greater capabilities, so as to develop year-long service. Indeed, a technical constraint for Arctic shipping is that high ice-class vessels are more expensive to build and operate, but are also often less seaworthy in open, rough waters (Baudu, 2019), thus making their exploitation in non-Arctic waters less attractive. The implementation of this transshipment system would, according to its promoters, eliminate these technical and business impediments to the growth of Arctic commercial shipping.

Several ports have thus been considered for the development of transshipment hubs, with various advantages and capacities. For the NSR, Murmansk is already acting as such a hub on the western entrance; the Norwegian port of Kirkenes is dreaming about such a possibility, especially if the Kirkenes-Helsinki railway is eventually built (Lasserre and Têtu 2020). On the eastern entrance, Zarubino in Primorie Province or the more northern port of Petropavlovsk are options. These two NSR possibilities are the most serious since they are actively supported by the shipping companies involved in oil and gas development in the Yamal area and by the Russian government with its Northern Sea Transport Corridor scheme (Staalesen, 2020).

For the Northwest Passage, several areas are considering project proposals to build transshipment ports that might provide an as-yet undeveloped shuttle service across Arctic passages, including the Transpolar Route: Nome in Alaska is promoting its hub vision; Halifax, Nova Scotia; St-Pierre on the eponymous French island; and Portland, Maine have all been considered. Whether these schemes will go to fruition or not remains to be seen.

Notes

1. NSRA, nsra.ru
2. CHNL, www.arctic-lio.com
3. Joint Rescue Coordination Center/JAC, Nuuk, https://www2.forsvaret.dk/eng/Organisation/ArcticCommand/Pages/ArcticCommand.aspx
4. The Northern Sea Route comprises Russian Arctic waters between the Kara Gate and the Bering Strait. Thus, traffic in the Barents Sea is not included in NSR figures, nor traffic in Russia's Arctic Pacific waters.
5. Nickel ore is shipped in containers from the port of Dudinka, thus the apparently high container traffic that in fact largely reflects shipments of mineral and metallurgical semi-transformed products, besides limited reefer shipments of fish from Kamchatka to Arkhangelsk and St-Petersburg.
6. A methodologic note is necessary here. The term transit is interpreted differently by the various administrations that collect and publish figures describing transit along Arctic passages. In Canada, figures are collected by the Canadian Coast Guard section responsible for the enforcement of the Northern Canada Vessel Traffic Services Zone Regulations (Nordreg). The definition used by Nordreg for transit is a movement between Baffin Bay to the Beaufort Sea. Robert Headland and his team at the Scott Polar Research Institute use a definition whereby transits are counted between the Labrador Sea and Bering Strait. This difference does impact figures since a vessel servicing the community of Inuvik from Montreal will be counted as a transit by Nordreg but not by the Scott Polar Research Institute. This is why the SPRI counts 32 transits in 2017 (33 for Nordreg), and 3 in 2018 (5 for Nordreg) for instance. In Russia, figures are collected by the Northern Sea Route Administration, then formatted and published by the Center for High North Logistics (CHNL), a private association and therefore not an official Russian administration. CHNL bases its figures on the NSRA definition of transit, which is a voyage between the Bering Strait and the Kara Gate. Thus, a ship from Kamchatka to Murmansk will be counted a transit by CHNL despite the fact the ship is still in Russian Arctic waters. Other voyages, like those carried in 2009 by heavy lift vessels *Beluga Foresight and Beluga Fraternity* in 2009, are counted as transits by CHNL from Korea despite the fact they unloaded their cargo at Yamburg before proceeding to Germany, thus making their voyages a destinational voyage. On these methodological issues, see Lasserre and Alexeeva (2015), Lasserre et al (2019). For this paper, I decided to work with official Nordreg figures and semi-official CHNL figures.

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A Logistical Approach to Sustainable Development of the Arctic in the Post-COVID Age

Sung-Woo Lee, Jisung Jo, and Sewon Kim

Introduction

COVID-19 is ushering in a new phase of technological development. Even the Arctic Ocean and the Northern Sea Route (NSR) are being affected by this pandemic. During this time, the development and utilization of contactless technologies, i.e., 4th Industrial Revolution technologies, have dramatically accelerated. Due to COVID-19, they are being rapidly deployed and commercialized in all areas. In the past, the biggest obstacles to their use were rigidities associated with established, conventional infrastructure, combined with an unprepared legal system. However, these impediments are now losing their influence in the face of fear caused by COVID-19. One unintended consequence of this pandemic is that it is paving the way to the expanded use of 4th Industrial Revolution technologies, which include the automation of industrial technologies, better machine-to-machine communication, big data analytics, and the increasing use of artificial intelligence to promote human endeavors such as trade, shipping, and more environmentally sound uses of resources.

Even before the pandemic, Lee (2017), Lee & Jo (2018) and others mentioned the need and potential to implement 4th Industrial Revolution technologies along the NSR and other Arctic logistics systems where there are few inhabitants, extreme climatic conditions, and special difficulties in rigorously protecting the environment and saving lives. In particular, Eurasia's Arctic Ocean coastal area. where energy resources are being actively developed, has low density populations, a declining availability of labor, and high costs because of severe environmental conditions. (see Figure 1). As main customers of Arctic resources, Northeast Asian countries place great importance on tackling these issues. A Korean policy foundation, Yeosijae, cited the price competitiveness of 4th Industrial Revolution technologies as a reason for applying them. In a report issued in May, 2020, it noted, as an example, that the costs for automobile welding by robots are $8 per hour and costs for automobile welding by humans are $23 per hour. The report also noted that this trend would only be

Source: www.reddit.com/r/MapPorn/comments/87tyca/russia_population_density_detailed_map_7200x3684/ (2019.3.19.)

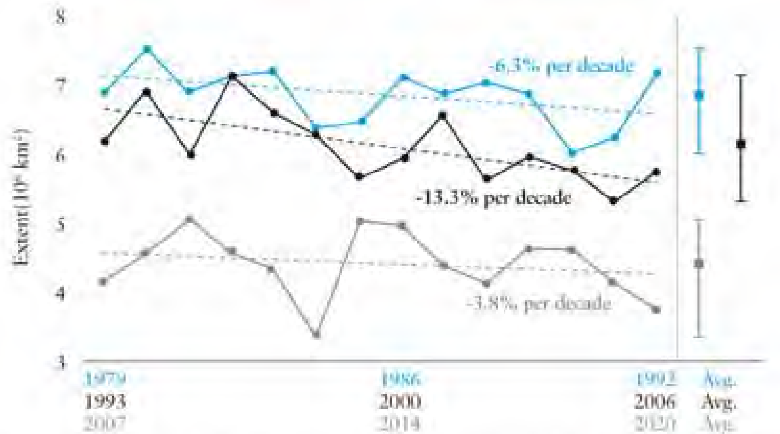
Figure III.12 Population density of Russia

accelerated by COVID-19 and would change the world, since many tasks currently done by human labor can be replaced by contactless robots. The report also observed that a robotic future might present a solution to labor force and environmental limitations in developing Arctic resources safely and sustainably.

Applying 4th Industrial Revolution Technologies in the Arctic

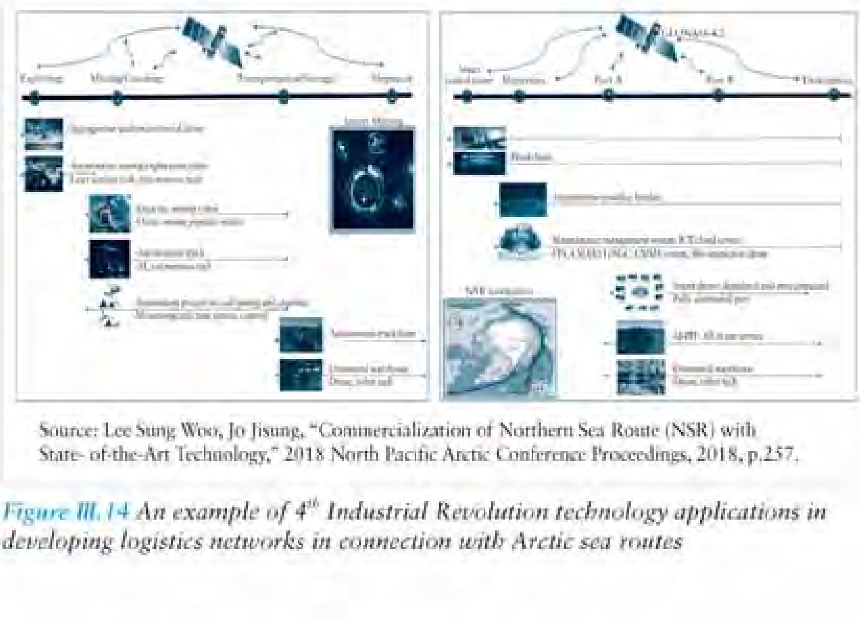
In 2020, the summer Arctic sea ice was at the second lowest level in history (Figure 2). Rapid sea ice melting from a steadily warming Arctic has created seasonal openings of the NSR, with an emerging pattern of ice-free conditions during the entire summer.[1] As Russia pushes ahead with its Arctic-1 and Arctic-2 LNG projects, 4th Industrial Revolution technologies linked to the NSR can be rapidly applied and utilized in the aftermath of COVID-19. This would be a useful strategy to overcome extreme environmental conditions, address a lack of the labor force. and raise price competitiveness for the safe export of Arctic natural resources. Figure 3 illustrates how to export natural resources from Russia's Arctic interior based on 4th Industrial Revolution technologies.

Energy development in the Arctic inevitably translates into growth of related industries. For example, Arctic energy development requires shipbuilding, and in turn, the shipbuilding industry is linked with a demand for increasing shipping services, civil engineering infrastructure through port development, and related supportive urban development. These linkages, however, have been blocked by previously mentioned obstacles to Arctic development. Although emerging 4th Industrial Revolution



Source: National Snow and Ice Data Center, University of Colorado at Boulder, September 2020.

Figure III.13 Arctic annual minimum sea ice extent



Source: Lee Sung Woo, Jo Jisung, "Commercialization of Northern Sea Route (NSR) with State- of-the-Art Technology," 2018 North Pacific Arctic Conference Proceedings, 2018, p.257.

Figure III.14 An example of 4th Industrial Revolution technology applications in developing logistics networks in connection with Arctic sea routes technologies were deemed a potential solution to those obstacles, immature technologies and high costs hampered the progress. Now that Covid-19 has attracted global attention to and use of 4th Industrial Revolution technologies, however, technological innovations can be expected to increase and per unit costs decrease simultaneously. It can be conservatively said that for sustainable development of the Arctic, there is no other way but to apply these 4th Industrial Revolution technologies.

Case Study for Applying 4IRT in Arctic Development

As we have argued, if 4th Industrial Revolution technologies become universal and affordable and thus applicable in the Arctic, it will be possible to simultaneously pursue social values (promoting safety and preventing environmental degradation) as well as economic feasibility. To prove this possibility, this study aims to estimate economic and social values of autonomous vessels, a flagship 4th Industrial Revolution technology for the maritime world. To that end, the study compares the capital expenditure (Capex), operational expenditure (Opex), and voyage-related expenditure (VoyEx) of an autonomous Arctic LNGC (Liquefied Natural Gas Carrier) with those of conventional vessels and analyzes scenarios by season. Table 1 compares the total expense of a traditional vessel, degree one vessel, and degree two vessel[2] by season. The capital expenditure (Capex), operational expenditure (Opex), and voyage-related expenditures (VoyEx)[3] are calculated based on an average of Arctic Class conventional LNGC and container ships. Lasserre (2015) has shown that an Arctic Class vessel Capex costs 20 percent more to operate than conventional sea-going vessels of a similar class. For Opex, the continuing maritime training fee would be $37,000 each per year, and the salary per year would be $107,000. The crew salary and education costs include Arctic area special expenses.[4] According to Sakjuja (2013), additional ice training is required to use the NSR. Fuel costs are assumed to be $10.78 million per year for a traditional vessel, $9.7 million for a type one vessel, and $8.62 per million for type two. According to Thi Bich Van Pham, an Arctic Class vessel consumes 30-40 percent more fuel than the vessel in seas without ice.

Pham et al. (2019) estimate the total cost expense of NSR by season. Pham assumes that the summer season is without ice, spring and fall have broken ice conditions, and the winter season has brash ice conditions (with significant accumulations of broken ice). The authors assessed the change in total cost between traditional and autonomous vessels according to the seasons as seen in Table 2. According to the analysis, the two types of autonomous vessels save about \$47 million, \$61 million, and \$72 million in summer, spring/fall, and winter conditions, respectively.

Table III.17 Scenarios of total expenses by season (Units: million dollars)

Season	Total Cost		
	Traditional	Type One	Type two
Summer (without ice condition)	348.46	312.94	301.29
Spring/Fall (with broken ice conditions)	450.90	404.94	389.87
Winter (with brash ice conditions)	535.18	480.64	462.74

An autonomous vessel not only provides economic benefits, but also contributes to social benefits. These benefits include fewer environmental impacts and improved crew welfare.

There is no doubt that Arctic shipping is a heavy contributor to greenhouse gas emissions in the Arctic. However, autonomous vessels can reduce emissions in three ways. First, since carbon dioxide (CO_2) greenhouse gas emissions are proportional to fuel oil consumption, gas emissions would be reduced due to shorter routing and lower fuel oil consumption. According to Sewon (2016), CO_2 emissions of an Arctic Class LNG carrier can be seen as proportional and directly related to fuel oil consumption. Based on this relation, the environmental effects of an autonomous vessel can be assessed by comparing fuel use with a traditional vessel in a qualitative way. In addition, water and waste disposal would be reduced with the smaller number of crew members. Therefore, an eco-friendly shipping method using autonomous vessels is a potential opportunity for Arctic marine operations.

Table III.18 The environmental benefits by using a qualitative approach by autonomous vessel type

Social Value		Traditional	Type 1	Type 2
Environmental Benefit	Greenhouse Gas Emissions	100.00%	78.00%	62.00%
	Water Disposal	100.00%	25%	10%

The Arctic Ocean is a harsh working environment, and autonomous vessel operations would also improve conditions for the crews. Referencing

Borchis (2018), crews are operating under severe conditions such as strong, continuous vibration during icebreaking, low temperatures, remoteness, and in winter, 24-hour polar nights. To explore effects on crew welfare, Russia, Japan, and Norway have conducted research on the use of autonomous vessels, terminals, and platforms. Equnoirs' unmanned offshore gas platform is a representative example of an autonomous operation concept.[1] This automation technology not only reduces the high injury rate of workers in the offshore gas industry, but also improves the safety and sustainability of work.

Three broad technological hurdles must also be considered to realize usage of autonomous vessels in the Arctic Ocean. The first one is the difficulty in compiling accurate and timely meteorological and sea ice data. The quality of meteorological and ice forecasts will determine in part whether autonomous vessels can be operated safely and efficiently in the Arctic Ocean. At this point, meteorological and sea ice data in the Arctic are insufficient to ensure safety and reliability of these operations. The second challenge is to create a route decision-making model that takes sea ice into account. State-of-the-art autonomous vessel route decision-making algorithms do not consider icebergs in the Arctic, for example. To realize use of autonomous vessels in the Artic, a route decision making algorithm based on iceberg conditions is essential. Lastly, the range of autonomous processes necessary for full development of autonomous vessels is not yet fully operational. All LNG-related shipping processes, which include loading/un-loading, vaporizing, liquefaction, and heating operations also need to be autonomous.

To implement autonomous vessels in the Arctic Ocean, port and gas terminals also must be prepared for autonomous vessel inter-operability. The infrastructure of the port and gas terminal in the Arctic Ocean for the autonomous vessels are as follows:

- Autonomous berthing and mooring support facility: If autonomous vessel type two is achieved, the crew can be reduced to two. In that case, the crew can focus solely on navigation and maintenance. Therefore, ports and gas terminals need to support autonomous berthing and mooring. Facilities should include sensors that guide the approach route and autonomous berthing. The mooring facility needs to use magnetic power without traditional mooring.
- Shore control center for remote operation: Types one and two autonomous vessels are highly likely to be supported by a remote

operation control scheme, which leads voyage operations by shore control centers (i.e. gas terminals). Therefore, the shore control center requires a vast communication infrastructure that can exchange data between the shore control center and the autonomous vessel. Also, the navigation function and process control functions should be equipped compatibly.

- Maintenance and repair center: The maintenance of autonomous vessels tends to be minimized during the voyage because of the small crew numbers. Therefore, maintenance and repair operations are conducted at the gas terminals.
- Autonomous loading and unloading arm: LNG cargo needs to be loaded and unloaded with human intervention. If the autonomous vessel is equipped with autonomous loading and unloading, the gas terminal requires corresponding equipment.

Discussion and Implications

This study sought to determine whether autonomous vessels—as one component of 4^{th} Industrial Revolution technologies—are economically feasible and have social benefits for transporting Arctic energy resources along the NSR. It is difficult to say that the result is definitive, since this scenario-specific comparative analysis was made using limited areas of Arctic energy development. This study, however, confirmed the potential for 4^{th} Industrial Revolution technologies to greatly influence the shipping of Arctic energy resources. Future research should be conducted on whether 4^{th} Industrial Revolution technologies are applicable beyond the Arctic energy development stage. Resources that are developed in the Arctic, its coast, and inland areas will be collected in ports by local marine and land transport and shipped to their final destinations. 4^{th} Industrial Revolution technologies can be applied in various ways to marine, land, and air transport and developed gradually. The hardware advances of 4^{th} Industrial Revolution technologies such as robots, drones, and unmanned vehicles are expected to advance in conjunction with software advances in big data, blockchain, and clouding systems. Even though it will take time, this trend will enable sustainable development of the Arctic. Even without the COVID-19 boost, it is high time to discuss in earnest how to use 4^{th} Industrial Revolution technologies as a means for environmental conservation, infrastructure maintenance, and sustainable development of the Arctic.

The future of the Arctic is a matter of concern for coastal countries and Northeast Asian countries alike, as all are concerned with both environmental protection and resource development. While exploitation of Arctic resources is likely inevitable, their development needs to take multiple Arctic environmental issues into consideration. These two outcomes are almost incompatible yet need to be merged in meaningful ways. In this sense, it seems necessary to create new, common policy indexes and plans regarding a roadmap to apply 4th Industrial Revolution technologies so that Arctic coastal and non-coastal countries can develop and use them in a sustainable manner. In addition, we would like to suggest a further study related to the economic efficiency of the entire export process of Arctic natural resources from origin to destination based on the implementation of 4th Industrial Revolution technologies.

Notes

1. Lee, S.W. & Song, J.M. 2013. *Economic Possibilities of Shipping through Northern Sea Route*. Asian Journal of Shipping and Logistics 30(3): 415-416.
2. We follow the degrees of autonomy identified by IMO. IMO defined that degree one is a ship with automated processes and decision support. Seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated and at times be unsupervised but have seafarers on board ready to take control. Degree two is remotely controlled ship with seafarers on board. This ship is controlled and operated from another location. Seafarers are available on board to take control and to operate the shipboard systems and functions. Degree three is remotely controlled ship without seafarers on board. The ship is controlled and operated from another location. Lastly, degree four is about fully autonomous ship. The operating system of the ship is able to make decisions and determine actions by itself. (www.imo.org)
3. Capex, Opex, and VoyEx represent three categories of business expenditures. In this case, Capex is the costs for vessels that company will use for future. Opex is about the costs for a company to run its business operations. Thus, the salary, education fee, maintenance, and insurance would be included. Lastly, voyage related expenditure contain fuel, port charge, and loading/uploading charges.
4. We assumed the number of crew members to be 25 for a traditional vessel, five

for degree one, and two for degree two.

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PART IV

ARCTIC MARINE COOPERATION: SECURING A SUSTAINABLE FUTURE

United States-Russian Relations in the Arctic Ocean: Cooperation or Conflict?

David A. Balton

> *The Soviet Union is in favor of a radical lowering of the level of military confrontation in the [Arctic] region. Let the North of the globe, the Arctic, become a zone of peace.*
>
> —*Mikhail Gorbachev, October 1987*[1]

> *The [Arctic] region has become an arena for power and for competition.... Russia is already leaving snow prints in the form of army boots... We know Russian territorial ambitions can turn violent.*
>
> —*Mike Pompeo, May 2019*[2]

Introduction

The speeches of Mikhail Gorbachev in Murmansk and of Mike Pompeo in Helsinki, quoted above, present a study in contrasts. As the Cold War waned, President Gorbachev offered a vision of a new paradigm for international relations in the Arctic, one in which the nations concerned with the region—particularly the two superpowers of the day—would set aside their mutual antagonisms in favor of working collaboratively to advance mutual interests. Much of this vision came to pass, beginning in the early 1990s. The Arctic has come to represent a model of low tension and far-sighted international cooperation. The United States and Russia have partnered in various ways to lead much of this cooperative effort.

That is, until recently. Secretary of State Pompeo, speaking on the eve of the 11th Arctic Council Ministerial Meeting, painted a starkly different vision for the Arctic, one marked by a rise in antagonism among nations over resources and shipping, among other things. The following day, the Arctic Council failed for the first time since its founding to reach agreement on a Declaration, reportedly because the United States could not accept language on climate change that other governments wanted in the text.[3] That failure has created serious challenges for the Arctic Council and for international relations in the Arctic more broadly.

A key question now is whether the nations concerned with the Arctic can continue to cooperate as they have with considerable success over much of the past 30 years, or whether the Arctic will actually become the "arena for power and competition" that Secretary Pompeo predicted. At the heart of this question lie choices that two Arctic States—Russia and the United States—will make in the coming years. Although they are but two of the eight Arctic States, and despite the increasing involvement of non-Arctic States and other actors in the region, much depends on the attitudes and actions of the former Cold War rivals.

What choices will they make?

Finding "Common Ground" in the Arctic Ocean

In putting forward their respective visions for the Arctic, President Gorbachev and Secretary Pompeo were speaking about the region as a whole. The contrasting paradigms they offered nevertheless relate as much to the Arctic Ocean as they do to the terrestrial portions of the Arctic. During the Cold War, the national security imperatives of the Soviet Union and the United States drove much of the human activity in the Arctic Ocean. The end of the Cold War, coupled with the dramatic opening of the Arctic Ocean itself as a result of climate change, has spurred significantly greater and more varied uses of the Ocean, most of which now support economic and scientific endeavors rather than national security requirements.

Beginning in the early 1990s, the new Russian Federation embarked with the United States and the other Arctic nations in a remarkable three-decade effort to build the current international architecture for managing the increasing human activities in the Arctic Ocean. The Arctic Council, created in 1996, has evolved from a modest start to become the primary venue for this effort.

Of the many ocean-related programs and projects that the Arctic Council launched in its first 15 years, three deserve special mention. The 2004 Arctic Climate Impact Assessment (ACIA) and the related document "Impacts of a Warming Arctic: Highlights" drew the attention of the world to the alarming extent of climate change in the Arctic and the potential consequences of Arctic climate change on the region and the rest of the planet. Among other findings, the ACIA accurately predicted that "reduced sea ice is very likely to increase marine transport and access to resources."[4] Along with the ACIA, the Council approved its first Arctic Marine Strategic Plan (AMSP), covering the period 2005–2015, which established an agreed set of goals for protecting the marine environment and for advancing scientific understanding of the Arctic Ocean.[5] Four years later came the 2009 Arctic Marine Shipping Assessment (AMSA), based on the work of more than 185 experts that the Council brought together during the course of 13 workshops convened over three years. The AMSA provided a variety of far-reaching findings, described several different scenarios for the future of Arctic shipping, and included numerous recommendations for managing such shipping.[6]

The ACIA, AMSP, and AMSA—impressive and seminal as they were—did not contain any binding commitments for the Arctic states to act. The Arctic Council did not, and still does not, have the authority to generate such commitments. Given the growth in human activity in the Arctic Ocean and the concomitant need to manage such activity through binding agreements, this limitation on the Council's authority has prompted the Arctic States—often led by the United States and Russia as partners—to find alternative ways to develop, adopt, and bring into force a set of binding agreements.

The first such initiative took place during the Danish Chairmanship of the Arctic Council, 2009–2011. The Council took the unprecedented step of establishing a Task Force to develop a new international agreement for the Arctic Region, with the intention of improving coordination of search and rescue capabilities. The United States and Russia co-chaired the Task Force, which included the participation of delegations from all Arctic Council Members and Permanent Participants organizations, as well as a number of invited experts. The Task Force worked quickly, at least by the usual standards of complex international negotiations, to produce the *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic*,[7] which representatives of all Arctic States signed at the Arctic Council Ministerial Meeting in Nuuk, Greenland, in 2011.

At that same Ministerial Meeting, the Arctic Council created a new Task Force with a mandate to produce another treaty, in this case to improve coordination in dealing with potential oil pollution incidents in the Arctic Ocean. Once again, Russia and the United States led the negotiations, this time with a co-chair from Norway as well. The Task Force operated in much the same way as the first one did, and delivered the *Agreement on Cooperation on Marine Oil Pollution Preparation and Response in the Arctic* for signature by Ministers in Kiruna, Sweden, in 2013.[8]

Two years later, the Arctic Council undertook a third effort of this kind, convening another Task Force co-chaired by the United States and Russia. This Task Force served as the venue for negotiating the *Agreement on Enhancing International Scientific Cooperation in the Arctic*,[9] signed by ministers in Fairbanks, Alaska, in 2017.

The three Task Forces and the treaties they produced share a number of common elements. First, they each arose from a perception among the Arctic States of their mutual interests in the opening Arctic region. The governments in question realized that, with increasing human activity in the region, they were insufficiently prepared—if they acted solely on their own—to respond to increasingly likely search and rescue needs and potential oil spills. The same governments also saw a common need to promote greater scientific research in the Arctic. Second, each of the treaties relates, in whole or in significant part, to the Arctic Ocean, the locus (by definition) of all marine oil pollution incidents, of many search and rescue events, and of much scientific research.

And finally, the success of each endeavor depended substantially on cooperation between Russia and the United States in leading the Task Forces. Having served as the U.S. co-chair for the first two Task Forces, I can say from direct experience that successful leadership of the negotiations required a great deal of behind-the-scenes communication and trust on the part of the co-chairs, communication and trust that flowed despite rising tensions in United States-Russian relations at the time. Similar communication and trust also existed between the co-chairs of the third Task Force, which was established *after the Russian invasion of Crimea and the resulting international sanctions*, demonstrating the willingness of the two governments in those years to "compartmentalize" the Arctic, to pursue cooperation in that region despite conflict elsewhere.

Outside the auspices of the Arctic Council, the United States and Russia collaborated in negotiating the *Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean*.[10] The United States chaired the negotiations; Russia was the first to ratify this treaty and convened the first meeting to prepare for its entry into force. The two States also worked together in discussions within the International Maritime Organization that produced the Polar Code,[11] which has strengthened the regulation of Arctic (and Antarctic) shipping. Following entry into force of the Polar Code, Russia and the United States jointly developed a proposal for a vessel traffic separation scheme for the Bering Strait region, which the IMO adopted in 2018.[12]

In short, the two former Cold War rivals have over the past 30 years repeatedly shown their ability and willingness to cooperate on matters pertaining to the Arctic Region, often co-leading major governance initiatives. They have done so despite serious friction that has arisen over differences relating to Syria (beginning as early as 2011), Ukraine (since 2014), and election interference (since 2016), among other things. Of late, however, this "Arctic Exceptionalism"[13] has come under threat.

Recent Static

The inauguration of Donald Trump in January 2017 did not cause an immediate rupture in United States-Russian cooperation in the Arctic. In May 2017, then-Secretary of State Rex Tillerson chaired the Arctic Council Ministerial Meeting in Fairbanks, bringing to fruition a wide range of collaborative work undertaken largely during the Obama Administration. At that same meeting, Secretary Tillerson signed the Arctic Science Agreement on behalf of the United States. The United States also subsequently signed and ratified the Arctic Fisheries Agreement.

That said, three recent developments have created palpable static in Arctic relations. The first concerns climate change, the central issue facing the Arctic today. For Canada, for the Nordic nations, and even for Russia, efforts to mitigate climate change and to adapt to warming conditions feature prominently in their foreign policy in general and in their attitudes about the Arctic in particular. The United States, by contrast, withdrew from the Paris Agreement and has reversed many domestic measures designed to limit greenhouse gas emissions. Where the United States had previously played a leading role—both globally and in the Arctic—in addressing climate issues, the Trump Administration actively downplayed the severity of the climate situation and, on more than one occasion, blocked international progress to combat climate change. This turnabout by the United States manifestly damaged relations among the Arctic States, perhaps most concretely at the 2019 Arctic Council Ministerial Meeting in Finland. The inability of the Council to come to agreement on a Ministerial

Declaration due to the unwillingness of the United States to accept language on climate change in the text has left the Council somewhat adrift and produced serious rifts between the United States and other Arctic Council members and participants.

A second source of friction in Arctic relations stems from heightened national security tensions. In this regard, Secretary Pompeo's remarks in 2019 did not come out of the blue. He was largely reacting to a series of provocative and aggressive actions that Russia has taken in recent years. After allowing its Arctic military infrastructure and personnel levels to erode after the collapse of the Soviet Union, Russia has embarked on a concerted campaign of rebuilding such capacities.[14] Russia claims that its steps are defensive in nature, and merely allow Russia to return to force levels and capabilities it maintained in prior years. Even if one accepted such claims, it would be harder to dismiss other recent Russian actions in the Arctic, including the jamming of GPS signals during a NATO exercise in Lapland[15] and interference with a U.S. exercise in the Beaufort Sea,[16] to take just two examples. For its part, Russia has accused the United States and other NATO members of taking similarly antagonistic measures against its Arctic interests.[17] These claims and counterclaims, reminiscent of the Cold War, have at a minimum put future cooperation in the Arctic at risk.

Third, the evolving relationship between Russia and China in the Arctic has also caused considerable concern in the United States and other Western nations. In 2018, China issued a policy paper on the Arctic in which it claimed to be a "near-Arctic State" and made clear its intentions to advance its own interests in the region.[18] Among other things, the paper envisioned a "Polar Silk Road" that fit within the framework of China's Belt and Road Initiative. Russia, blocked by Western sanctions from sources of investment, has turned to China to support the development of large-scale projects in the Russian Arctic, perhaps most visibly in the liquefied natural gas projects in Yamal.[19] Coming as it does amid heightened rivalry between China and the United States, the growing Russo-Sino Arctic partnership also threatens to undermine Arctic cooperation.

What's Next: Cooperation or Conflict?

The physicist Niels Bohr once remarked that "it is difficult to make predictions, especially about the future." While Bohr offered that quip in relation to scientific forecasting, it applies equally to international relations in general and to the future of relations in the Arctic in particular. Even so, predicting the outcome of a natural process ("When will the sun run out of hydrogen?") differs in one respect from predicting the trajectory of human interactions ("Will the Arctic become an arena of power and competition?"). The question of whether the nations concerned with the Arctic, including the United States and Russia, will pursue cooperation or conflict—or some combination of the two—ultimately comes down to the choices that their leaders will make.

Success in predicting these choices depends on a number of factors. One key variable in doubt until recently was the outcome of the recent U.S. election. With Joe Biden having assumed the presidency in January 2021, we know that his administration will lead U.S. foreign policy for the next four years. While it is too soon to say how the new administration will alter U.S. Arctic policy on the full range of issues, at least one thing seems clear: The United States immediately rejoined the Paris Agreement and presumably will find itself in significantly greater alignment with other Arctic governments on matters relating to climate change. More generally, one may expect the new administration to place greater emphasis on multilateral regimes such as the Arctic Council. This development alone suggests greater cooperation, and less conflict, in the Arctic region.

Another factor concerns the upcoming Russian chairmanship of the Arctic Council, which will begin in May 2021. As chair, Russia will receive heightened attention for its role in leading the body and thus will have added incentive to promote cooperation in the Arctic. As of this writing, Russia has not yet proposed a program for its upcoming chairmanship. When it chaired the Council once before (2004–2006), that program focused most notably on projects related to climate change and the remediation of environmental hazards (particularly in the Russian Arctic), but relatively little on the Arctic Ocean.[20] During the next Russian chairmanship, one might expect more emphasis on marine issues, in part because Russia has come to see the Arctic Ocean as more critical for its economic development than it did during its earlier chairmanship.

During its chairmanship, Russia will also have the responsibility to assume leadership over a number of initiatives to strengthen the Arctic Council itself. Successful completion of these initiatives—including the development of a long-term strategic plan,[21] possible reorientation of the working group and secretariat structure, and improvements in financing and transparency—would position the Council to assume even greater roles in promoting Arctic cooperation, which in turn may lead to reduced tensions.

Both inside and outside the Arctic Council, the United States and Russia could choose to rekindle the sort of joint leadership on Arctic Ocean issues that they provided in the previous decade. The need for such leadership derives from a number of circumstances, beginning with the fact that the Arctic Ocean remains poorly understood and poorly charted. Current arrangements and rules relating to the Arctic Ocean—including the Arctic Council, the IMO's Polar Code, and the Arctic Fisheries Agreement—may not prove either sufficiently robust or sufficiently well-coordinated to manage increasing human activity in that ocean in the coming years.

In 2015, the United States and Russia supported the creation of the Task Force on Arctic Marine Cooperation (TFAMC) within the Arctic Council with a mandate to consider these circumstances. Unfortunately, after four years of work, the TFAMC did not deliver on its primary mission to present terms of reference for a new Arctic Council subsidiary body through which to improve coordination among the Arctic States in addressing marine issues. Instead, the Council decided in 2019 to create a "SAO-based mechanism"—SAO referring to the diplomats who serve as Senior Arctic Officials and represent each State within the Council—that is supposed to continue this work. The pandemic delayed the first meeting of this mechanism; as of this writing, it is difficult to say what will come of this approach.

Working together, Russia and the United States could probably produce a consensus among all nations concerned to create something more meaningful, either within the Arctic Council or as a separate but related forum. Among other things, one can imagine some new rules and arrangements for the Arctic Ocean, including a marine science body for the Central Arctic Ocean and, sometime thereafter, a marine management body for the Central Arctic Ocean.[11]

Conclusion

As noted above, the United States and Russia chose—at least until recently—to "compartmentalize" the Arctic and to pursue cooperation in the region even in the face of burgeoning problems in their relations on other matters. They did so, presumably, because (1) they had common interests in the Arctic that they could only advance by working together, and (2) the need to advance those interests outweighed the pressure to allow their animosities arising from the other matters to undermine their cooperation in the Arctic.

Perhaps the rise of "Great Power Competition" in the Arctic will become the new normal and will make Secretary Pompeo's prediction come true. One nevertheless hopes that cooler heads will prevail and that the dynamics that have produced United States-Russian cooperation in the Arctic for most of the post–Cold War period will continue to carry the day.

Notes

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A Non-Arctic Perspective on the Future of the Arctic Marine Cooperation

Sung Jin Kim

Introduction

Around the time of the 11th Arctic Council Ministerial Meeting in May of 2019, the World Wildlife Fund (WWF) published the *Arctic Council Conservation Scoreboard*. The report assessed eight Arctic states on their ocean management and conservation efforts, particularly in the areas of biodiversity, conservation areas, ecosystem-based management, black carbon and methane emissions, oil spills, and shipping. The report gave a positive assessment of oil spill management by the eight Arctic States, but the overall assessment of their ocean management was rated "average."

However, the report also indicates shortcomings in integrated ocean management. Responding to this critical analysis necessitates support and cooperation from non-Arctic states in addition to the efforts of Arctic states in managing the Arctic Ocean. Together with the recent involvement of non-Arctic states in the Arctic region, the question of what roles non-Arctic states may play to bolster marine cooperation in the Arctic Ocean is gaining much attention. Marine cooperation in the Arctic Ocean comprises a vast array of fields, including evidence-based environment and biodiversity conservation, shipping, science, and protecting Indigenous Peoples. This paper will consider these domains and examine directions for

Table IV.1 Arctic Council conservation scorecard

	Canada	Denmark	Finland	Iceland	Norway	Russia	Sweden	U.S
Biodiversity	C	C	C	C	C	C	B	D
Conservation Area	B	D	B	B	C	C	B	C
Ecosystem-Based Management	A	C	A	C	A	C	A	A
Black Carbon and Methane	A	C	B	C	B	B	A	C
Oil Spill	A	B	A	B	B	C	B	B
Shipping	D	D	B	D	B	D	A	D
Ratings	B^-	C^-	B^+	C^+	B^-	C	B^+	C^-

Source: WWF, Arctic Council Conservation Scorecard, 2019 marine cooperation in the Arctic Ocean with a focus on the roles of non-Arctic states and the Arctic Council.

How Have Non-Arctic States Encouraged Arctic Marine Cooperation Outside the Arctic Council Framework?

A renowned scholar on Arctic governance, Oran R. Young, noted that a long-standing characteristic of Arctic governance is "interests of the Arctic states first." However, a mixture of both the national interests of Arctic nations and those of the international community are reflected in Arctic governance through the increased participation by both non-Arctic states and international organizations—especially with increased activity in the Arctic due to the accelerated melting of the Arctic sea ice. Even within the Arctic Council, there are higher expectations of observer states'

Table IV.2 Arctic marine cooperation of non-Arctic states

	Policy	Bilateral and Multilateral Cooperation
EU	EU Arctic Policy(2019) 'Horizon 2020', funded a €40 million Arctic research package	Cooperate with International Organizations (UNFCCC, CBD, IMO, OSPAR, UNEP) SAON(Sustaining Arctic Observing Networks) European Regional Development Fund (INTERREG)
China	"China's Arctic Policy" White Paper (2018) Chinese Arctic Scientific Expedition (9 expeditions) Operates research station and ice-breaking research vessel.	Arctic Circle China Forum and International Arctic Scientific Committee (IASC) in 2019 / China-Nordic Arctic Cooperation symposium ('16~'17) Korea-China-Japan High level Dialogue Bilateral dialogues on Arctic affairs (USA, Russia, Iceland, UK, France)
Japan	The 3rd Basic Plan on Ocean Policy ('18) Operates research station and ice-breaking research vessel. 5-year national flagship research project of Arctic Challenge for Sustainability (ArCS)	Arctic Circle Regional Forum and the International Arctic Science Committee (IASC) to be held in 2020 Korea-China-Japan High level Dialogue Bilateral scientific cooperation (Russia, Canada, USA, Norway)
Korea	Arctic Policy Master Plan ('18~'22) Operates the Arctic Dasan research station and an ice-breaking research vessel. Korea Arctic Experts Network (KAEN)/ Korea Arctic Research Consortium (KoARC)/ Korea Arctic Academy (KAA)/ North Pacific Arctic Conference (NPAC)	Arctic Circle Regional Forum (2018) Arctic Partnership Week (APW, '16~), North Pacific Arctic Conference (NPAC, '11~), International Arctic Science Committee (IASC) Korea-China-Japan High level Dialogue Bilateral Arctic consultations (Russia, Canada, Norway Denmark, Finland, Iceland)

Note : EU, China, Japan, and Korea are all parties to the CAO Fisheries Agreement
Source : Arctic Council Observer report

involvement and cooperation with regard to addressing Arctic issues. The activities of the 13 observer states have recently been particularly pronounced; in addition to their participation in the Arctic Council's six working groups, Observers are making their respective contributions to the Arctic marine cooperation through policymaking, the creation of standards, and other bilateral or multilateral cooperation efforts.

First, observer states are actively participating in the establishment of Arctic norms and standards. In 2018, the EU and Korea, Japan, and China signed the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (CAOF Agreement). This was a notable precedent in that it was the first regional multilateral agreement relating to the Arctic wherein states outside the eight Arctic Council members were signatories. It also demonstrated the potential for active participation by non-Arctic states and other outside stakeholders in the establishment of norms and standards pertaining to Arctic Ocean issues.

Second, non-Arctic states are establishing their own national Arctic policies, and are using them to guide various forms of Arctic Ocean cooperation. Representative examples of such Arctic policies include the EU's "Arctic Policy" (2019), Japan's "Arctic Policy" (2015), "China's Arctic Policy" white paper (2018), Korea's "Arctic Activity Master Plan" (2018), and the UK's "Beyond the ice: UK policy towards the Arctic" (2018)." Through their respective policies, Korea, China, and Japan have established research stations in Svalbard and have sent their ice-breaking research vessels to the Arctic to participate in Arctic scientific cooperation activities. Korea expects to make contributions to Arctic marine cooperation through accumulated marine-related expertise and is boosting related domestic capacities through the establishment of the Korea Arctic Experts Network (KAEN), the Korea Arctic Research Consortium (KoARC) and the Korea Arctic Academy (KAA), among others.

Third, non-Arctic states, by expanding bilateral and multilateral cooperation, are pursuing the goal of marine cooperation in the Arctic Ocean. Korea, China, and Japan are also exploring means of contributing as non-Arctic states to the sustainable development of the Arctic through the Trilateral High-Level Dialogue on the Arctic. Also, Korea, Japan, and China have taken turns since 2018 in hosting the Arctic Circle Regional Forum. Korea maintains Arctic cooperation dialogue channels with Russia, Canada, Norway, Denmark, Iceland, and Finland, and hosts the Arctic Partnership Week (APW), the North Pacific Arctic Conference (NPAC), and conferences of the North Pacific Arctic Research Community (NPARC) as venues for discourse between Arctic and non-Arctic states in finding joint solutions to Arctic Ocean issues.

What Could be the Role of Non-Arctic States in Arctic Marine Cooperation?

As examined above, non-Arctic states, most notably the EU, Korea, China, and Japan, are making various contributions to Arctic Ocean cooperation. They play four primary roles: balancer, facilitator, agenda-setter, and contributor.

The first role is that of balancer in the dimension of Arctic governance. The interests of Arctic states and those of the international society are both present in the Arctic, creating inherent areas of tension and cooperation. Non-Arctic states can play the role of balancer regarding the interests of international society and those of the Arctic states. They bring a broader perspective to considering the rights and obligations of Arctic States within the waters of their national jurisdiction and those beyond, and act as an additional check on both the tensions and the cooperation within Arctic governance structures. A key example is the CAO Fisheries Agreement, through which non-Arctic states actively participated in arriving at a normative consensus relating to the Arctic Ocean.

The second role is that of a facilitator. It is through this role that non-Arctic states can make important contributions to the sustainable development of the Arctic. Non-Arctic states play a role in establishing foundations for the economic, scientific and technical cooperation through which sustainable Arctic development can be achieved, and through which the economic opportunities brought about by the reduction of Arctic sea ice can be harnessed. An example of this role is the Multidisiciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC) project, a joint international Arctic research project. Involving more than 400 researchers from 20 countries—including Germany, Korea, China, and Japan—this is the largest joint Arctic research program to date. Cooperation by non-Arctic states has the potential to make great contributions in the areas of Northern Sea Route development and investment into infrastructure and resource development.

The third role is that of an agenda-setter. This perspective views Arctic issues as an extension of international society discourse relating to climate change and the environment. Alongside increasing international interest in the Arctic, the number of observer states, which currently stands at 13, is expected to increase as well. Accordingly, circumstances are developing in which non-Arctic states may propose new Arctic agenda items and spark related discourse. A key example of the agenda-setting role relates to the Arctic and infectious diseases, such as the bi-directional development of discourse on the impact of infectious diseases between Arctic and non-Arctic regions, and on the utilization of the Korean model for disease prevention and control. In this capacity, non-Arctic states can also contribute best practices in marine spatial management and marine waste management.

The fourth role is that of a contributor. The Indigenous peoples of the Arctic, as citizens of individual countries, are under the primary jurisdiction of their respective states. However, non-Arctic states can work toward the safety of the lives and societies of Arctic Indigenous Peoples from the perspectives of human security and humanity rather than by nationality alone. The role of non-Arctic states in this capacity would be based on the concept of equity. This acknowledges that states that have achieved economic growth through industrialization are primarily responsible for climate change and global warming that are causing so many of the problems faced by the Arctic region and Arctic Indigenous Peoples. With this acknowledgement also comes the responsibility for these industrialized nations to hold themselves accountable for the outcomes of global warming and resultant climate and ecological changes. Korea is an observer state of the Arctic Council and has been operating the Korea Arctic Academy invitational program since 2015, which hosts Arctic-themed lectures and programs that include Arctic Indigenous students. In 2015, Korea participated in the Arctic Marine Indigenous Use Mapping: Tools for Communities (AMIUM) project by the Protection of the Arctic Marine Environment Working Group (PAME). Also, by transferring cutting-edge IT technology and building advanced broadband internet infrastructure, we can enhance connectivity between Arctic and non-Arctic states in the "Untact"—or contact-free—era of COVID-19 while physical contact is limited.

How Might Future Marine Cooperation within the Arctic Council be Enhanced?

Arctic regional cooperation is also currently increasing through the Arctic Council. This cooperation can be traced to former Soviet President Mikhail Gorbachev's "zone of peace" speech of 1987, also referred to as the "Murmansk Initiative." In this landmark speech, Gorbachev set forth goals of "peaceful cooperation in Arctic resource development," "installation of a joint Arctic research council," and "joint marine environmental protection among Arctic states." This initiative is widely recognized as having ushered in an era of cooperation in the Arctic and inspired the establishment of the Arctic Council. The eight Arctic states would go on to establish the Arctic Environmental Protection Strategy (AEPS) in 1991. Superseding the AEPS, the Arctic Council was established in 1996, and continues to lead Arctic cooperation through its six working groups that include contributions from the eight members states, six Permanent Participants, and 38 observer states and organizations.

The Arctic environment has been experiencing drastic changes recently. Climate change and the melting of sea ice are expected to make possible not only expanded navigable seasons through the central Arctic high seas but also the opening of commercial fishing operations. With such drastic change in the offing, there is naturally a greater need for management of the marine ecosystems, resources and the environment. The high sea area in the central Arctic Ocean is outside the jurisdiction of Arctic states, and in accordance with the United Nations Convention on the Law of the Sea and customary international law, the principles of *mare liberum* (The Freedom of the Seas) apply here. One implication of this is the increased importance of cooperation in managing the Arctic Ocean. This requires the harmonization and coordination of interests of numerous stakeholders, including not only the Arctic Council member states, but also non-Arctic states, Observers, and international bodies such as the IMO, UNEP, and PICES.

Accordingly, the functions and roles of the Arctic Council have become that much more important in the face of change in the marine environment of the Arctic Ocean. On April 17, the United States' Wilson Center Polar Institute and the Russian International Affairs Council (RIAC) jointly released its "Implementing Marine Management in the Arctic Ocean" report. The report proposes short- to medium-term and long-term plans for bolstering marine cooperation within the Arctic Council. The short- to medium-term focus includes reinforcing existing mechanisms built into the Arctic Council, so as to overcome present challenges such as SAO, EBM-based management, co-work of PAME-ICES-PICES, and monitoring and reviewing systems for the implementation of the Arctic Council's recommendations. In the long term, however, the report proposes the establishment of a new body, such as a marine science or marine management agency for the Central Arctic Ocean (CAO).

The role of non-Arctic states in bolstering marine cooperation in the Arctic Council is also noteworthy. As demonstrated by the CAO Fisheries Agreement, non-Arctic states' participation will gain growing importance not only in the establishing of norms and standards but also in the activities of the Arctic Council working groups. Non-Arctic states may spearhead the establishment of an Arctic epistemic community for the promotion of joint interests in the Arctic. Such an epistemic community would be a means for non-Arctic states to contribute to promoting Arctic Ocean marine cooperation through soft power. Through this epistemic community, experts and stakeholders may engage in discussions to develop consensus and also participate in policy decision-making processes to maintain stability in Arctic governance. Further, as a check against a handful of world powers dictating Arctic discourse, various Arctic stakeholders, including international organizations and non-Arctic states, could establish a "multidimensional cooperation platform" through which tensions may be eased and cooperation promoted.

What are the Prospects for the Central Arctic Ocean Fisheries Agreement in Strengthening Cooperation?

The CAO Fisheries Agreement was signed in October 2018 by 10 Arctic and non-Arctic states. The Agreement was especially significant in that it was a package deal that settled many different and complicated interests. It also signaled a transition to a concept of the freedom of the high seas under which the interests and responsibilities of all participating states are given due recognition. The Agreement prohibited commercial operations in the Arctic high seas for at least 16 years, until sufficient scientific evidence about its potential viability has been gathered. It also established a foundation for cooperation in protecting and managing other fisheries. The CAO Fisheries Agreement is expected to contribute to bolstering cooperation in the Arctic Ocean by providing a system for cooperation and defining scopes of participation while also providing means and methods for management, scientific research, and coordination. This system has five main components, with multiple benefits.

First, by adopting a fisheries resources management system for the central high seas that lie outside the jurisdiction of Arctic States, the agreement is expected to promote cooperation in the Arctic Ocean. The area over which the agreement applies is one where future commercial operations are expected to be possible. As an interim measure, commercial operations will only be permitted if regional fisheries management organizations (RFMOs) exist and conservative measures backed by scientific grounds are in place. The agreement therefore mandates that the party states establish joint scientific research and monitoring programs to accumulate scientific data and bolster cooperation, and recommends they hold a general meeting at least once every two years to share outcomes and establish rules for exploratory fishing operations.

Second, in that it is the first regional multilateral agreement relating to the Arctic involving states other than the eight members of the Arctic Council, the Agreement demonstrates the increasing importance of the role of non-Arctic states in pushing forward cooperation in the Arctic Ocean. Korea, China, Japan, and the European Union all played an active role in the Agreement, showing that non-Arctic states can show equivalent initiative in establishing Arctic Ocean governance in specific areas such as fisheries. The agreement is an example demonstrating that Arctic issues are no longer regional issues but global in scope, and Arctic Council observer states and non-Arctic states have a larger role to play in resolving the region's problems. In particular, it should be noted that Korea, China, and Japan, which are Northeast Asian observer states on the Arctic Council, participated actively from the early phases of the Agreement; in addition to participating in official meetings leading to the conclusion of the agreement, these three countries also hosted expert round tables. Korea, China, and Japan already have advanced infrastructure for Arctic scientific research and maintain solid cooperation with Arctic states. They are accordingly expected to assume a leading role in cooperation in any future scientific surveys of fisheries in the central Arctic high seas.

Third, the Agreement is expected to contribute to cooperation in the Arctic Ocean by filling in certain voids in Arctic Ocean scientific research and coordination. Research indicates certain gaps in Central Arctic Ocean scientific research and management, particularly in the areas of fish species distribution and migration patterns,[1] information sharing, and coordination (Figure IV.1). As such, the joint scientific research and monitoring activities under the CAO agreement are expected to fill in existing gaps in marine research and coordination in the central Arctic Ocean. In particular, as detailed in Article 5, Paragraph 2 of the Agreement, the establishment of a (hypothetical) Arctic ocean marine science committee in charge of joint programs for marine scientific surveys and coordinating marine scientific research may be considered.

Table IV.3 Main marine research organizations and programs in the CAO region

Organization /Program	(Effective) Date	Geographical Extent	Scientific coordination	Fishery related	Provide Management advisory	Use Management advisory
AC	1996	Arctic	O	-	-	-
IASC	1990	Arctic	O	-	-	-
ICES	1964	Atlantic	O	O	O	-
PICES	1992	Pacific	O	partially	-	-
JointFish	1976	Atlantic	O	O	-	O
NEAFC	1982	Atlantic	O	O	-	O
ICC	1988	Pacific	O	O	-	O
ESSAS	2005	Arctic	O	partially	-	-
PAG	2009	Pacific	O	-	-	-

Annotation: AC(Arctic Council), IASC(International Arctic Science Committee), ICES(International Council for the Exploration of the Sea), PICES(North Pacific Marine Science Organization), JointFish(Joint Norwegian-Russian Fisheries Commission), NEAFC(North East Atlantic Fisheries Commission), ICC(Intergovernmental Consultative Committee), ESSAS(Ecosystem Studies of Subarctic and Arctic Seas), PAG(Pacific Arctic Group)
Source: T.I. Van Pelt and 3 others (2017)

Fourth, the purpose of the Agreement is "to prevent unregulated commercial fishing in the high seas portion of the Central Arctic Ocean by implementing precautionary conservation and management measures." The Agreement thereby encompasses a precautionary approach consisting of preventive measures instituted prior to actual fishing operations, and proactively establishes regional fishery organizations well before it is necessary to manage actual future fishing operations. The introduction of a comprehensive fishing operations management plan through the agreement is expected to contribute to bolstering marine cooperation for management of Arctic Ocean fisheries resources.

Fifth, in the process of implementing the Agreement, a new order for coordination and cooperation among various stakeholders may arise with regard to the sustainable management and use of the seas, which are a joint asset of humanity. As of October 31, the CAO Fisheries Agreement has been ratified by nine countries, with China yet to do so. The process of implementing the agreement after it enters into effect may be yet another long journey, as there remain numerous issues to be resolved. These include: devising effective means of regulating the parties in a manner that preserves the freedom of high seas fishing operations guaranteed under the United Nations Convention on the Law of the Sea; coordinating realistic interests of party states until regional fisheries management organizations

Figure IV.1 Main marine research organizations or programs in the CAO region and fishing quotas are established; defining acceptable fishing operations in the Central Arctic Ocean; resolving conflicts of interest among navigation protocols, resources development and environmental protection; and establishing a body for effective Central Arctic Ocean scientific research and coordination. In particular, whether or not fisheries will be included in the UN-led BBNJ discussions will have a far-reaching impact on the CAO Fisheries Agreement, and this matter will require careful and systematic examination by CAO party states.[1]

Korean Perspectives on the Future of Arctic Marine Cooperation

Due to the recent COVID-19 pandemic, the world is entering an unprecedented age where a confluence of factors define the "New Normal": hyper-globalization of trade and economies, the globalization of danger, a global economic downturn, closed national borders, lockdowns and extreme preventive public health measures, online and "contact-less" (untact) activity becoming the norm, the acceleration of the 4th Industrial Revolution and cutting-edge innovative technologies (ICT), the escalation of the United States-China hegemony struggle, and the advent of a multi-polar world regime. Such circumstances create higher risks for tension and confrontation, and indeed the arrival of an "every-country-for-itself" ethos. It is these risks that necessitate the transition to a new international cooperation paradigm and provide further justification for efforts toward marine cooperation in the Arctic Ocean.

Since becoming an official observer state to the Arctic Council in 2013, Korea has made notable contributions toward the sustainable development of the Arctic, while sharing current and future obligations toward the Arctic. Korea, together with China, Japan, and the EU, has become a party of equal standing with Arctic Council member states in the CAO Fisheries Agreement. Through this Agreement, Korea is in a position to share in Arctic Ocean fisheries resource management and utilization best practices, and to bolster its role as an Arctic Council observer state. In particular, the Agreement promises to be an opportunity for Korea to discuss with Arctic states useful means of sharing Korea's experience and networks in marine science infrastructure, marine ecosystem-based management, marine spatial management, and international marine and fishery organizations. Follow-up measures for the implementation of the CAO Fisheries Agreement will require cooperation among the stakeholder states involved; Korea, together with neighboring observer states, is expected to contribute as a facilitator enabling marine cooperation.

The Arctic Ocean must become a sea of peace and cooperation for all of humanity wherein Arctic and non-Arctic interests are harmonized instead of an arena for confrontation among the superpowers. Indeed, the Arctic must become a model case for accomplishing the UN's Sustainable Development Goals (SDGs). As mentioned earlier, the CAO Fisheries Agreement is the first case of Arctic marine cooperation signed by Arctic and non-Arctic stakeholders. The "cooperative spirit" that flows through and lies in the entire process from the preparation to the conclusion of the final agreement may be applied to other cooperation processes in the future as an exemplary model. In addition, the spirit of cooperation will also be needed between the governments and the participating expert groups in the preparation of follow-up measures to achieve the objectives of the agreement by continuously monitoring its implementation.

In the Agreement's practical implementation, it will be necessary to take a consensus-based, step-by-step approach. Possible options may include reinforcing the roles of the Arctic Council's Senior Arctic Officials (SAO) as suggested by David Balton and Andrei Zagorski (2020), expanding Central Arctic Ocean ecosystem-based management (EBM) measures, building the capacities of the Arctic Council in responding to emergency situations in the Arctic Ocean, and establishing a Central Arctic Ocean marine science body or marine management body. In particular, non-Arctic states that are parties to the CAO Agreement should also actively examine and propose the establishment of consultative groups or bodies necessary for implementation of the agreement. Indeed, the establishment of a Central Arctic Ocean marine science body, for example, is aimed at coordinating and promoting marine scientific research, and mandates cooperation among non-Arctic states—including observers, international science bodies, and Arctic Indigenous Peoples—in order to promote its establishment and success.

Effective marine cooperation in the Arctic may be achieved through Arctic and non-Arctic states' sharing their respective customary marine spatial planning (MSP) experiences. The Arctic Ocean is characterized as a "semi-enclosed sea." This means a topic that examines "transboundary marine spatial planning (MSP) should be on the agenda. In this regard, by forming Arctic Council task forces (TFs) or through working group discussions, the establishment of an integrated marine spatial management plan for the Arctic Ocean (an Arctic IMSP) may be discussed. At present, Arctic states have established or are in the process of establishing marine spatial planning. In order to promote Arctic maritime cooperation from a long-term perspective, it is necessary to seek more rational and scientific cooperation by sharing the practices and experiences of maritime spatial planning of each country. If the "Integrated Marine Spatial Planning in the Arctic High Seas" system is established, feasible marine cooperation in the Arctic should be possible. Therefore, establishing "Integrated Marine Spatial Planning" as an agenda item of the Working Group under the Arctic Council is an important step.

In addition, by linking isolated areas in the Arctic through state-of-the-art communications and infrastructure, connectivity may be brought to these areas and contributions may be made to the lives of Arctic Indigenous Peoples. Other possibilities include the establishment of a "Sustainable Arctic Marine Cooperation Fund" led by the Arctic Council to secure funds required for research, international academic events, and programs necessary for expanding and bolstering marine cooperation in the Arctic Ocean.

Humanity is expected to face many future changes and uncertain situations. Digital innovations and contactless technologies at the center of change will have a direct impact on the Arctic. While embracing these changes, we will have to manage the ocean in a sustainable way as a valuable asset to humanity. In this vein, cooperation in the Arctic Ocean, especially in the high seas, is quite important. To this end, NPAC should go beyond the level of presenting grand discourses accumulated over the past 10 years and develop to a stage where it can also propose more practical, tangible policies. In particular, it would be very desirable to establish a communication channel between NPAC and the Arctic Council. Based on the contents discussed in NPAC, it would be possible to consider how to best use the Arctic Council Working Groups as a platform connecting NPAC and the Arctic Council.

Acknowledgement

This year marks the 10^{th} year of NPAC. NPAC has been an important venue for global Arctic discourse, linking Arctic and non-Arctic states in Arctic marine cooperation. We hope that the next decade of NPAC will be marked with major milestones toward borderless Arctic cooperation.

Notes

1. Rachael Tiller commented in her paper* that the regulatory scope of the BBNJ treaty will likely fall under the hybrid model, where the BBNJ treaty would be limited and that the agreement will not have a hierarchical relationship with other instruments that already exist. The BBNJ shall not undermine existing agreement in the Arctic. This argument was also emphasized in Session IV of the 2020 NPAC Proceedings. **BBNJ, Interrupted. – With the due date passed, will intersessional work keep the lights on for negotiations under Covid-19?*

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An Icelandic Perspective on Arctic Marine Cooperation

Einar Gunnarsson

Iceland's Arctic Policy

Iceland's Arctic Policy (IAP) was developed in cooperation with the Icelandic Parliament and unanimously approved by it in March 2011.[1] The IAP is currently under review by a group of representatives from all parliamentary groups and an updated Arctic policy is scheduled for approval in the spring of 2021, in conjunction with the conclusion of the Icelandic Chairmanship of the Arctic Council.

There are few states in the world for which ocean governance is more important than for Iceland. A large part of Iceland's exclusive economic zone lies above the Arctic Circle and the majority of it would qualify as being a part of the Arctic marine environment under many of the different methods used to delimit the Arctic. This is reflected in the IAP, where a strong focus on the Arctic marine environment is easily identified. There is a strong reference to the United Nations Convention on the Law of the Sea (UNCLOS) as providing the legal framework for ocean affairs and containing, among other things, provisions on navigation, fisheries, exploitation of oil, gas and other natural resources on the continental shelf, maritime delimitation, ocean pollution prevention, marine scientific research, and dispute settlement applicable to all sea areas, including the Arctic region.[2] The IAP also highlights the importance of sustainable use of natural resources, not least marine resources, and it gives special attention to cooperation on search and rescue (SAR) and pollution prevention in Arctic waters. The IAP furthermore highlights the battle against human driven climate change, referencing its propensity for unforeseen negative changes to the waters surrounding Iceland—and indeed, Iceland itself.

In order to protect Iceland's interest in the Arctic, Iceland strives to build and develop partnerships with states, stakeholders, and international organizations. This is identified in the IAP, where the Arctic Council is deemed to be the premier forum for circumpolar cooperation and coordination on Arctic affairs. This is in harmony with Iceland's longstanding support for regional cooperation.

The IAP identifies the importance of preserving Iceland's security interests in the Arctic by promoting peaceful civilian measures and working against any kind of militarization of the region. In that respect the IAP calls for cooperation with other states on surveillance, SAR, and pollution prevention.

The IAP furthermore mandates the government to pursue social and economic development in the Arctic in a sustainable manner and with special emphasis on the rights of Arctic Indigenous populations.

The last two priority points of the IAP focus on promotion of the Arctic agenda both domestically and internationally. Communications about the activities of the Arctic Council have for many reasons taken a very high profile in this regard, not least in the run up to and during Iceland's Chairmanship of the Council. In addition to the work of the Arctic Council, attention should also be given to various other forums like the Arctic Circle Assembly, Arctic Frontiers, the Arctic Territory of Dialogue, and NPAC, to name but a few.

From the Icelandic point of view, it is only natural to pay special attention to the Arctic Circle Assembly and Forums under the leadership of Iceland's former President, Mr. Ólafur Ragnar Grímsson. The Arctic Circle is run by an independent foundation but enjoys strong support from Iceland. This event has established itself as one of the most prominent annual gatherings for the free-flowing exchange of ideas and networking on Arctic affairs among stakeholders from all walks of life. Its strength lies in its egalitarian structure and strong attendance, where all stakeholders have the chance to make their points without the constraints that may be inherent in various other forums.

The Arctic Circle Assembly came into existence after the IAP was adopted in 2011 and can easily be seen as a positive response to some of the IAP's key points. As with many other international conferences and events, the Arctic Circle Assembly of 2020 had to be postponed because of the COVID 19-pandemic. Early assumptions that such postponements would only be short term have been proven wrong and the possibility cannot be excluded that the pandemic might have some long-term effects on how similar events will be organized in the future. Looking at the current IAP and the continued strong support of Icelandic authorities to the Arctic Circle Assemblies and Forums, it would not be surprising to see support for its continuation in the scheduled update of Iceland's IAP next year.

Regional Cooperation in the Arctic and on Arctic affairs

Regional cooperation in the Arctic and on Arctic affairs takes on many different shapes and forms. Since the middle of the 20th century the five Nordic states have cooperated closely, first within the Nordic Council[3] and then also within the Nordic Council of Ministers, with increasingly prominent participation of Greenland, the Faroe Islands and the Åland Islands in their own right.[4] The Barents Euro-Arctic Council was established in 1993 and operates both on the intergovernmental and interregional level.[5] The West Nordic Council was established in 1985 under a different name as a forum for cooperation between parliamentarians from the three countries but later also became a forum for cooperation among governments.[6]

There are several different regional fisheries management organizations (RFMO) that have responsibilities in the Arctic, and the recent Central Arctic Ocean Fisheries Agreement is a shining example of regional cooperation in the Arctic. These examples include Iceland's involvement as a point of departure and are far from being a comprehensive list of regional cooperation in the Arctic.[7] What all of them have in common though, is that they are not circumpolar in nature.

The only two cooperation forums that are circumpolar, with all eight Arctic states involved, are the Arctic Council and the Arctic Coast Guard Forum. Both are set up as informal cooperative forums and neither is intended to be a venue for taking legally binding decisions for its members. The Arctic Coast Guard Forum focuses on cooperation at the operational level while the Arctic Council is policy oriented, focusing on scientific cooperation in the fields of sustainable development and environmental protection.[8] However, the Arctic Council has on three occasions become a venue to negotiate three legally binding agreements that are of great importance for Arctic governance.

The Arctic Council as forum for regional cooperation on marine affairs

Oceans play a central role for life in the Arctic region and ocean issues have therefore always been high on the agenda in the Arctic Council. In light of global climate change and its ongoing impacts in the Arctic where the warming is already more than double the world average, the issue of ocean governance is becoming more crucial than ever before, both for the Arctic states and the work of the Arctic Council.

The knowledge- and science-based work of the Arctic Council frequently leads to policy recommendations, has resulted in several joint action plans, and has encouraged negotiations of international agreements in other forums. As noted above, the Arctic Council has also served as a venue for negotiating three legally binding agreements on SAR,[9] marine oil pollution preparedness and response,[10] and on scientific cooperation.[11]

Most of the work of the Arctic Council takes the form of projects, led by one or more of its working groups and other subsidiary bodies. Many of these projects have contributed significantly to strengthen ocean governance in the Arctic. One should start by mentioning the working group on the Protection of the Arctic Marine Environment (PAME) that, true to its name, focuses first and foremost on marine matters. In the first decade of this century PAME developed the Arctic Marine Shipping Assessment, which includes 17 recommendations for further work and studies.[12] Later reports from PAME show that a considerable number of these recommendations has already been implemented by the Arctic states.[13] This ground-breaking work helped the Arctic States to initiate negotiations on the Polar Code within the International Maritime Organization (IMO) that were successfully concluded in 2015.[14] In 2018 PAME, in cooperation with the IMO, established the Arctic Shipping Best Practices Information Forum (ASBPIF), aimed at facilitating the implementation of the Polar Code.[15]

PAME developed an Arctic Marine Strategic Plan for 2015-2025, which was adopted by the Council in 2015 and is currently under review.[16] During the Icelandic Chairmanship from 2019-2021, PAME is working on the development of a Regional Action Plan on Marine Litter and Microplastics, which enjoys broad support in the Council and is scheduled for approval early next year. The working group on Arctic Monitoring and Assessment (AMAP) has carried out basic studies and monitoring of chemical pollution in the Arctic that led to international negotiations on both the Stockholm Convention on Persistent Organic Pollutants[17] and the Minamata Convention on Mercury.[18] The working group on Conservation of Arctic Flora and Fauna (CAFF) developed Actions for Arctic Biodiversity 2013-2021 that were adopted by the Council in 2013.[19] The working group on Emergency Prevention, Preparedness and Response (EPPR) has contributed significantly to the establishment and implementation of two legally binding agreements between the eight Arctic States on Search and Rescue and preparedness for oil pollution incidents. The Sustainable Development Working Group (SDWG) is currently running a project on the Blue Bioeconomy, focusing on improved utilization of marine catches.

These examples are given here to show the Arctic Council's longstanding and strong focus on marine affairs.

In 2015 the United States decided to put emphasis on safety, security, and stewardship of the Arctic Oceans during their Arctic Council chairmanship. A Task Force on Arctic Marine Cooperation (TFAMC) was set up with the mandate to assess future needs for a regional seas program or other mechanism, as appropriate, for increased cooperation in Arctic marine areas, and to make recommendations on the nature and scope of any such mechanism.[20]

The Task Force could not agree upon establishing a regional seas program but felt strongly that there was a need to enhance the work of the Arctic Council on marine issues. The Task Force identified a range of functional needs and opportunities for enhancing and strengthening the Council's role in Arctic marine stewardship and proposed that work should continue under the Finnish Chairmanship from 2017 to 2019 to identify, among other things, potential complementary enhancements to existing Arctic Council mechanisms. The proposal was endorsed by the Fairbanks Ministerial and the new Task Force on Arctic Marine Cooperation (TFAMC II) was to deliver its recommendations for complementary enhancements to existing Arctic Council mechanisms for consideration by Ministers in 2019.

The TFAMC II proposed to enhance existing institutions' capacity regarding marine issues by establishing a SAO-based marine mechanism. This would coordinate and guide the marine activities of the Arctic Council and improve coordination on marine issues within the Council. The SAO-based mechanism would be a forum where SAOs would meet with marine experts and discuss relevant Arctic marine issues. The Task Force also recommended that the Arctic Council should consider meetings of ministers with responsibility for marine issues and include marine issues as specific topic of discussion for all ministerial meetings.[21]

Iceland has been a longstanding supporter of a stronger marine focus in the work of the Arctic Council. The first Arctic marine strategy was adopted at the Reykjavík Ministerial in 2004 and Iceland provided one of the co-chairs for both TFAMC and TFAMC II and participated actively in their work.[22]

Iceland's Chairmanship of the Arctic Council

Iceland took over the Chairmanship of the Arctic Council from Finland at the Rovaniemi Ministerial in May 2019. The overarching theme of the Icelandic Chairmanship of the Arctic Council is "Together towards a Sustainable Arctic." Given the central focus on ocean affairs in the IAP it is not surprising that the Arctic Marine Environment is one of three substantial priority areas that Iceland endeavors to highlight during its chairmanship. The other two are climate and green energy solutions on the one hand, and people and communities of the Arctic on the other. A fourth cross-cutting issue is to strengthen the Arctic Council and enhance its effectiveness.[23]

The emphasis on marine issues includes: efforts to combat marine litter and in particular plastic pollution in the Arctic Ocean; ways and means to promote and support blue bioeconomy; continued work on safety at sea and pollution prevention; further studies on ocean acidification; and last but not least, how the Arctic Council can support sustainable Arctic marine tourism.

In addition to focusing on these projects, the Icelandic chairmanship had scheduled three major events focusing on marine affairs. According to the original plan, the proposed SAO-based Marine Mechanism (SMM) was first scheduled as an integral part of the March 2020 SAO plenary meeting in Akureyri, to be followed by an International Symposium on Plastics in the Arctic and the Sub-Arctic Oceans in April 2020, held in parallel with a meeting of the Arctic Oceans ministers. All these events had to be postponed because of the pandemic. At the time of writing this paper it seems all but clear that the meeting of the Arctic Oceans Ministers will not be held during the Icelandic Chairmanship. The International Symposium on Plastics will be held in the spring of 2021 in a virtual format. The SMM has already set sail in an online format.

The TFAMC II recommendations for the SMM were detailed as regards functions, format, participation, and frequency of meetings of the mechanism. The SAOs should convene periodic meetings with invited marine experts. These should include, but not be limited to, those engaged with the Arctic Council working groups to enhance strategic and policy guidance, and to enhance collaboration and coordination of marine activities in the Arctic Council.

The Icelandic Chairmanship planned the SMM based on the TFAMC

II's recommendations. According to the original plan for the Akureyri meeting, two and a half meeting days were devoted to the SMM. When it was clear that the SMM had to be converted into a virtual format, it was evidently necessary to shorten the overall meeting substantially. The format chosen was a series of six webinars where the first and last were set in a regular SAO plenary format, while the four in the middle took the form of thematic sessions with focus on expert participation. The thematic sessions focused on marine issues of importance for the Arctic that reflect the functions of the SAO-based mechanism as recommended by the TFAMC II. The online format resulted in time for engagement being seriously restricted and called for innovative methods to be applied to facilitate the work of the SMM delegates. Keynote speeches and expert presentations were pre-recorded and distributed to participants ahead of each session in order to allow more time for interactive discussions. Requests for speaking were noted ahead of sessions, and each event supplemented with an online chatroom that was kept open for a day after the conclusion of the session. In the thematic sessions the main emphasis was on encouraging active participation of marine experts from the Arctic States, the Indigenous Permanent Participants as well as the Observers, and the size of delegations was increased from regular meetings to accommodate those constraints.

The first thematic session dealt with the Arctic Marine Strategic Plan (AMSP) in general. In the recommendations of TFAMC II, it is clearly spelled out that the SAO-based mechanism should review and revise the AMSP. It was therefore a timely discussion to aid the midway review.

The second thematic session dealt with Arctic shipping, which is growing both with respect to transport and tourism. As the IMO Polar Code has now been in force for over three years, it was felt to be timely to take stock on how things are developing in the Arctic with respect to shipping and the Code's sustainability criteria.

The third thematic session focused on regional coordination of marine issues and global commitments. Various international agreements on marine issues have significant implications for the Arctic and often require regional cooperation on their implementation. Regional cooperation of this kind can overlap with the work of the Arctic Council. Some have raised the question whether there might be a scope for an organizational alignment that might benefit the Arctic Council and other stakeholders.

The fourth and last thematic session focused on Ecosystem-based management (EBM), which has been a priority issue within the Arctic

Council for many years. Work on EBM has progressed but is still some distance from practical implementation. The aim of the session was therefore to discuss the situation, the status of science, and the logical next steps in order to move faster towards EBM.

The overall ambition of the SMM is that these annual sessions will help to identify emerging challenges and possible new priorities for the Arctic Council's work on marine issues and give guidance on how to address these issues. The SMM was followed up with a discussion at the SAO Plenary meeting in November 2020. There was general appreciation for the SMM and support to see it become a fixture within the work of the Arctic Council. The mid-term review of the AMSP was welcomed and delegations supported further work on sustainable Arctic shipping and on exploring possibilities for a pilot project on EBM.

Conclusion

Ocean governance is of paramount importance to Iceland, and its chairmanship of the Arctic Council has provided an excellent opportunity to highlight that. UNCLOS provides the legal basis for ocean governance in the Arctic and a framework for additional agreements where needed. Iceland has been actively involved in strengthening the ocean governance framework in Arctic waters through negotiations about and implementation of international and regional agreements based on UNCLOS. When it comes to management of joint marine resources, Iceland traditionally favors regional over global approaches. Iceland is therefore a strong supporter of Regional Fisheries Managements Organizations. As for other Arctic affairs in the field of sustainable development and environmental protection, the Arctic Council is the most important venue for circumpolar cooperation and coordination. Arctic marine affairs are as firmly on the agenda as ever before, now that the Arctic Council is preparing to celebrate its 25th Anniversary in 2021. The establishment of the SMM is intended to strengthen the Arctic Council's work on regional cooperation and coordination on matters pertaining to the Arctic marine environment and should contribute to enhancing the role of the Council in stewardship of the Arctic oceans.

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China and the Arctic

Yao Tang

China has been involved in Arctic affairs since 1925, when it signed the Spitsbergen Treaty (now known as the Svalbard Treaty). China's interests and participation in Arctic affairs have increased on multiple fronts since then, especially in the scientific, diplomatic, and economic domains. By the end of September 2020, China had carried out 11 scientific expeditions in the Arctic Ocean, the most recent of which was supported by a Chinese new icebreaker, the *Xue Long 2*. China also joined Arctic-related international institutions, regimes, organizations, and agreements over the past several decades, such as the United Nations Convention on the Law of the Sea (UNCLOS), the Arctic Council, and the International Arctic Science Committee. China's Arctic Policy, released in January 2018, is the most important document to understand China and the Arctic, China's policy goals and basic principles on the Arctic, as well as China's policies and positions on participating in Arctic affairs.

What Roles has China played in Fostering Marine Cooperation in the Arctic?

China has played a constructive role in creating international rules regarding Arctic marine cooperation. As a member state of the International Maritime Organization (IMO), China actively participated in initial efforts to develop the International Code for Ships Operating in Polar Waters (Polar Code). In addition, China is an original contracting party in the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (CAOF Agreement). In 2015, Chinese scientists participated in the third meeting of scientific experts regarding fish stocks in the central Arctic Ocean, during which Professor Zhu Guoping from Shanghai Ocean University described China's research and monitoring activities in the Arctic. China also participated in the six inter-governmental meetings for the development of the CAOF Agreement. Moreover, China hosted a roundtable meeting in Shanghai in 2015 that contributed to achieving consensus on the CAOF Agreement text and was attended by experts from

China, the United States, and Canada, among others.[1]

China became an accredited observer on the Arctic Council in 2013. As Professor Oran R. Young states, the Arctic Council has emerged as the primary venue for the consideration of policy issues arising in the new Arctic.[2] Until now, China has taken substantial measures to foster Arctic marine cooperation under the Arctic Council framework. China participated in meetings of Arctic Council Working Groups (WGs), in particular the Protection of the Arctic Marine Environment (PAME) and Conservation of Arctic Flora and Fauna (CAFF) groups. China also participated in multiple Arctic Council Task Forces meetings: on Black Carbon and Methane in 2013, Arctic Marine Oil Pollution Prevention in 2014, and the Scientific Cooperation Task Force in 2016. China recommends experts to WGs and substantively participates in research into related projects. China has recommended nearly 30 experts to WGs, and eight of them participated in the work of PAME, Arctic Contaminants Action Program, CAFF, and the Arctic Monitoring and Assessment Program. Some suggestions and contributions of Chinese experts were also adopted by relevant WGs.[3] China has consistently met relevant requirements of the Arctic Council.

In May 2019 the Arctic Circle China Forum was held in Shanghai, China with the theme "China and the Arctic." More than 500 people from about 30 countries attended the meeting. The video and discussion about the *Xue Long 2* attracted much attention in the forum. *Xue Long 2* is China's fourth polar-research vessel, following *Xiang Yang Hong 10, Jidi, and Xue Long*, but it is also China's first domestic-built polar-research icebreaker. In 2017, three Canadians (two of them scientists) joined a Chinese Arctic Research Expedition supported by the *Xue Long*, during which scientists from two countries conducted joint surveys in Baffin Bay. By hosting the Arctic Circle China Forum, China conveyed to the world that China will play a more active role in fostering marine cooperation in the Arctic.

What is Envisaged for the "Polar Silk Road" and What are the Implications for Arctic Marine Cooperation?

The concept of the "Silk Road" can be traced back to the Han Dynasty in ancient China, when China wanted to create cooperative relationships with the so-called "Western world." Fast-forward 2,000 years, and the combination of a dramatic decline of Arctic sea ice along with the rapid development of science and technology has opened up greater marine access and longer seasons for Arctic navigation. This ancient Chinese idea has now become part of modern Chinese planning. The construction of the Polar Silk Road originated from Russia's invitation to China. In 2015, Russian Deputy Prime Minister Dmitry Rogozin pointed out that Russia suggested that China participate in some projects of infrastructure construction along the Northern Sea Route (NSR). That year, China and Russia signed the Joint Statement on Cooperation of Connection between the Silk Road Economic Belt and Eurasian Economic Union. Finally, the concept of a "Polar Silk Road" was announced by Chinese President Xi Jinping in 2017. The Polar Silk Road was presented as an important part of China's Belt and Road initiative, which will bring opportunities for international partners to jointly build a Polar Silk Road that will facilitate connectivity as well as sustainable economic and social development of the Arctic.

Interconnection is one of the backbones of the Polar Silk Road. Sino-Russian cooperation in the Yamal LNG project is one example. In July 2018, Russian gas was shipped to China via the NSR. Meanwhile, China has made solid efforts to fulfill its international responsibilities to prevent its ships from polluting the maritime environment (e.g. by complying with the Polar Code). Moreover, extensive transportation infrastructure is being built with a similar scope as the Yamal LNG project, in which there are about 30,000 Russian workers involved in Belkomur railway project that connecting the Sabetta Port to the Eurasian railway network.[4] As a consequence, the two countries' economies and societies may be further developed through the Yamal LNG project and others.

Based on the principle of extensive consultation, joint contributions, and shared benefits, cooperation between China and Russia along the Polar Silk Road has achieved mutually beneficial results. To date, Sino-Russian cooperation can be seen as the main element of the Polar Silk Road. But China also seeks to deepen cooperation with other parties, such as the United States, Canada, Denmark, Finland, Norway, Iceland, Sweden, Korea, and Japan in the process of building a Polar Silk Road. For instance, the China-Iceland Arctic Science Observatory (CIAO) was inaugurated and officially began operation in 2018, which is a joint project by Chinese and Icelandic research institutions to further scientific understanding of Arctic phenomena.[5] Though CIAO was initiated bilaterally, it also welcomes scientific researchers from other countries. In addition, China and Finland signed an agreement to establish a joint research center for Arctic space observation and data sharing services. The two countries agreed to build the center as a platform for international cooperation for ongoing research on the Arctic region.[6] In short, the Polar Silk Road is open and inclusive, and it will inject new vitality into the development of the Arctic.

What Lessons did China Learn from the CAOF Agreement?

As mentioned, China participated in the creating the CAOF Agreement, mainly through three scientific meetings and six inter-governmental meetings. In fact, Arctic Ocean coastal states had already issued a Declaration Concerning the Prevention of Unregulated High Seas Fishing in the Central Arctic Ocean in 2015, with the the United States playing a leading role in the CAOF Agreement negotiations.

In 2007, the United States proposed that Arctic fisheries management be discussed in the Arctic Council. The Arctic Council did not accept the U.S. proposal, but the issue of international fisheries management has come up in the context of the Arctic Ocean Review project that is carried out within the PAME.[7] The Arctic Ocean Review report included a chapter on living marine resources that suggested various possible future management options, which include expanding the United States' existing precautionary moratorium on commercial fisheries in its Arctic Exclusive Economic Zone (the U.S. adopted the Fishery Management Plan for Fish Resources of the Arctic Management Area in August 2009) to the broader Central Arctic Ocean.[8] China's rights as an observer in the Arctic Council are limited compared with Arctic member states, but China can still engage in bilateral and multilateral cooperation with other parties, such as proposing projects through an Arctic State or a Permanent Participant, according to the Arctic Council Observer Manual For Subsidiary Bodies.

The United States also proposed adoption of a non-legally binding instrument regarding fisheries management by convening an intergovernmental meeting during a side event at the meeting of the UN Food and Agriculture Organization Committee of Fisheries in 2009. As a result, many discussions took place under UN auspices, which contributed to the adoption of the Declaration Concerning the Prevention of Unregulated High Seas Fishing in the Central Arctic Ocean.[9] In 2018, ten parties signed the CAOF Agreement in Ilulissat, Greenland, and a new

Regional Fisheries Management Organization may be established in the future. By using a step-by-step approach, ten parties successfully concluded the CAOF Agreement. This is similar to the Polar Code, since the IMO first adopted the Guidelines for Ships Operating in Arctic Ice-Covered Waters and the Guidelines for Ships Operating in Polar Waters in 2002 and 2009 respectively before adopting the Polar Code, which entered into force in January 2017.

In sum, it is important for China to make full use of Arctic-related institutions, regimes and organizations[10] as well as adopting step-by-step approaches to appropriately contribute to creating international rules and norms with regard to Arctic governance.

What are the Main Constraints to Enhancing Arctic Marine Cooperation and What Might be Future Ways Forward?

There are at least two major constraints to enhancing Arctic marine cooperation.

The first is the low level of trust existing among the great powers in the Arctic, which once was a highly militarized place during the Cold War period. This militarization was a markedly different stance compared with the Antarctic, which was dominated by a spirit of scientific cooperation after the 1957-1958 International Geophysical Year (IGY). That spirit of cooperation also developed in the Arctic after former Soviet President Mikhail Gorbachev pronounced the region as a "zone of peace" in 1987. This cooperation continued to expand with the formation of the Arctic Council in 1996 and the creation of other multilateral organizations and agreements.

The low level of trust, however, may affect Arctic states' cooperation in many areas. For example, Arctic states did not make a joint declaration at the 11th Arctic Council Ministerial meeting at Rovaniemi, Finland on May 2019, which is the first time that Arctic states did not reach consensus since the establishment of the Arctic Council. Despite ongoing scientific and economic activities conducted by countries such as China, Korea and Japan, some Arctic states have recently expressed concerns about whether the Arctic can remain a zone of peace. China, for its part, commits itself to maintaining a peaceful, secure, and stable Arctic order. In ancient China, Chinese ships roamed throughout the Pacific (perhaps into high latitudes) as explorers and traders, and there is no evidence that they were interested in governance or control.[11]

The Antarctic Treaty, signed by 12 countries in 1959, is a good example to illustrate that science diplomacy can enhance the great powers' cooperation in the Antarctic, both for claimant states and non-claimant states—as it was for the United States and the former Soviet Union even in the depths of the Cold War. One of the driving forces for concluding the Antarctic Treaty was the IGY. Scientists preparing the IGY had almost seven years to do so, three times as long as the previous Polar Years.[12] The IGY provided a concrete example of how scientific collaboration can lead to international cooperation, leading 12 nations to maintain 65 research stations in the Antarctic.[13] China had actively prepared for the IGY, although it finally withdrew from its activities for political reasons.[14] As for the Arctic, one can also find the practice of science diplomacy by looking at the development of the Arctic Council and the Agreement on Enhancing International Arctic Scientific Cooperation.

A prerequisite for science diplomacy is to build common interests,[15] which is consistent with China's policy goals with regard to the Arctic. These are "to understand, protect, develop and participate in the governance of the Arctic, so as to safeguard the common interest of all countries and the international community in the Arctic, and promote sustainable development of the Arctic." China may focus even more on science diplomacy when it involves Arctic marine cooperation in the near future.

Another second constraint is that many countries, even Arctic states, face capacity challenges when participating in Arctic affairs. Due to the vast size of the region, the extreme climatic conditions, and the lack of adequate support infrastructure, emergency scenarios at sea such as ship accidents are particularly challenging. Therefore, countries always need to address those challenges by cooperating with each other. For example, Arctic states established the Arctic Coast Guard Forum in 2015, which is an important step to implement the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic and the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic. There is no doubt that the Arctic Coast Guard Forum can improve Arctic states' capabilities in fields such as search and rescue and environmental protection.

The Multidisciplinary drifting Observatory for the Study of

Arctic Climate (MOSAiC) is another example that demonstrates how international scientific cooperation can greatly promote the capability of countries to participate in Arctic affairs. Hundreds of researchers from 20 countries were involved in this project. Originally, China planned to dispatch *Xue Long 2* to participate in MOSAiC, but this changed because of the Covid-19 pandemic. Instead, China only dispatched experts to the joint Arctic research expedition. Through MOSAiC, countries like China, Germany, and Russia successfully conducted winter Arctic research activities, which would be a challenging task for countries such as China to do it by itself.

At the end of the day, significant progress has been made in fostering marine cooperation in the Arctic. The Arctic states in particular are carrying out more extensive cooperative efforts than other countries by signing non-legally binding and legally binding instruments. China will fundamentally abide by China's Arctic Policy and will continue to show deep engagement in Arctic marine cooperation in the future.

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BBNJ Negotiations and the Arctic—Interrupted

Rachel Tiller

Introduction

Covering three fourths of the earth's surface area, the ocean is the world's largest ecosystem. The high seas—areas beyond the jurisdiction of individual states (ABNJ)—cover more than 60 percent of this area, where close to ten million tonnes of fish are harvested; 15 percent of total global marine landed value. The Central Arctic Ocean (CAO) is also located in this jurisdictional zone. As such, building consensus on an ecosystem-based, legally binding agreement covering this last frontier of the global commons is of great importance. Negotiations towards this instrument to protect biodiversity in areas beyond national jurisdiction (BBNJ) is a work in progress that has been interrupted by the COVID-19 pandemic.

The Circumpolar Arctic has historically been a distinctive international region with its own policy agenda where issues such as environmental protection, human well-being, and sustainable development have been key organizing principles of multinational governance. The legal framework covering the CAO is largely fragmented and uncoordinated, however, forming a patchwork of regulatory schemes that address issues such as protection of migratory birds, deep sea mining, dumping of illegal wastes from ships, and pollution from land-based sources (Bigagli 2016). Speculation about the future economic potential of these areas abound. Oil. Gas. Mineral extraction. Ice-free Arctic shipping routes. Increased fishing activities on commercially valuable species, new and old. There is also the promise of marine genetic resources (MGRs)—one of the still-unregulated potentials of the ABNJ—which is one of the four focus areas of the BBNJ treaty negotiations. It is also at the center of many of the challenges to reaching consensus.

The four-part "package" being discussed during the BBNJ negotiations includes the MGR issue and its corresponding focus on benefit sharing. The other packages include capacity building and the transfer of marine technology, area-based management tools (such as MPAs), and environmental impact assessments. The treaty's ambition is to address holes and fragmentated regulations with regard to elements of these issues that were left ambiguous or open by the United Nations Convention on the Law of the Sea (UNCLOS) (1982). These omissions are especially important in light of increasing stressors from climate change and new waters becoming operable for various commercial uses as a result of ice melting in the polar region as well as other Arctic ecological and geopolitical changes.

The BBNJ negotiations are the most important ocean protection discussions at the global level since UNCLOS, and they had been scheduled to conclude in spring 2020, preferably with a legally binding instrument adopted by consensus. The COVID-19 outbreak delayed the global discussions for all scheduled meetings that required large gatherings, however. The final round of negotiations from March 23-April 3 2020 were (with decision 74/543) postponed until the earliest possible available date, currently considered for fall of 2021. The consequence of this delay may be to make matters worse for the Arctic oceans, the CAO included, given how little time we have to avoid further biodiversity challenges due to our current uncertain environmental context. The delay could also be a blessing in disguise, however, giving delegates more time for in-depth negotiations during intersessional work, which could increase the chances of reaching consensus by the time of the last round of negotiations.

Nearing the end point of the scheduled negotiations, this chapter assesses the path towards consensus on one of the most important governance mechanisms proposed since UNCLOS and considers how power politics in the Arctic is playing a role and how those politics may affect this treaty. We concentrate on the three first rounds of negotiations that have already taken place (September 2018, April 2019, and August 2019). Since no specific ocean areas, including the CAO, are specifically discussed during the negotiations, we will frame our discussion broadly. First, we discuss some of the main challenges that have materialized during these sessions in general, followed by an assessment of what must be included in the final treaty for it to not only reach consensus, but also be effective once ratified and implemented and to what degree the governance mechanisms of the Arctic will be affected by said treaty. We conclude by discussing a hybrid option for the contents of the agreement and whether this lends itself to a realistic end of negotiations by consensus by fall 2021, which is the loose plan right now depending on the development of COVID-19.

Background

The last Inter-Governmental Conferences (IGC-3) on BBNJ took place at the United Nations headquarters from August 19-30, 2019. For the first time in the three conferences, the talks focused on an actual draft text of the treaty that had been produced by the president of the negotiations, Rena Lee of Singapore, and released to delegations and the general public a few weeks before the meeting. This draft text substantially changed the tenor, pace, and detail of interventions by delegates during this round of negotiations as compared to the first two meetings (Mendenhall, De Santo et al. 2019, Tiller, De Santo et al. 2019, De Santo, Mendenhall et al. 2020). In addition to have concrete language to discuss, this third meeting did not only include plenary informal working group meetings with full access for observers, as there had been in the first two rounds of negotiations. These were now supplemented with fourteen sessions named "informal informals," where more contentious issues were scheduled to be discussed. For these, only a limited number of observers were permitted, and no webcast or press were allowed.

Though well intended, these "informal informals" unfortunately often ran over time, precisely because of the topics discussed. This meant that interpreter services were discontinued and discussion proceeded in English, which was difficult for smaller delegations and those who required translations to follow and participate in negotiations. Furthermore, there were four parallel or overlapping informal sessions on different issues, which was also disadvantageous to smaller delegations. Finally, a most notable and unintended effect was the low visibility and diminished influence of NGOs and IGOs. During the IGC3, these groups were "... not invited to speak, and...had to jockey among themselves for a limited number of seats," as described by a participant in the meetings. Because of this, they spoke less than half as much during the third round of negotiations than they had in the two previous rounds combined, and as such had less influence (De Santo, Mendenhall et al. 2020). As a result, there was an overwhelming disappointment in the lack of overall progress after this third round of negotiations. This was also reflected in private conversations, where some delegates and observers expressed concerns about the timeline and how realistic it would be that there would be consensus on an agreement after the last round of negotiations. There was, however, no formal discussion about whether additional IGCs would need to be scheduled beyond the expected fourth and final IGC that had been scheduled for March and April 2020.

Arctic States and the BBNJ Treaty

The Arctic within the context of the BBNJ treaty centers on a projected ice-free CAO. Because of perceived governance gaps, we now explore to what degree the current regulatory framework of the region is affected by or affects the ongoing process of the new BBNJ treaty. The Arctic is an often-imagined new frontier of sorts, and an ice-free CAO represents a frontier within the frontier. Speculations, dreams and aspirations of oil and gas extraction, ice-free Arctic shipping routes, increased fishing activities, and potential to develop marine genetic resources are just a few economic activities that have captured the dreams of many states and private interests. These imaginings have naturally led to concerns about resource conflicts in the Arctic region, and in the CAO specifically.

When completed, the BBNJ negotiations will decide, among other things, which principles and sets of rules will govern the exploitation of at least MGRs in this area. They will identify to what degree maritime states—especially technologically developed states such as the Arctic ones—are willing to build the capacity of developing states in terms of marine exploitation and protection of said resources in areas far removed from land. The agreement will also assess to what degree there ought to be a global sharing of benefits from resources harvested in these areas, and how to effectively implement area-based management tools in areas outside national jurisdiction such as the CAO. These are all issues that will have an effect on not only the current Arctic governance framework, but also resource management in the Arctic as the climate continues to change, new resources become available that were not accessible previously, and sea routes become largely ice free.

During the negotiations, one could argue that the eight Arctic states (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States) have had a dampening effect on the BBNJ process in terms of hopes for reaching consensus on an overarching agreement. This is because the Arctic states show a clear preference for concentrating on utilizing existing regional governance alternatives in the region rather than placing decision-making power in a global hierarchical treaty that would affect treaties and agreements that already exist in the region. The Arctic states also consider themselves stewards of their region, but that role has also been claimed by non-Arctic states that have an active role in the Arctic as well, such as China, Japan, and Korea. All of these are part of governing the region by a pastiche of international treaties and organizations (Young 2019) though, which goes to the heart of the arguments by Arctic states. In fact, during the negotiations Russia has emphasized that any kind of hybrid or hierarchical global version of the BBNJ treaty would undermine existing agreements in the Arctic and beyond. The fear articulated by Arctic states as such is that a BBNJ treaty may undermine relevant existing legal instruments and frameworks and relevant global, regional, and sectoral bodies already operating in the Arctic high seas. This includes the main regional governance body in the region, the intergovernmental forum of the Arctic Council (AC), with its eight member states, six Indigenous groups serving as Permanent Participants, and a number of non-Arctic Observers. With regards to the BBNJ treaty negotiations, AC members have highlighted that among the six working groups (WG) of the Arctic Council, one already pertains to the Conservation of Arctic Flora and Fauna (CAFF), voicing that perhaps the development of the BBNJ instrument could be both redundant and cumbersome. Arctic states argue that CAFF is closely linked to the goals of BBNJ in that it addresses conservation of Arctic biodiversity conservation already and that CAFF—though regional in scope—also coordinates with global biodiversity initiatives that include the Arctic. These include the Convention for Biological Diversity (CBD), which is closely linked to the BBNJ process as well as the Convention on the Conservation of Migratory species of Wild Animals (CMS).

The position of the Arctic states has furthermore been that if there are no existing regional instruments for a given issue in the Arctic, relevant states—by which non-Arctic states or global governance regimes are generally not included—should cooperate to establish new relevant bodies to fill these governance gaps and not rely on a distant overarching global treaty to govern Arctic activities. The role of the Task Force on Arctic Marine Cooperation set up in 2015, for example, was to assess precisely the need for an Arctic Regional Seas Organization (RSO), which would be able to fill potential governance gaps in the region. A transformation of the Arctic Council is another example of regional approach that could be taken to fill governance gaps. Were it to transform into a CAO RSO, this could arguably strengthen the CAO ecosystem governance as a whole.

Simultaneously, it could ensure that the CAO ecosystem governance system is overseen and implemented through regional institutions, albeit within a global framework set up under the new BBNJ treaty. However, it is important to note that the AC has no legal standing or formal status as an international organization in relation to the BBNJ treaty, and as such can only offer recommendations to Arctic states to take action in areas within their jurisdiction (but not in areas beyond national jurisdiction). The AC, therefore, would not be undermined by the BBNJ treaty in its current form, since the treaty as envisioned would serve different purposes that existing Arctic governance structures.

However, the main Arctic Ocean Governance Framework for the Arctic considers more global issues, and there are also many other existing targeted agreements for the region that are more directly within the context of the BBNJ instrument and its packages. These include the North East Atlantic Fisheries Commission (NEAFC), the OSPAR Convention, and the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (the CAO Fisheries Agreement). These regionally oriented agreements share some overlapping elements of governance emphasis. NEAFC, for example, manages fisheries and OSPAR protects the marine environment—but neither has competence in more than a tiny portion of the CAO. The CAO Fisheries Agreement on the other hand is a de facto area-based management tool (Balton 2019) and covers this precise area. This agreement could technically be undermined by the BBNJ instrument if it were to still exist in the region at the time of ratification of the agreement—if the ABMTs was implemented in this area at that time. However, one could also argue that the CAOF is only a placeholder for a future RFMO, which would likely fall outside the scope of the agreement and also not be able to be undermined.

Shall not Undermine

What remains to be seen is what IGC-4 will bring to the table in regard to an agreement among the member states of the UN, and what implications this may have for the Arctic. One can be hopeful that the treaty text for the ILBI is adopted by consensus, ratified by all state parties, and enters into force in a timely manner after the fourth conference. But will interpretations of the legal terminology "shall not undermine" affect the negotiations in its final stages—and existing arrangements in the Arctic specifically? Some Arctic states have expressed that a strict interpretation of this phrase should be considered before any new agreements are made, which might in turn create a roadblock for these negotiations.

We argue that this potential sticking point will largely depend on how one reads and understands "not undermine" within an Arctic context specifically. Will the BBNJ be seen as a vehicle to undermine the effectiveness of existing agreements, or in the way the majority of the BBNJ proponents seem to read it: as a way to avoid encroachment on the territory or mandate of existing organizations. The former could co-exist in a nested regime complex with the BBNJ, whereas the latter would not be able to since the BBNJ treaty would be able to mandate regulatory priorities for the regional arrangement to ensure that these were in line with global priorities.

The regulatory scope of the BBNJ treaty will likely need to fall under a hybrid model, where the BBNJ treaty would be limited and the agreement would not have a hierarchical relationship with other existing instruments. The COP of a BBNJ treaty would have a high level of decision-making capacity, using existing institutions as much as possible but also establishing new governance bodies when necessary. In doing so, it may be able to move beyond UNCLOS and tackle the issues that this agreement does not cover and that have emerged since the 1970s and 80s. This latter is critical if it is to have any effect on biodiversity protection in the ABNJ at all.

These concerns likely mean that any future BBNJ instrument will not be empowered with any substantial oversight or coordination functions in terms of existing agreements in the Arctic, if there is to be any hope for consensus. Even with the hybrid model a consensus may be difficult to achieve, given the position of Russia on this topic. Russia has also made its opposition clear in terms of the concept of adjacency. What role will coastal states have in decision-making regarding the adoption and implementation of ABMTs/MPAs in for example the CAO, which is adjacent to the maritime territories of many Arctic states, and how will their views be taken into account? It would seem that the answer is, "Not much," if consensus is to be reached on an agreement.

If the Arctic preference of leaving Arctic affairs to the regional bodies already operating in the area and keeping the BBNJ out of it wins the day, it would mean that biodiversity conservation must be achieved in these areas without the oversight of a global umbrella organization representing the global community. The BBNJ treaty, if adopted, could even risk being boxed into the spaces between other Arctic agreements if the "shall not undermine" concept is strictly interpreted in a way that precludes broader participation and governance structures. This unfortunately would add to the existing patchwork pastiche, directly contradicting its original purpose to provide for regional collaboration, and make it difficult to actively identify and create synergies between and among them, and prevent this agreement from merging the fragmented field of agreements in the high seas as it was envisioned.

It is still important to try and move forward with the BBNJ treaty and aim for adoption by consensus to reach its overarching aim of protection biodiversity in all areas that are beyond national jurisdiction, including the CAO. That will allow actors with vested interests in the area, including states, industries, Indigenous Peoples, and humankind in general, to be better prepared, organized, and ready to determine if resource exploitation or area-based management plan proposals for the CAO, if and when such a time arises, comply with globally accepted baselines as determined by an internationally accepted environmental impact assessment. ABNJ are ocean areas where no state has sole jurisdiction. They need to be considered and governed for the good of all mankind, whether or not states have borders near the ocean space. Even in the Arctic.

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The Implications of Climate Change for the Future of Arctic Marine Cooperation

Yunjin Kim

Introduction

The French saying, "il vaut mieux prévenir que guérir," means "it is better to prevent than to cure." In other words, it is more worthwhile to head off the creation of a problem than to have to deal with it afterwards. Does this principle apply to the future Arctic marine cooperation as well?

Ongoing and projected Arctic warming will result in further reductions in the mass of glaciers, sea ice, and snow on land (IPCC 2019). It may also continue to cause negative consequences to the Arctic's marine biodiversity and Arctic flora and fauna, as well as to the human beings who depend on those resources. Arctic ice is not only crucial to the marine ecosystem in the Arctic Ocean, but also to the world's climate system. Once those intricate natural systems pass certain tipping points, it might be too late to fix the damage and there can be no turning back.

In such circumstances, the success of future marine cooperation in the Arctic Ocean will hinge on immediate precautionary actions to minimize the impact of climate change at an international level. Consequently, states should recognize their common interest in prioritizing the prevention of harm in order to avoid the more difficult task of curing problems after they have occurred.

The Emergence of Common Concern in the Arctic Ocean

The concept of the "common concern of humankind" appeared in the global legal framework as a fundamental notion to protect the global environment in the common interest of all states. The preamble to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) begins by acknowledging that "change in the Earth's climate and its adverse effects are a common concern of humankind." Similarly, the 1992 Convention on Biological Diversity (CBD) affirms that "the conservation of biological diversity is a common concern of humankind." The 2015 Paris

Agreement also acknowledges that "climate change is a common concern of humankind" and notes "the importance of ensuring the integrity of all ecosystems, including oceans, and biodiversity."

The principle of common concern of humankind essentially obliges states to cooperate in solving common problems that affect people generally, whether those problems arise from activities that occur within sovereign territory or outside national boundaries (Cottier et al 2014). To be clear, these common concerns are not the world's climate nor the biological diversity in the abstract but rather the adverse effects that climate change and reduction in biodiversity cause to the sustainability of life on the planet (Shelton 2009). Therefore, the common concern drives the need for common action and efforts by states to mitigate the impacts of climate change and to adapt to its consequences that cannot be effectively managed at the national or regional level.

The impacts of climate change—including sea-level rise, flooding, coastal erosion, melting of ice sheets and glaciers, ocean acidification, and the degradation of marine biodiversity—are intricately intertwined. As the 2019 IPCC special report highlighted, the risk of adverse consequences from global warming of 1.5°C to the biodiversity and ecosystem functions of the world's ocean and cryosphere are potentially severe. The same report described how ocean warming may lead to the loss of pristine and unique Arctic marine ecosystems, which include species that have adapted to extreme cold.

Arctic glaciers are already melting at an unprecedented rate. The volume of Arctic sea ice is also declining dramatically, opening significantly greater areas of the Arctic Ocean to future human activities such as navigation, offshore development, and fishing as new economic opportunities. Those possible economic activities and the ensuing environmental concerns that need to be addressed on a global level have led to the emergence of common concerns in the Arctic Ocean for a wide variety of states.

In particular, common concerns in the Arctic Ocean require contributions from, and cooperation by, both Arctic and non-Arctic states in the development and implementation of appropriate conservation measures, recognizing that the responsibilities of these two groups of states may differ in terms of jurisdiction. The Central Arctic Ocean—which includes both a high seas portion and adjacent areas under national jurisdiction—is such a case, requiring contributions and cooperation from many states.

Arctic and non-Arctic states both have legitimate concerns about the Central Arctic Ocean. They also share responsibilities to prevent or reduce harmful environmental impacts, to conserve marine biodiversity, and to use marine living resources sustainably in the area. Arctic and non-Arctic states may have different capacities to adopt environmental protection measures to prevent harm to the Central Arctic Ocean and may face different cost-benefit calculations about whether to adopt such measures. But without common, coordinated action to manage human activities affecting the Central Arctic Ocean, a "tragedy of the commons" may take place (Hardin 1968).

Given the situation, the future of Arctic marine cooperation must be developed on the basis of common interests shared by Arctic and non-Arctic states alike, recognizing their shared responsibilities. But how likely is future cooperation in the Arctic Ocean? What mechanisms are available to promote such cooperation? What approach would states likely adopt?

Precautionary Approach to Using Area-based Management Tools in the Central Arctic Ocean

One key concept embedded in the agreement being negotiated under United Nations auspices concerning "biodiversity beyond national jurisdiction" (BBNJ) is the need to develop and apply Area Based Management Tools (ABMTs) in the parts of the ocean beyond the jurisdiction of any individual state. The draft agreement would define ABMTs as "regulations of human activity in a specified area to achieve conservation or sustainable resource management objectives."

Marine Protected Areas (MPAs) are one type of ABMT to promote the protection and safeguarding of marine biodiversity, the restoration of ecosystem functions, the preservation of habitats, and the conservation of target species (PAME 2015). While there is no authoritative legal definition of the term MPA, the description given by the IUCN captures a generally agreed meaning: "a protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (IUCN 2019). In accordance with this formulation, the establishment of an MPA does not necessarily mean that all human activities are prohibited within the MPA boundaries. Within those boundaries, though, one or more human activities, such as fishing, shipping, or resource extraction are to be regulated. In that respect, the real question is whether the specific area has values that can and should be protected by such a measure. What is the purpose of restricting human activities within the area? Why might we want more robust protections in that area?

Increased ocean temperatures and shifting ranges and migration patterns of marine species are likely to result in new high-latitude fisheries. However, the increasing size and efficiency of the world's fishing fleets has given rise to various destructive fishing practices such as overfishing and excessive by-catch. Bottom trawling in sensitive areas is another serious problem. In order to prevent and mitigate such negative effects from unregulated fishing activities, states may adopt conservation and management measures for marine living resources based on a precautionary approach. This approach means that states should take action or adopt decisions based upon careful foresight when their activities might be expected to cause damage to the environment (Sands 2003). Hence, the rapidly changing Arctic marine environment necessarily requires precautionary management in warming waters that are causing rippling impacts across the ecosystem, especially when scientific uncertainties about the extent of future impacts still remain.

No commercial fishing is yet taking place in the Central Arctic Ocean and it is unlikely to become viable in the near future. Nevertheless, in 2018 nine states and the European Union signed the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (CAOFA) as a precautionary measure. The Agreement imposes a moratorium on the start of commercial fishing in the high seas portion of the Central Arctic Ocean. The Agreement itself, in a sense, can be seen as creating a de facto MPA that limits at least one human activity—commercial fishing—in a clearly defined geographical marine area through a binding international legal mechanism.

However, further measures to protect the marine environment should be taken based on concrete scientific research data and adequate evidence. In the absence of scientific evidence, therefore, it will be a significant defect to create additional MPAs in the Central Arctic Ocean. While the CAOFA only regulates one potential human activity, it is expected to establish the Joint Program of Scientific Research and Monitoring that could contribute to other prospective ABMTs in the Central Arctic Ocean. The envisioned

BBNJ Agreement could also create a new means to produce additional ABMTs using mechanisms that State Parties develop in implementing both that Agreement and the CAOFA (Balton 2019).

Korea's Future Participation in Arctic Marine Cooperation

International conventions and agreements such as the 1982 UN Convention on the Law of the Sea, the 1992 UNCBD, and the 2015 Paris Agreement call upon states to take actions and commit themselves to cooperate for the conservation and sustainable use of biological diversity with respect to the common concern of humankind. As a party to those international instruments, Korea carries legal obligations to cooperate with other states in adopting conservation and management measures for the Ocean that will result in the long-term conservation and sustainable use of marine resources.

The entry into force of the 2017 International Code for Ships Operating in Polar Waters (IMO Polar Code) has expanded the environmental regulatory regime in polar waters with the inclusion of non-Arctic states such as Korea (Yoo 2019). In this regard, Korea was also involved as a legitimate stakeholder in negotiations that produced the 2018 CAOFA, which will give each State Party equal responsibility to prohibit unregulated fishing activities and to contribute to joint scientific research in the Central Arctic Ocean. Future Arctic marine cooperation would likely require similar efforts to find common ground between Arctic and non-Arctic states with respect to common concerns in conserving the marine environment.

Recognizing that common concerns require shared responsibilities in conserving the Arctic Ocean, Korea's future participation in Arctic marine cooperation will very much depend on its contribution to the creation of marine environment management tools in the Arctic. Korea, in accordance with the international agreements, has additional steps to take in enacting effective environmental legislation that reflects the commonality of state interests to promote sustainable fishing practices, which include the prevention of illegal, unreported, and unregulated (IUU) fishing. Korea must also enforce its domestic laws prohibiting pollution and unregulated fishing activities against vessels that violate them.

Despite its geographic distance from the Arctic, Korea has been actively working with different states, stakeholders, and Arctic Indigenous Peoples to contribute to promoting sustainable development and environmental protection in the Arctic, both nationally and internationally. At the domestic institutional level, Korea has established its Arctic vision through its Arctic Policy Master Plans, which includes tasks in international cooperation, scientific investigation, Arctic business, legal, and institutional fields.

Since the Polar Code entered into force, Korea has expanded domestic laws to support and strengthen scientific research and conservation activities in polar regions. In addition to the enforcement of regulations for Port State Control for the safe navigation and prevention of marine pollution in polar waters, Korea is planning to enact the *Act on Promotion of Polar Activities* that would likely apply to the Central Arctic Ocean area. Having completed the ratification process for the CAOFA in October 2019, Korea will contribute to the creation of more opportunities to gather scientific information through the joint research and monitoring program in the Central Arctic Ocean with other states, in accordance with domestic laws and policies.

Closing Remarks

The international community shares common interests in the world's oceans and also shares common responsibilities to conserve and sustainably use marine resources. The consequences of rising global temperatures are forcing states to adopt new approaches and promote adequate conservation measures to protect and conserve marine biodiversity. Considering the unique nature and geopolitical aspects of the Arctic, options to cooperate in the Arctic Ocean should be discussed based on the substantial common ground that all states share in this regard. The Arctic Council has assumed the role of an intergovernmental cooperation forum since 1996 and has worked with Arctic states as well as Indigenous organizations and observer states. However, it is still true that the Council faces the fundamental challenge of addressing climate change issues coming from different national interests. It is also true that the escalating impacts of climate change, including rapid ecological shifts in the Arctic, require a more comprehensive governance regime and represent challenges to which the international community must respond.

Although there is a lack of scientific evidence needed to establish MPAs in the Central Arctic Ocean, the 2018 CAOFA can be seen as a meaningful precedent for future high seas ABMTs in terms of prohibiting unregulated fishing activities in the area. Other human activities would likely be regulated under the envisioned BBNJ Agreement. However, the fact that some of the CAOFA State Parties may not join the BBNJ Agreement could be a hindrance to implementing future ABMTs.

The effective implementation of ABMTs in the Central Arctic Ocean ultimately relies on the commitment of national governments. That is, states are ultimately responsible for ensuring compliance and enforcement through their national legislation. Moreover, the authority upon which governments take those actions ultimately rests with civil society. There should be more enhanced public awareness and appreciation of the need for Arctic marine conservation measures. Future Arctic marine cooperation, therefore, will likely require respect for marine management interests, practices, and values of Arctic Indigenous Peoples, in order to conserve the Arctic Ocean in ways that honor their traditions. Finally, it is necessary to include non-governmental experts and relevant international organizations to avoid knowledge gaps.

A number of important questions remain unanswered. When marine resources become accessible enough to support commercial fishing in the Central Arctic Ocean, will states collectively prevent overfishing in the area? When marine resource disputes arise between the Central Arctic Ocean coastal and non-coastal states, how could they be settled? Will a new body to manage fisheries in the Central Arctic Ocean ultimately be established? What role will the BBNJ Agreement play in the region, and will the states concerned establish a new comprehensive governance regime in the Arctic?

Future Arctic marine cooperation depends on whether and to what extent Arctic and non-Arctic states can overcome these challenges. Success in this regard will depend on the political will and the ability of each state to balance national interests and those of the international community—and understanding that it is much easier to prevent problems now than to seek cures down the road.

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