

The Disruption of Arctic Exceptionalism

Managing Environmental Change in Light of Russian Aggression

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Key Points

- The Arctic is directly affected by the interaction of two ongoing global crises: climate change and Russia's war of aggression in Ukraine.
- With temperatures in the Arctic rising four times faster than the global average, the region is facing dramatic environmental changes such as melting ice, permafrost thawing, and more frequent heatwaves and wildfires. Thus, understanding and managing the global and local implications of environmental change in the Arctic requires urgent scientific and diplomatic collaboration.
- Retreating sea ice has led to more economic interest in the Arctic and its increasing geopolitical importance, fueling militarization and tensions among Arctic states and external global powers like China.
- Russia's February 2022 invasion of Ukraine and its ongoing war has severely disrupted "Arctic Exceptionalism," which considered the region to be a place for peaceful and scientific cooperation despite other disagreements and political tensions existing globally and among Arctic countries.
- Resuming key elements of critically needed scientific and political cooperation is dependent on the end of Russian aggression against Ukraine.

The Arctic was long considered a region in which global political tensions were successfully mediated by peaceful cooperation and collaboration. In particular, the 1986 Murmansk speech by Soviet leader Mikhail Gorbachev marked a turning point in Soviet foreign policy toward the Arctic. It signaled the will to prioritize peaceful cooperation over military competition and highlighted the need for environmental protection of the Arctic's unique ecosystem. Following this ideal of "Arctic Exceptionalism," the Arctic Council was formed as a platform for eight Arctic nations under inclusion of Indigenous Peoples who have lived in the Arctic for millennia.

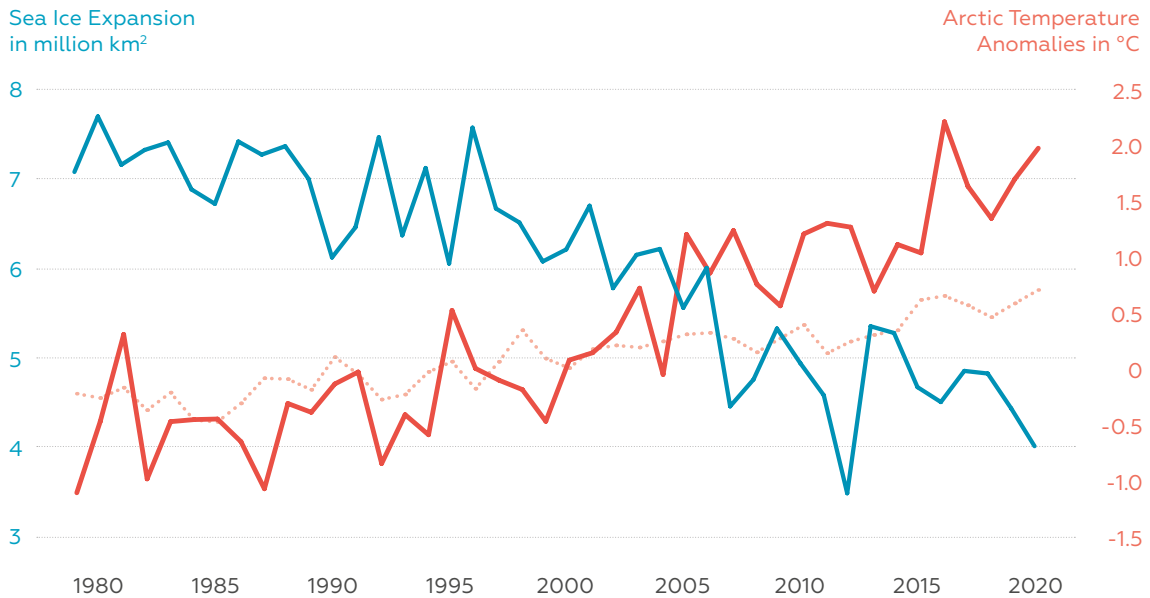
Arctic cooperation particularly promoted the advancement of scientific research urgently needed for observing and understanding the Arctic environment and its response to climate change. Further, it helped to regulate increasing geopolitical interests driven by more accessible resources and the strategic importance of Arctic zones. Russia's war on Ukraine, however, has brought this collaboration to a halt, risking the end of Arctic Exceptionalism for a return to geopolitics that is led by national interests and disregards international law. Restrictive measures, such as sanctions regimes and scientific isolation, and a shift of the Arctic Council toward NATO might not prevent Russia from pursuing a new Arctic strategy characterized by exploiting Arctic resources, partners, and transport routes.

Arctic Exceptionalism is suspended as long as Russia's aggression persists and poses future challenges about how to regulate Arctic environmental protection and observation in times of ongoing climate change. It is too early to say what the effects of a likely expansion of NATO to two other Arctic states – Finland and Sweden – might be. However, from the governance of fisheries, albeit imperfect, we can see that some regimes can be upheld in times of geopolitical crises.

OBSERVED AND PROJECTED CLIMATIC CHANGES IN THE ARCTIC

The Arctic is a climate hotspot where amplified warming at a rate 3 to 4 times faster relative to the rest of the globe¹ meets a particularly sensitive environment (Figure 1). This amplified warming rate is driven, among other mechanisms, by an increased

¹ Mika Rantanen et al., "The Arctic Has Warmed Nearly Four Times Faster Than the Globe Since 1979," *Communications Earth & Environment* 3 (2022): <https://doi.org/10.1038/s43247-022-00498-3> (accessed January 30, 2023).

Figure 1 – Change of Sea Ice Expansion Compared to Global Warming

This graphic shows sea ice expansion (solid blue line) and temperature anomalies both within the Arctic Circle (solid red line, 60° to 90°N) and outside of it (dotted red line). Temperature anomalies are calculated relative to yearly averages from 1981 to 2010. Since 1990, the Arctic has experienced a decrease in sea ice of 40 percent while Arctic temperatures have increased about four times compared to the rest of the globe. | Source: ERA5 reanalysis, Copernicus Climate Change Service, ECMWF; [AWI: https://www.meereisportal.de](https://www.meereisportal.de)

absorption of solar radiation in Arctic regions resulting from declining sea ice, which has experienced a reduction of up to 45 percent² in recent decades. While the retreating sea ice would reflect 50 to 70 percent of incoming sunlight, newly opened dark ocean areas are reflecting approximately 6 percent – the difference contributes to warming. As the warming further reduces sea ice, these processes constitute a feedback loop and are expected to continue even at a low emission scenario.³ These expectations highlight the need to be prepared for major shifts in Arctic climatology with local and global impacts on nature and societies⁴ that can already be observed today.

A series of record-breaking heat waves within the Arctic Circle have led to air pollution, extensive CO₂ release through wildfires, and accelerated permafrost thawing.⁵ Fragile Arctic ecosystems are struggling to adapt to rising temperatures and shifting climate zones. In addition to causing local impacts, changes in the Arctic will affect future climate risks on a global scale as permafrost thawing can lead to greenhouse gas release that constitutes a positive climate feedback and considerably reduces the available carbon budget.⁶ Further, increased Arctic temperatures and sea ice loss have been suggested to affect mid-latitude weather patterns, possibly leading to more persistent and more frequent extreme weather.

2 Warwick F. Vincent, "Arctic Climate Change: Local Impacts, Global Consequences, and Policy Implications," *The Palgrave Handbook of Arctic Policy and Politics* (2019), pp. 507–526.

3 Jun Ono et al., "Enhanced Arctic Warming Amplification Revealed in a Low-Emission Scenario," *Communications Earth & Environment* 3 (2022): <https://doi.org/10.1038/s43247-022-00354-4> (accessed January 30, 2023).

4 J. Cohen et al., "Divergent Consensuses on Arctic Amplification Influence on Midlatitude Severe Winter Weather," *Nature Climate Change* 10 20–29 (2020): <https://doi.org/10.1038/s41558-019-0662-y> (accessed January 30, 2023).

5 Matthew L. Druckenmiller et al., *Arctic Report Card 2022*, National Oceanic and Atmospheric Administration: https://arctic.noaa.gov/Portals/7/ArcticReportCard/Documents/ArcticReportCard_full_report2022.pdf (accessed January 30, 2023).

6 Susan M. Natali et al., "Permafrost Carbon Feedbacks Threaten Global Climate Goals," *Proceedings of the National Academy of Sciences* 118 (21), May 17, 2021: <https://doi.org/10.1073/pnas.2100163118> (accessed January 30, 2023).

Trends presently observed will have long-term, potentially irreversible effects. The Greenland ice sheet, for instance, has been repeatedly affected by rapid melting events, which are associated with increased water runoff and ice-shelf collapse. Ice sheets in Greenland have been identified as a climate tipping point⁷ that could contribute a total of 7.2 meters to global sea level rise if melted in their entirety and between 0.59 and 1.88 meters by the end of the century under a moderate climate scenario.⁸

Scientific collaboration is therefore urgently needed to monitor and improve our understanding of how and to what degree the Arctic climate is changing. Such data and knowledge are necessary to protect the local environment, improve climate models, and facilitate carbon budget stocktaking.

THE HUMAN DIMENSIONS OF ARCTIC CHANGE

Climate impacts unfold not only in the ecosystem of the Arctic, but also through human-environment interactions in different social systems. Arctic Indigenous Peoples are particularly affected by and vulnerable to these changes because current economic pressures and challenges to human security, such as food security, have been amplified by climate impacts in the Arctic.⁹ Furthermore, the impacts are exacerbated by the intersectionality of the multiple factors that produce inequity, including patterns of inequity stemming from colonialism.¹⁰

Currently, 10 percent of the approximately 4 million inhabitants of the Arctic are Indigenous.¹¹ Arctic Indigenous Peoples live across areas that are prone to be immediately affected by climate impacts due to direct dependencies of subsistence economies on healthy ecosystems. Coastal erosion linked to later sea-ice formation due to warmer temperatures and

thawing permafrost, which leave shores unprotected from storm damage, poses grave threats to Arctic livelihoods and infrastructure.¹² The thawing of permafrost and the formation of taliks (areas of unfrozen ground surrounded by permafrost) causes land to subside, negatively impacting roads and buildings.¹³ Thinning ice in some areas poses (seasonal) risks to travel on previously stable frozen areas. Due to growing pressures on subsistence economies, harvesting periods and locations have been shifted in attempts to adapt to climatic changes.¹⁴ High place attachment to ancestral homelands has motivated people to stay despite these growing climate risks. Relocation poses the risk of the dissolving of community structures that have formed over long periods of time.

With all the emissions pathways of the Intergovernmental Panel on Climate Change (IPCC) indicating a further global mean temperature increase to at least 1.5 degrees Celsius above preindustrial levels, more severe changes in the Arctic are expected in the coming decades. While mitigation efforts are key for preventing even greater warming, significant adaptation measures will be required to protect traditional livelihoods and support Arctic People's right to remain on their homeland, including their right of self-determination. However, the geopolitical crisis that has unfolded since the Russian invasion of Ukraine is disrupting collaboration in the Arctic region.

The Russian aggression against Ukraine has unprecedented and serious consequences for Arctic Indigenous Peoples. Inuit, Saami, and Aleuts live across the borders between the Nordic countries and Russia, as well as the border between North America and Russia. For Inuit, it took decades to build the connections and relationships to their fellows in Chukotka, Russia; full participation of the Chukotkan Inuit in the Inuit Circumpolar Council was only made possible after the end of the Cold War.¹⁵

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- 7 Timothy M. Lenton et al., "Co-Evolution of Eukaryotes and Ocean Oxygenation in the Neoproterozoic Era," *Nature Geoscience* 7 257–65 (2014): <https://doi.org/10.1038/ngeo2108> (accessed January 30, 2023).
- 8 A. Aschwanden and D. J. Brinkerhoff, "Calibrated Mass Loss Predictions for the Greenland Ice Sheet," *Geophysical Research Letters* 49 (19), October 16, 2022: <https://doi.org/10.1029/2022GL099058> (accessed January 30, 2023).
- 9 German Arctic Office and Saami Council, "Arctic Indigenous Peoples," September 2021: https://www.arctic-office.de/fileadmin/user_upload/www.arctic-office.de/PDF_uploads/Arctic_Indigenous_Peoples_englisch.pdf (accessed January 30, 2023).
- 10 IPCC Working Group II, *Climate Change 2022: Impacts, Adaptation and Vulnerability – Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*: https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf (accessed January 30, 2023).
- 11 Niels Einarsson, "Arctic Human Development Report (AHDR)," *Encyclopedia of Quality of Life and Well-Being Research* (2014), pp. 213–14: https://link.springer.com/referenceworkentry/10.1007/978-94-007-0753-5_104 (accessed January 30, 2023).
- 12 Matthew L. Druckenmiller et al., *Arctic Report Card 2022: Executive Summary*, National Oceanic and Atmospheric Administration: <https://doi.org/10.25923/yjx6-r184> (accessed January 30, 2023).
- 13 Thomas Schneider von Deimling et al., "Consequences of Permafrost Degradation for Arctic Infrastructure – Bridging the Model Gap Between Regional and Engineering Scales," *The Cryosphere* 15 (5), May 31, 2021, pp. 2451–71: <https://doi.org/10.5194/tc-15-2451-2021> (accessed January 30, 2023).
- 14 Michael Meredith, Martin Sommerkorn et al., "Polar Regions," *The Ocean and Cryosphere in a Changing Climate: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge, 2022), pp. 203–320: <https://doi.org/10.1017/9781009157964.005> (accessed January 30, 2023).
- 15 Heather Exner-Pirot, "New Directions for Governance in the Arctic Region," in *Arctic Yearbook* 1. Vol. 1 (2012), pp. 224–46: https://arcticyearbook.com/images/yearbook/2012/Scholarly_Papers/12.Exner_Pirot.pdf (accessed January 30, 2023).

BOX 1: LEGALITY OF RESOURCE EXPLOITATION IN THE ARCTIC

Two thirds of the Arctic region are comprised of the water and sea ice of the Arctic Ocean. Despite its fragile ecosystems and the important role that its sea ice plays in the global climate, the Arctic – unlike the Antarctic – is not governed by a special treaty regime. Instead, it is governed by the general law of the sea as set out in the United Nations Convention on the Law of the Sea (UNCLOS). Therefore, most of the Arctic is legally considered to be widely frozen ocean. The legal situation of the Arctic will not change due to climate change as the UNCLOS regime would also govern an ice-free Arctic Ocean.

In establishing the broad economic rights of coastal states, the law of the sea distinguishes among four different maritime zones: the territorial sea, the contiguous zone, the exclusive economic zone, and the high sea. As detailed below, the exploitation of resources is only legally restricted in the high sea, which has implications for the Arctic:

- As its name already indicates, the **territorial sea** is considered to be part of the territory of

a coastal state. Hence, territorial states enjoy sovereign rights and have jurisdiction over this maritime zone that includes up to 12 nautical miles of coastal waters from the baseline of a coastal state.¹⁶ The territorial sea vertically extends to airspace, seabed, and subsoil. Beyond the territorial sea, states may establish a **contiguous zone** that is comprised of 24 nautical miles from the baseline.¹⁷ The **exclusive economic zone** (EEZ) extends to 200 nautical miles from the baseline of a coastal state. Within these maritime zones, it is the sovereign right of the coastal states to exploit resources from the surface (mainly fish) and subsurface (hydrocarbons, minerals, and other natural resources).¹⁸

- Only a small part of the Arctic is considered as **high sea**, a maritime zone in which no coastal state enjoys sovereign rights. While fishing is still allowed in the high sea, ten parties have entered into the Central Arctic Fisheries Agreement that establishes a moratorium for the time being. Seabed and subsoil may only be used for scientific research and not for resource exploitation.¹⁹ Although those activities are not currently taking place, they fall within the jurisdiction of the International Seabed Authority when they do.

Therefore, the current situation and new freeze of Arctic cross-border cooperation is impacting Arctic Indigenous Peoples and several Permanent Participants of the Arctic Council directly. The Arctic Council itself (see Box 3: The Arctic Council) was co-established by three of the Arctic Indigenous Peoples' organizations that later became Permanent Participants while three more obtained this status after the council was established. With its unique structure, the Arctic Council has become an international example for other Indigenous Peoples around the world to follow as best practice in their own engagement with nation states and international institutions.

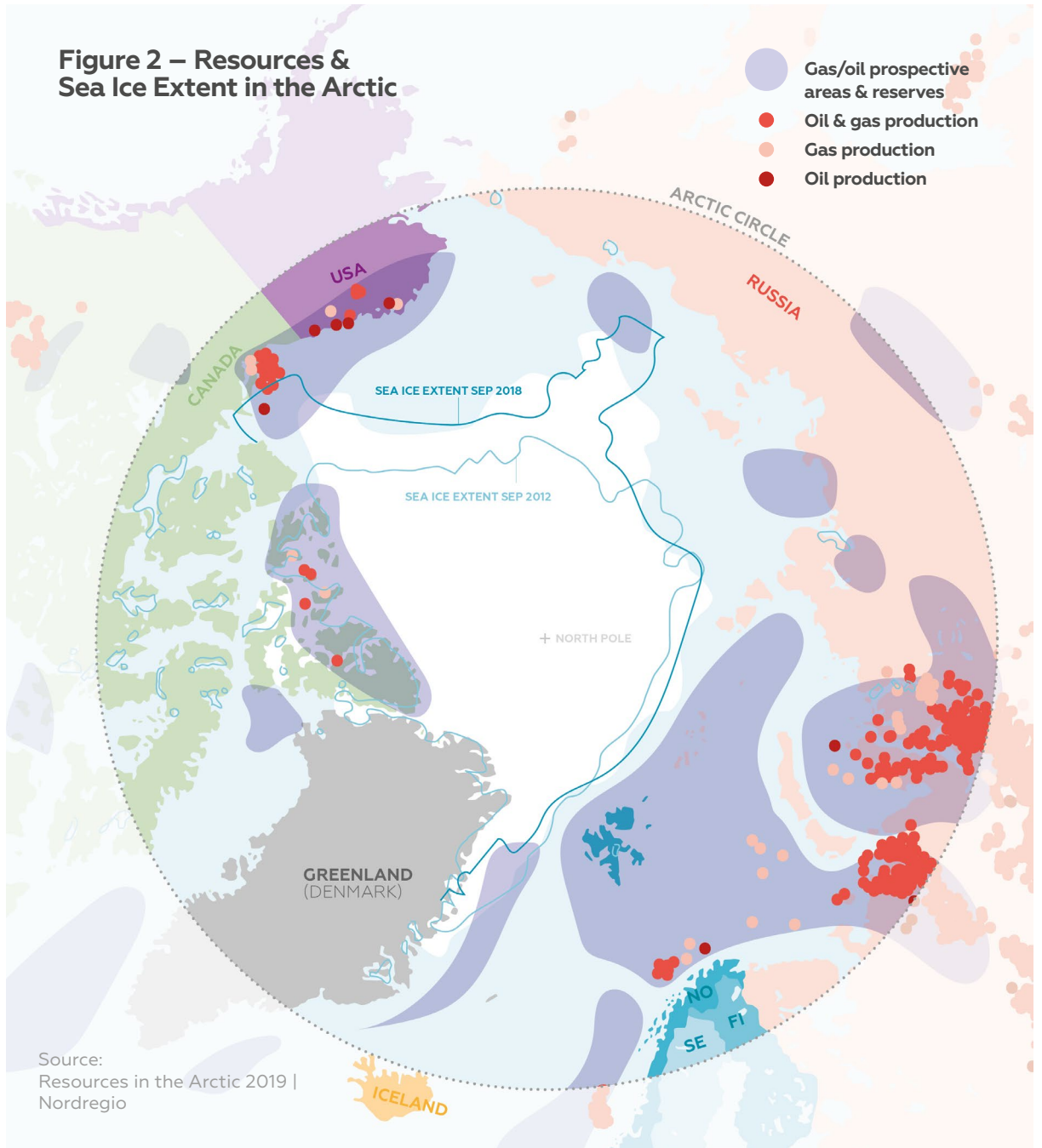
Although they participate in many of the same international and regional forums as the Arctic states, Arctic Indigenous Peoples are diverse and have built very different governance structures in each of their respective homelands. Furthermore, numerous self-governance arrangements have emerged as the Arctic has been democratized. What many Arctic Indigenous Peoples have in common is they have been colonized by powers to their south, such as the Russian Empire, France, Sweden, Finland, Norway, Denmark, and England. Thus, they share having fought for the implementation of their right to self-determination and participation in decision-making.

16 United Nations General Assembly, Article 3, *Convention on the Law of the Sea* (1982), p. 27: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed January 30, 2023).

17 United Nations General Assembly, Article 33, *Convention on the Law of the Sea* (1982), p. 35: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed January 30, 2023).

18 United Nations General Assembly, Articles 55–58, *Convention on the Law of the Sea* (1982), pp. 43–44: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed January 30, 2023).

19 United Nations General Assembly, Part XI: The Area, *Convention on the Law of the Sea* (1982), pp. 69–100: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed January 30, 2023).



Often, a Westphalian view on sovereignty and governance has been dominant.²⁰ Peoples such as the Inuit have, from the beginning of the establishment of their international organizations, expressed their views on sovereignty and the militarization of the Arctic; they have strongly and continuously pushed

for a peaceful use of the region. At the Inuit Circumpolar Council's founding meetings in 1977, a resolution concerning peaceful and safe uses of the Arctic circumpolar zone called for both a moratorium on the emplacement of nuclear weapons in the Arctic and for the Arctic not to become the scene or

20 Inuuteq Holm Olsen and Jessica M. Shadian, "Greenland and the Arctic Council: Subnational Regions in a Time of Arctic Westphalianisation 1" in *Greenland and the International Politics of a Changing Arctic: Postcolonial Paradiplomacy Between High and Low Politics* Vol. 1, edited by Kristian S. Kristensen and Jon Rahbek-Clemmensen (Routledge, 2017), pp. 229–50: <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315162645-10/greenland-arctic-council-inuuteq-holm-olsen-jessica-shadian> (accessed January 30, 2023).

object of human conflict or discord.²¹ Later Inuit Circumpolar Council policies have included references to and further wording on the demand of Inuit for their homeland to be used for peaceful purposes only. These include the Inuit Sovereignty Declaration of 2009,²² the Inuit Arctic Policy of 2010,²³ and, most recently, the Inuit Circumpolar Council General Assembly Declaration of 2022 that reiterates Inuit strength and peace.²⁴

Great powers and Arctic nation states hold a big responsibility to include Arctic Indigenous Peoples in Arctic governance, and to maintain and build the diplomatic solutions to shared challenges. Given that Arctic governance has been affected by and developed parallel to global Indigenous social and political movements for the recognition of Indigenous representation,²⁵ it will be difficult for states to ensure legitimate decision-making if they do not include Arctic Indigenous Peoples in related processes – also in times of great geopolitical crises.

ECONOMIC PRESSURES AND COMMERCIAL ACTIVITIES IN A CHANGING ARCTIC

From a geoeconomical perspective, the observed and projected reduction in sea ice has fueled particular interest in more efficient shipping routes and new potential for resource extraction in the Arctic.

Below, we expand upon the implications that three areas have for commercial activities.

Resource Extraction

The Arctic is thought to have vast fossil energy reserves. In 2008, the United States Geological Survey (USGS) estimated that the equivalent of up to 412 billion barrels of oil remained largely undiscovered (Figure 2).²⁶ It said that these resources are distributed throughout the region, predominantly offshore.²⁷ While the USGS report has been widely cited, some sources have taken a different view. These sources do not see the same extent of hydrocarbon (fossil fuel) resources, suggesting that there are considerably less of them than previously thought.²⁸

The questioning of the 2008 figures has already had an impact. Greenland, for example, banned further offshore activity in 2021. However, other actors, such as Russia, remain interested in dominating Arctic oil and gas. Russia's strategic vision for 2035 sees the region as integral to its state power. In 2020, Arctic zones accounted for 10 percent of its national GDP,²⁹ 80 percent of gas production, and 17 percent of oil output.³⁰ To reinforce its presence, Russia developed numerous multibillion-dollar oil and gas production and shipping projects along its Arctic coast. This capacity was codeveloped by pairing local expertise with international finance and technology for projects originally intended to service European markets.

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- 21 Resolution 77-11, *Final Report – First Inuit Circumpolar Conference* (1977): <http://ebenhopson.com/586-2/> (accessed January 27, 2023).
- 22 Inuit Circumpolar Council, "A Circumpolar Inuit Declaration on Sovereignty in the Arctic," April 2009: <https://iccalaska.org/wp-icc/wp-content/uploads/2016/01/Signed-Inuit-Sovereignty-Declaration-11x17.pdf> (accessed January 27, 2023).
- 23 Inuit Circumpolar Council, *Inuit Arctic Policy*, 3rd ed. (2009): <https://www.inuitcircumpolar.com/project/inuit-arctic-policy/> (accessed January 30, 2023).
- 24 Inuit Circumpolar Council, *2022 Inuit Circumpolar Council Declaration*: <https://iccalaska.org/wp-icc/wp-content/uploads/2022/07/2022ICC-DECLARATION-1.pdf> (accessed January 27, 2023).
- 25 Wilfrid Greaves, "Indigenous Peoples" in *Routledge Handbook of Arctic Security* Vol. 1, edited by Gunhild Hoogensen Gjørsv et al., 1st ed. (London, New York, 2022), pp. 363–77: <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315265797-30/indigenous-peoples-wilfrid-greaves> (accessed January 30, 2023).
- 26 The report speculated that roughly one quarter of this was expected to be oil, with the remainder being natural gas or natural gas liquids. See: Kenneth J. Bird et al., "Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle," United States Geological Survey, 2008: <https://pubs.usgs.gov/fs/2008/3049/fs2008-3049.pdf> (accessed January 30, 2023).
- 27 The USGS report speculated that up to 84 percent of these resources are expected to be offshore.
- 28 Other reports illustrate that subregions, for example near Greenland, have considerably less recoverable reserves than previously thought. See: Corine Wood-Donnelly and Marianne Pascale Bartels, "Science Diplomacy in the Arctic: Contributions of the USGS to Policy Discourse and Impact on Governance," *Polar Record* 58, June 9, 2022: <https://doi.org/10.1017/S0032247422000134> and K. Berglar et al., "Project PANORAMA: Petroleum Potential of the Northern Barents Sea and the Northeast Greenland Margin Including Aspects of Oil Spill Related Environmental Risks of Petroleum Production in the Arctic," Germany's Federal Institute for Geosciences and Natural Resources (BGR), June 2022: https://www.bgr.bund.de/DE/Themen/MarineRohstoffforschung/Meeresforschung/Downloads/Panorama_Final_Report.pdf?__blob=publicationFile&v=1 (both accessed January 30, 2023).
- 29 Evgeny Gontmakher, "Russia's Arctic Economy Is Heading for Decline," *Geopolitical Intelligence Services AG*, October 21, 2022: <https://www.gisreports.com/r/russia-arctic-economy/> (accessed January 30, 2023).
- 30 Nazrin Mehdiyeva, "Strategy of Development of the Arctic Zone of the Russian Federation and the Provision of National Security for the Period to 2035," NATO Defense College, June 25, 2021: <https://www.ndc.nato.int/research/research.php?icode=703> (accessed January 30, 2023).

BOX 2: RISKS OF HYDROCARBON EXPLOITATION IN THE ARCTIC

The prospect of reduced oil and gas exploration in the Arctic could help local environmental regeneration and the global emissions balance. The Arctic's pristine ecosystem is one of the world's most fragile biomes. Short reproductive cycles make it hard for populations to rebound, and the cold temperatures can even preserve the harm caused.³¹ Oil, for example, breaks down at significantly slower rates in cold temperatures than in moderate ones.

The remote location and extreme conditions also make spill management challenging – especially for offshore activity. Any large-scale containment effort would struggle to respond quickly and face the impossibly complex task of removing oil mixed with thick ice while battling subzero temperatures, high wind speeds, large waves, and limited daylight. A report from the Nuka Research and Planning Group found that these conditions severely limited the effectiveness of conventional spill responses.³² The report showed that four of the five tactics assessed were unfavorable between 80 and 99 percent of the time in the winter (November to June), while the fifth response was only favorable 15 percent of the time in the same period.

The flaring of associated gas from production is also an issue. Aside from the increase in emissions, flaring also produces a significant volume of black carbon. Up to 42 percent of black carbon in the Arctic has been linked to this practice.³³ On its own, black carbon is a major air pollutant that causes various health issues. However, it is even more problematic in the Arctic because, when the particulates settle on snow or ice, they make these surfaces melt faster.³⁴

The future emissions resulting from burning Arctic oil and gas that are still contained in the soil would be exceptionally incompatible with the climate goals of the Paris Agreement. Reclaim Finance calculated that, if proven Arctic oil and gas reserves were exploited and burned for energy purposes, they would account for 22 percent of the global carbon budget by 2050 (Figure 3).³⁵ A study from the UCL Institute for Sustainable Resources that assessed future oil production based on carbon intensity metrics projected that, in a well below 2°C scenario, most Arctic oil remained undeveloped – also given the availability of other, more accessible oil sources.³⁶ In an article published by Nature, Christophe McGlade and Paul Ekins concluded that Arctic oil was essentially unburnable even in 2°C scenarios.³⁷

- 31 The Wilderness Society, "Arctic Animals at Risk: Which Animals Are Most Threatened by Oil Development?": <https://www.wilderness.org/articles/article/arctic-animals-risk-which-animals-are-most-threatened-oil-development> (accessed February 1, 2023).
- 32 Nuka Research and Planning Group, LLC, "Estimating an Oil Spill Response Gap for the US Arctic Ocean (Revised)," June 10, 2016: <https://www.bsee.gov/sites/bsee.gov/files/osrr-oil-spill-response-research/estimating-an-oil-spill-response-gap-for-the-us-arctic-ocean-revised.pdf> (accessed February 1, 2023).
- 33 Ekaterina Borshchevskaia et al., "Pollution in the Arctic: Oil and Gas Extraction on the Continental Shelf as a Major Contributor," June 28, 2022: <https://www.thearcticinstitute.org/pollution-arctic-oil-gas-extraction-continental-shelf-major-contributor/> (accessed February 1, 2023).
- 34 Arctic Council, "Black Carbon and Methane": <https://www.arctic-council.org/about/task-expert/egbcm/> (accessed February 1, 2023).
- 35 Reclaim Finance, "Protecting the Arctic from Oil and Gas Expansion," September 2021: <https://reclaimfinance.org/site/en/protect-the-arctic/> (accessed February 1, 2023).
- 36 Omran Al-Kuwari et al., "Carbon Intensity of Oil and Gas Production," June 2021: https://www.researchgate.net/publication/352669802_Carbon_intensity_of_oil_and_gas_production (accessed February 1, 2023).
- 37 Christophe McGlade and Paul Ekins, "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2°C," *Nature* 517 (2015), pp. 187–90: <https://doi.org/10.1038/nature14016> (accessed February 1, 2023).

Following Russia's invasion of Ukraine, however, commercial cooperation with the West has collapsed. International companies have either withdrawn or had their shares in major assets expropriated.³⁸ While some companies are working to retain their stake, big players like Exxon and Shell have completely pulled out due to social backlash or the obligations to comply with sanctions. The newest sanctions constrain Russia's ability to explore for, produce, transport, and sell Arctic oil or gas. Financial restrictions have already resulted in numerous projects being eliminated. However, blocked access to technology essential for gas liquefaction could remain the most significant immediate curb to resource development.³⁹

Gas projects in the Russian Arctic are remote and not connected to pipelines. If they are, those pipes generally lead to Europe. Hence, liquefaction is all but essential to bring gas from new projects to markets or to reroute existing gas away from European demand centers. The issue of physically moving gas is currently a major obstacle facing Russia. Once tapped, gas formations generally need to keep producing. Any deliberate interruption to this flow has the potential to severely damage long-term outputs. In an attempt to deal with this, Russia has reportedly flared significant volumes of this gas, for example near the Finnish border (see Box 2: Risks of Hydrocarbon Exploitation in the Arctic, for further information on the environmental risks of flaring).⁴⁰ However, market analysis shows that flaring at other key facilities has experienced significant reductions since the 2022 invasion.⁴¹ While oil does not face this issue, price caps and import bans from major oil consumers limit potential buyers, which forces discounted sales and makes it harder for Russia to sell the same volumes.

In addition, concerns over the accelerating climate crisis have caused many governments to deemphasize hydrocarbon extraction, including in the Arctic, in favor of renewable energy. Estimates reveal that resources in the Arctic would use up 22 percent of the remaining budget to stay within the 1.5 degree warming limit (Figure 3). The EU, for example, is – according to its latest Arctic Policy of 2021 – committed to keeping Arctic oil and natural gas in the ground. That, as well as the continued high expense of extraction in the region, has limited energy development in many parts of the Arctic.

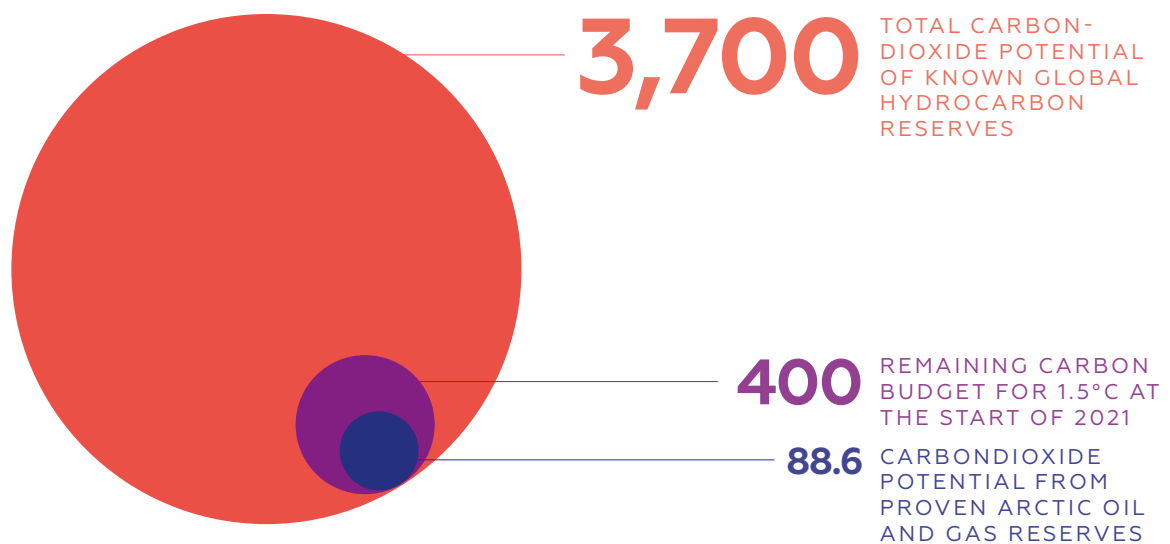
Sanctions are not globally enforced, and Russia has found more business with other actors. For example, in May 2022, Chinese imports of Russian oil were 55 percent higher than the year before – meaning that Russia was providing more oil to China than China received from Saudi Arabia.⁴² Activity like this is a driver of Russia's continued advance of its energy developments in the Arctic. In the summer of 2022, Russia announced a large oil discovery⁴³ and that it would begin constructing a terminal at the Bukhta Sever port that is intended to become Russia's largest oil terminal by 2030.⁴⁴ Nevertheless, analysts believe that this will not be enough to prevent Russia's Arctic energy assets from entering a long-term decline.⁴⁵

Transport and Shipping Routes

Taking account of the changing ice conditions caused by climate change, Russia has been developing its capacity to regulate and support the Northern Sea Route along its Arctic coast for decades. This route connects the Atlantic and Pacific Oceans through the Russian Arctic. It is ice-free during the summer, and any ship using the Northern Sea Route can save up to 40 percent of the time and fuel needed to pass to Europe from Asia through the Su-

- 38 In the summer and fall of 2022, the Russian government seized control over the Sakhalin-1 and -2 projects. See: Sabrina Valle, "Putin Orders Seizure of Exxon-Led Sakhalin 1 Oil and Gas Project," Reuters, October 7, 2022: <https://www.reuters.com/world/europe/russias-putin-signs-decree-setting-up-new-operator-sakhalin-1-tass-2022-10-07/> (accessed January 30, 2023).
- 39 Reuters, "Russia's LNG Plans Face Rethink After EU Sanctions on Equipment – Analysts," April 12, 2022: <https://www.reuters.com/business/energy/russias-lng-plans-face-rethink-after-eu-sanctions-equipment-analysts-2022-04-12/> (accessed January 30, 2023).
- 40 Matt McGrath, "Climate Change: Russia Burns Off Gas as Europe's Energy Bills Rocket," BBC News, August 26, 2022: <https://www.bbc.com/news/science-environment-62652133> (accessed February 1, 2023).
- 41 Bloomberg News, "Russia Is Keeping Unsold Gas Underground Rather Than Flaring It," September 28, 2022: <https://www.bloomberg.com/news/articles/2022-09-28/russia-is-keeping-unsold-gas-underground-rather-than-flaring-it> (accessed February 1, 2023).
- 42 Chen Aizhu, "China May Oil Imports from Russia Soar to a Record, Surpass Top Supplier Saudi," Reuters, June 20, 2022: <https://www.reuters.com/markets/commodities/chinas-may-oil-imports-russia-soar-55-record-surpass-saudi-supply-2022-06-20/> (accessed February 1, 2023).
- 43 Julianne Geiger, "Russia Announces 82-Million-Ton Arctic Oil Discovery," OilPrice.com, July 4, 2022: <https://oilprice.com/Energy-General/Russia-Announces-82-Million-Ton-Arctic-Oil-Discovery.html> (accessed February 1, 2023).
- 44 Enerdata, "Russia's Rosneft Starts Building a 30 Mt/year Arctic Oil Terminal," July 27, 2022: <https://www.enerdata.net/publications/daily-energy-news/russias-rosneft-starts-building-30-mtyear-arctic-oil-terminal.html> (accessed February 1, 2023).
- 45 Bloomberg News, "Russia Is Keeping Unsold Gas Underground" (see Note 41).

Figure 3 – Unburnable Arctic Carbon
Value in Gigatons of CO₂ (GtCO₂)



A comparison of the total carbon potential of known reserves (red), estimated potential in the Arctic (blue), and remaining carbon budget to stay within the 1.5°C temperature limit. Estimated resources in the Arctic would use up 22 percent of the remaining budget. | Source: Carbon Tracker, "Unburnable Carbon: Ten Years On," June 2022: <https://carbontracker.org/reports/unburnable-carbon-ten-years-on/>; Mercator Research Institute on Global Commons and Climate Change, MCC Carbon Clock, January 2023: <https://www.mcc-berlin.net/en/research/co2-budget.html>; Reclaim Finance, "Drill, Baby, Drill," September 2021: https://reclaimfinance.org/site/wp-content/uploads/2021/09/Drill_Baby_Drill_RF_Arctic_Report_23_09_2021.pdf

ez Canal.⁴⁶ The Russian government requires vessels taking this route to be accompanied by a Russian icebreaker and to pay a fee for its service⁴⁷ (aspects of Russia's Northern Sea Route regulations have been contested by the United States and others as inconsistent with the law of the sea). In 2021, this valuable economic corridor had considerable traffic, including 60 international transits⁴⁸ flowing between East Asia and Europe. While this figure is marginal compared to the Suez or Panama Canals, it is notably higher than the three commercial uses recorded in 2008.⁴⁹ Yet, 2022 data from the Russian Northern Sea

Route Administration shows that, for the first time in a decade, there has not been a single international transit as companies have avoided business with Russia.⁵⁰ Even state-owned enterprises from China, which accounted for nearly half of the international traffic in 2021, did not utilize this route in 2022. Considering this, Russia has made a strategic pivot away from the Atlantic in favor of the Pacific. Its new maritime doctrine considers Arctic resource extraction and safe transit through the eastern end of this sea lane as a vital interest.⁵¹ The new Northern Sea Route Development Plan supports this by channeling 1.8 trillion

46 Barentsinfo.org, "The Northern Sea Route": <https://www.barentsinfo.org/barents-region/Transport/Northern-Sea-Route> (accessed February 1, 2023).

47 Russia's Federal Service for Tariffs, "Order About the Approval of Rules of the Application of Tariffs for the Icebreaker Escorting of Ships in the Water Area of the Northern Sea Route," April 16, 2014: http://www.nsr.ru/files/fileslist/20140428133914en-Tariff_rules%2046t2.pdf (accessed February 1, 2023).

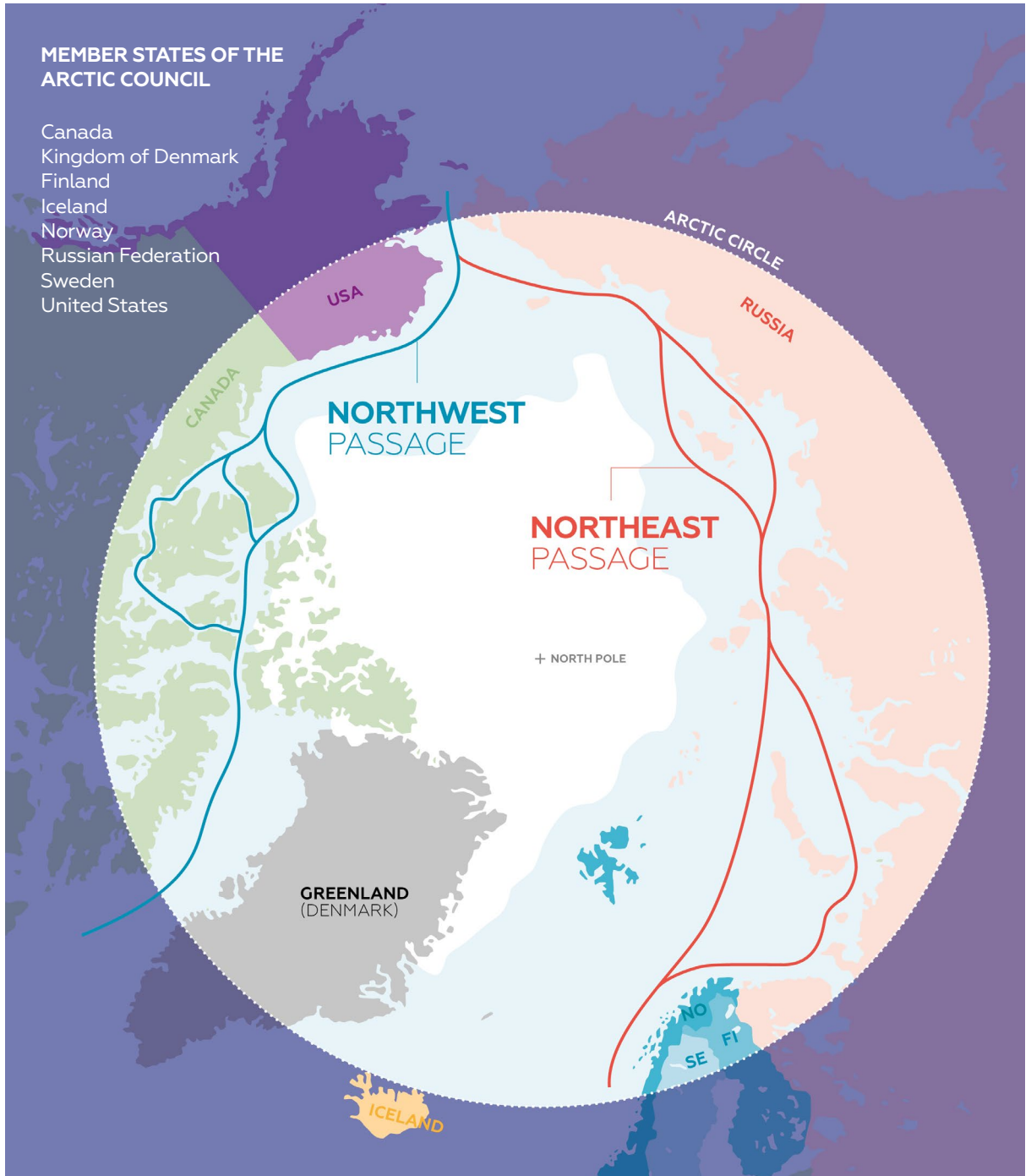
48 Northern Sea Route Information Office, "Transit Voyages on the NSR in 2021. The Results as of the Current Date.," October 15, 2021: <https://arctic-lio.com/transit-voyages-on-the-nsr-in-2021-the-results-as-of-the-current-date/> (accessed February 1, 2023).

49 Frédéric Lasserre, "Arctic Seaways in the Age of Climate Change," *Georgetown Journal of International Affairs*, April 18, 2022: <https://jia.georgetown.edu/2022/04/18/arctic-seaways-in-the-age-of-climate-change/> (accessed February 1, 2023).

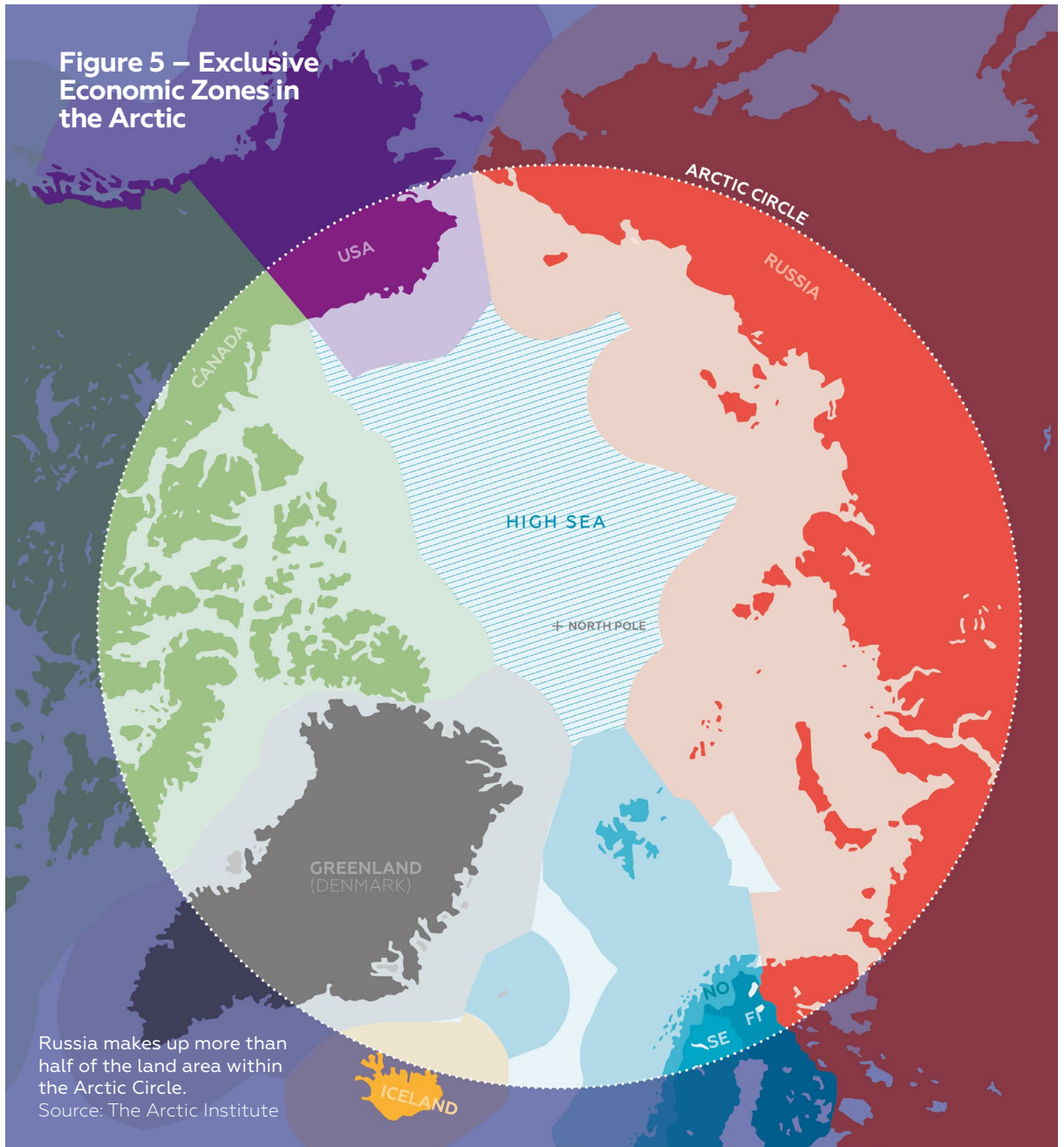
50 Malte Humpert, "International Shipping on Northern Sea Route Collapses as Foreign Companies Stay Away," *High North News*, September 12, 2022: <https://www.highnorthnews.com/en/international-shipping-northern-sea-route-collapses-foreign-companies-stay-away> (accessed February 1, 2023).

51 Captain Sarabjeet S Parmar et al., "Maritime Doctrine of the Russian Federation 2022: An Analysis," National Maritime Foundation, August 17, 2022: <https://maritimeindia.org/maritime-doctrine-of-the-russian-federation-2022-an-analysis-maritime-doctrine-of-the-russian-federation-2022-an-analysis/> (accessed February 1, 2023).

Figure 4 – Arctic Shipping Routes



Retreating sea ice makes new, more efficient transit routes feasible. The Northern Sea Route can reduce travel time, fuel consumption, and CO2 emissions of vessels by up to 50 percent compared to the Suez Canal. | Source: AWI, Factsheet: Shipping in the Arctic.



rubles into making this route an “energy superhighway.”⁵² Investments focus on new liquefied natural gas terminals and highlight funding for new ports, mining terminals, and more icebreaking vessels. Further, the Russian Duma has passed a law aimed at limiting the ability of military vessels to move through the Northern Sea Route without clearance.⁵³

Despite the intention, infrastructure investment faces severe risks – notably, the thawing of permafrost. An emerging body of literature is beginning to show that rapid thawing can cause extraordinarily complex challenges. Earlier studies projected that permafrost thaw would be one of the most significant risks to public infrastructure throughout Alaska, causing

52 Russia Briefing, “Russia Issues Northern Sea Route Development Plan to 2035,” August 8, 2022: <https://www.russia-briefing.com/news/russia-issues-northern-sea-route-development-plan-to-2035.html/> (accessed February 1, 2023).

53 Thomas Nilsen, “Russian Parliament Passes Law Limiting Freedom of Navigation Along Northern Sea Route,” *The Barents Observer*, December 1, 2022: <https://thebarentsobserver.com/en/arctic/2022/12/russian-parliament-passes-law-banning-freedom-navigation-along-northern-sea-route> (accessed February 1, 2023).

billions of dollars in damage by the end of the twenty-first century. A more recent study from the Monterey Bay Aquarium Research Institute (2022) found that ice-filled hills or sinkholes the size of large city blocks can emerge along the seafloor.⁵⁴ Developments like this are hard to address, especially retroactively. Infrastructure in the region generally requires strong consideration of long-term permafrost dynamics. However, if science continues to show that permafrost is thawing faster than previously expected, the integrity of old assumptions underpinning built infrastructure becomes an increasingly larger risk to continued commercial activity.

Fisheries

Fisheries constitute an area where commercial and governmental collaboration in the Arctic has been possible. That collaboration includes the multilateral Agreement to Prevent Unregulated High Sea Fisheries in the Arctic Ocean of 2018.⁵⁵ This agreement, which entered into force in 2021, was signed, inter alia, by Canada, China, the Kingdom of Denmark, Japan, the EU, Norway, Russia, and the United States.⁵⁶ In November 2022, the parties to the agreement held their first Conference of the Parties, a meeting that brought Russian officials together with ones from countries opposed to Russian actions in Ukraine.

Russia's February 2022 invasion of Ukraine has limited some bilateral aspects of cooperation on fishing. Canada,⁵⁷ the EU, Iceland,⁵⁸ and the United States⁵⁹ quickly barred Russian fishing vessels from entering their ports. The Faroe Islands and Norway are two notable exceptions; despite barring Russian vessels port entry, they have retained entry rights for fishing

vessels to keep bilateral management of fish stocks open.⁶⁰ The Faroe Islands are also in the process of renegotiating a bilateral fishing agreement and aim to keep this process outside of geopolitical issues. There are, however, limits to this, as perceivable escalations warrant elevated precautions. For example, after the Nord Stream pipelines were destroyed by explosion, Western nations generally feared a threat to the physical security of European energy infrastructure. In response, Norway closed all but three of its ports to Russian fishing vessels and implemented rigorous security searches for any docking vessel. All the while, they began coordinating with the British, French, and German armed forces to protect their offshore energy infrastructure in the North Sea.⁶¹

Reluctance to fully disrupt cooperation on fish stocks can be justified as Arctic fisheries require active management and are vulnerable to progressing anthropogenic disturbance. Many species have been overexploited for decades, and research from the Institute of Marine Research has shown that environmental changes are causing reproduction rates to decline in multiple species.⁶² Moreover, fish do not adhere to man-made delineations, such as borders or EEZs, and many migratory paths go across multiple national jurisdictions (see Figure 5 on exclusive economic zones). Noncooperation in managing stocks could cause problems, especially if fishing quotas are not respected. One country's vessels could exceed their allowable catch or begin fishing illegally in neighboring jurisdictions. Collaboration here still seems possible, as both Norway and Russia announced a direly needed 20-percent reduction in total allowable catches of cod in the Barents Sea for 2023.⁶³

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- 54 Monterey Bay Aquarium Research Institute, "Rapid Changes to the Arctic Seafloor Noted as Submerged Permafrost Thaws: Using MBARI Mapping Technology, Researchers Have Established a Baseline for Tracking Future Changes to the Seafloor," *Science Daily*, March 14, 2022: <https://www.sciencedaily.com/releases/2022/03/220314154407.htm> (accessed February 1, 2023).
- 55 Directorate-General for Maritime Affairs and Fisheries, "Agreement to Prevent Unregulated High Sea Fisheries in the Central Arctic Ocean," October 3, 2018: <https://www.mofa.go.jp/files/000449233.pdf> (accessed February 1, 2023).
- 56 Arctic Council, "Arctic Council Strategic Plan 2021 to 2030," May 20, 2021: https://oaarchive.arctic-council.org/bitstream/handle/11374/2601/MMIS12_2021_REYKJAVIK_Strategic-Plan_2021-2030.pdf?sequence=1&isAllowed=9 (accessed February 1, 2023).
- 57 Naida Hakirevic Prevljak, "Canada Prohibits Russian Ships from Entering Its Ports, Waters," *Offshore Energy*, March 3, 2022: <https://www.offshore-energy.biz/canada-prohibits-russian-ships-from-entering-its-ports-waters/> (accessed February 1, 2023).
- 58 Trine Jonassen, "Iceland Blocks Russian Trawlers," *High North News*, March 11, 2022: <https://www.highnorthnews.com/en/iceland-blocks-russian-trawlers> (accessed February 1, 2023).
- 59 Jeffrey Orenstein and Luke M. Reid, "United States Bans Russian-Affiliated Vessels from US Ports," *K&L Gates*, April 27, 2022: <https://www.klgates.com/United-States-Bans-Russian-Affiliated-Vessels-From-US-Ports-4-27-2022> (accessed February 1, 2023).
- 60 Hilde-Gunn Bye, "Faroe Island's Fishery Cooperation with Russia up for Discussion," *High North News*, October 12, 2022: <https://www.highnorthnews.com/en/faroe-islands-fishery-cooperation-russia-discussion> (accessed February 1, 2023).
- 61 The editorial team, "Norway Deploys Navy to Protect Oil and Gas Platforms," *SAFETY4SEA*, October 3, 2022: <https://safety4sea.com/norway-deploys-navy-to-protect-oil-and-gas-platforms/> (accessed February 1, 2023).
- 62 Runar Bjørkvik Mæland, "Polar Cod in Climate Crisis," Institute of Marine Research, January 15, 2020: <https://www.hi.no/en/hi/news/2020/january/polar-cod-in-jeopardy> (accessed February 1, 2023).
- 63 Editor, "Barents Sea Cod Fishery Faces 20 Percent Reduction in Quota for 2023," *The Fishing Daily*, September 7, 2022: <https://thefishingdaily.com/featured-news/barents-sea-cod-fishery-faces-20-percent-reduction-in-quota-for-2023/> (accessed February 1, 2023).

INTERNATIONAL GOVERNANCE OF ARCTIC REGIONS

The combination of rising geoeconomic interest with the fast pace of environmental change due to amplified warming and its direct effects on the local population calls for effective scientific and diplomatic collaboration in the Arctic that involves both Arctic and non-Arctic states.

The Arctic has long been considered a model region for peaceful and constructive cooperation with scientific collaboration playing a central role. The success story of the Arctic Council (see Box 3) is, to a large extent, built on scientific cooperation – recognizing that policy-making must be based on scientific knowledge. Such long-lasting, productive collaboration, which took place through the Arctic Council and other entities and despite serious geopolitical tensions, helped to coin the term “Arctic Exceptionalism.”

The scientific assessments conducted by the Working Groups of the Arctic Council are very successful instruments for formulating policy recommendations for its member states. These assessments provide the basis for a multitude of measures to protect the Arctic environment, support the well-being of Arctic inhabitants, and facilitate the sustainable development of the region.⁶⁴ Although military security is outside the mandate of the Arctic Council, it serves as an important network for bilateral and multilateral discussions on key regional topics. Recognizing the need to strengthen scientific cooperation in the Arctic, the Arctic Council initiated and facilitated a legally binding Agreement on Enhancing International Arctic Scientific Cooperation among the Arctic States in 2017.⁶⁵

Another process to strengthen international scientific cooperation was initiated by the United States in 2016, when it invited the science ministers from all countries engaged in Arctic research as well as representatives from Arctic Indigenous Peoples’ organizations to the initial White House Arctic Sci-

BOX 3: THE ARCTIC COUNCIL

The Arctic Council is a high-level intergovernmental forum to promote cooperation in the Arctic with a clear mandate on environmental protection and sustainable development. Security aspects are explicitly excluded. The Arctic Council consists of the eight Arctic Nations – Canada, the Kingdom of Denmark, Finland, Iceland, Norway, Russia, Sweden, the United States – and six Indigenous Peoples’ organizations as Permanent Participants. The council grants observer status to non-Arctic states and various organizations and governmental institutions. Its scientific work is organized around six working groups, focusing mainly on environmental protection initiatives. Established in 1996, the Arctic Council has played a leading role in moderating geopolitical tensions through scientific collaboration and diplomatic efforts. Since Russia invaded Ukraine in February 2022, the seven member states not including Russia announced that they would pause their participation in the work of the Arctic Council. In July 2022, they announced a limited resumption of activities not involving the Russian Federation.

ence Ministerial Meeting (ASM).⁶⁶ Following this first ASM, the European Union, Germany, and Finland organized the second meeting in Berlin in 2018.⁶⁷ Iceland and Japan hosted the third meeting in Tokyo in 2021.⁶⁸ The plans for a fourth ASM to be jointly organized by France and the Russian Federation are currently on hold as a consequence of Russia’s war.

That the Arctic Council has long been an effective platform for negotiations is arguably due to three factors: its limited and clearly defined agenda (sustainable development and environmental protection but explicitly not military security issues); its focus on technical, expert-focused work rather than

64 David P. Stone, *The Changing Arctic Environment: The Arctic Messenger* (Cambridge University Press, 2015): <https://www.cambridge.org/core/books/changing-arctic-environment/8F24B5C9EA7ECB0FBED0BBBB55F06A60> (accessed February 1, 2023).

65 Arctic Council, Agreement on Enhancing International Arctic Scientific Cooperation, May 11, 2017: <https://oaarchive.arctic-council.org/handle/11374/1916> (accessed February 1, 2023).

66 Unspecified, “Supporting Arctic Science: A Summary of the White House Arctic Science Ministerial Meeting,” *Arctic Portal Library*, September 28, 2016: <http://library.arcticportal.org/1944/> (accessed February 1, 2023).

67 Report of the 2nd Arctic Science Ministerial, “Co-Operation in Arctic Science – Challenges and Joint Actions,” October 2018: https://asm3.org/library/Files/190402_ASM2_Bericht_V2_bf.pdf (accessed February 1, 2023).

68 3rd Arctic Science Ministerial Report, “Knowledge for a Sustainable Arctic,” May 2021: https://asm3.org/library/Files/ASM3_Final_Report.pdf (accessed February 1, 2023).

on negotiating binding regulations; and its consensus-based decision-making rule. Indeed, in challenging circumstances in which bilateral efforts to engage Russia on environmental issues proved difficult, approaching them through the multilateral mechanism of the Arctic Council was often effective. For diplomats working within it, collaborating with their Russian counterparts was more cordial and less problematic than in many other fora.

Due to the February 2022 invasion of Ukraine by Russia, however, the seven member states other than Russia – Canada, Finland, Iceland, the Kingdom of Denmark, Norway, Sweden, and the United States – announced that they were pausing their participation in the Arctic Council's work, including that of its subsidiary bodies until further notice.⁶⁹ Those states subsequently agreed among themselves to recommence cooperation on activities not involving Russia. Unlike other international institutions like the United Nations Framework Convention on Climate Change (UNFCCC) that are founded on the basis of legally binding international agreements, the Arctic Council is solely based on the Ottawa Declaration – a non-legally binding instrument rather than a binding treaty. Consequently, cooperation in the Arctic Council is mainly based on political will instead of strict legal obligations. This is why, when those members ceased their cooperation with Russia in the Arctic Council as a consequence of the invasion of Ukraine, their participation with Russia in UNFCCC formats such as the COP still proceeded. It remains unclear whether and how the Arctic Council can continue to function without Russia, which would mean ignoring the council's current rules of procedure. It is, for example, uncertain how the chairmanship can pass from Russia to Norway as was planned for early 2023.

DISRUPTED SCIENCE DIPLOMACY

The international scientific organizations of the North have also condemned the unprovoked Russian invasion of Ukraine. For example, the International Arctic Science Committee (IASC), which is the leading international science organization for the Arctic, stated that it cannot proceed as normal and is currently evaluating the situation and the implications for its future work.⁷⁰ The University of the Arctic (UArctic), a network of universities, colleges, research institutes, and other organizations concerned with education and research in and about the North, decided that collaboration between UArctic and Russian institutions is paused.⁷¹ The European Commission suspended the cooperation with Russian entities in research, science, and innovation,⁷² and many countries have taken similar measures regarding the bilateral cooperation with Russian institutions. The German Federal Ministry of Education and Research, for example, announced that all current and planned activities with Russia are frozen and subject to critical review.⁷³

LEGAL PERSPECTIVES ON ENVIRONMENTAL PROTECTION IN THE ARCTIC

Despite being broadly entitled to resource exploitation as mentioned above, states are still obliged to protect and preserve the marine environment. Thus, according to UNCLOS, states shall take necessary measures to prevent, reduce, and control pollution of the marine environment.⁷⁴ Additionally, the Arctic coastal states are entitled to set up stricter regulations to further protect the marine environment against pollution resulting from shipping. This so-called Arctic Exception in Article 234 of UNCLOS applies equally to all ice-covered waters and permits coastal states to adopt and enforce non-discriminatory laws for vessels passing through ice-covered

69 Office of the Spokesperson, "Joint Statement on Arctic Council Cooperation Following Russia's Invasion of Ukraine," US Department of State, March 3, 2022: <https://www.state.gov/joint-statement-on-arctic-council-cooperation-following-russias-invasion-of-ukraine/>; Michael Paul, "Arctic Repercussions of Russia's Invasion," SWP Comment 2022/C 39: <https://www.swp-berlin.org/publikation/arctic-repercussions-of-russias-invasion; Arctic Council: https://www.arctic-council.org/> (all accessed February 1, 2023)

70 International Arctic Science Committee (IASC), "IASC Statement on Ukraine," March 7, 2022: <https://iasc.info/news/iasc-news/957-iasc-statement-on-ukraine> (accessed February 1, 2023).

71 UArctic Actions on Ukraine, "UArctic Statement by the Board of UArctic," April 4, 2022: <https://www.uarctic.org/news/2022/4/uarctic-actions-on-ukraine/> (accessed February 1, 2023).

72 European Commission, "Commission Suspends Cooperation with Russia on Research and Innovation," March 4, 2022: https://ec.europa.eu/commission/presscorner/detail/en/IP_22_1544 (accessed February 1, 2023).

73 Germany's Federal Ministry of Education and Research (BMBF), "BMBF friert Kooperation mit Russland und Belarus ein" [BMBF freezes cooperation with Russia and Belarus], March 30, 2022: <https://www.bmbf.de/bmbf/shareddocs/kurzmeldungen/de/2022/03/weitere-zusammenarbeit-mit-russland-belarus.html> (accessed February 1, 2023).

74 United Nations General Assembly, Articles 192–194, *Convention on the Law of the Sea* (1982), pp. 100–102: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed January 30, 2023).

areas within their EEZ.⁷⁵ Russia and Canada have referred to Article 234 to justify aspects of their respective regulation of the Northern Sea Route and the Northwest Passage.

In addition to the regulation by UNCLOS, Arctic states agreed upon non-binding measures that cover oil and gas exploitation in the Arctic. These Arctic Offshore Oil and Gas Guidelines (AOOGG) were considered a great success as they provide a minimum set of measures to protect the Arctic marine environment from harmful effects potentially caused by oil and gas production.⁷⁶

What most effectively protects the marine environment in the Arctic to date, however, is the fact that areas where resources are suspected to exist are hardly accessible due to sea ice or other harsh conditions, or they are located far from shore at great depths.⁷⁷ This situation, at least with respect to sea ice as an obstacle, is likely to evolve given the immense speed of temperature rise in the Arctic. Considering the current energy crisis and high energy prices, it is possible that there will be further attempts to promote hydrocarbon exploitation in the Arctic in the future, despite warnings from scientists related to climate concerns.

CONCLUSION: A BALANCING ACT

Arctic Exceptionalism may be stymied in geopolitics, but the Arctic's current challenges mean that the region itself remains exceptional – through the pressures it is under from Russian aggression in Europe; the threats to institutions that include the Indigenous Peoples of the Arctic such as the Arctic Council; and growing climate, environmental, and biodiversity crises with far-reaching implications. In the face of all these challenges, the Arctic currently presents an important example for considering how to apply a value-based foreign policy to autocratic actors whose cooperation is needed for the protection of global public goods.

In the short- to mid-term, scientific cooperation with Russia on an institutional level – needed to acquire climate knowledge – remains politically impossible,⁷⁸ and its resumption depends on the end of Russian aggression against Ukraine. While some limited personal exchanges among previously closely linked groups of scientists working inside Russia and other Arctic countries have quietly continued, these interactions and data transfers are constrained by factors that include the Russian government punishing any perceived dissent. Scientific and environmental protection initiatives should therefore be intensified outside of Russian jurisdiction. In the long run, this could include investing more in remote sensing initiatives to work toward scientific data collection independent from geopolitical tensions. Moreover, Arctic Indigenous Peoples should be increasingly involved in these processes for the coproduction of knowledge on ecosystems, climate change, biodiversity, and environmental development.

Russia makes up half the Arctic. Despite the current obstacles to cooperation within the Arctic Council, that also means that effective, long-term pan-Arctic cooperation on environmental, scientific, and geopolitical issues can only be realized with Russia. It is difficult to foresee how Russia's current chairmanship of the Arctic Council will end and how a new Norwegian chairmanship might begin.⁷⁹ Once, as anticipated, Finland and Sweden join NATO, all members of the Arctic Council other than Russia will be part of this alliance, which is likely to create concerns for Russia. Finding a way to preserve the Arctic Council so that it can resume its positive impact on regional governance and promote the interests of Arctic Indigenous Peoples will be important in the long term but difficult to achieve as long as Russia's war in Ukraine continues.

In particular, to mitigate global climate change, international efforts need to be increased to stop the exploration and extraction of fossil resources in spite their increasing accessibility linked to retreating sea ice.

75 Robin Churchill et al., "The Law of the Sea: Fourth Edition" in *Melland Schill Studies in International Law* (Manchester University Press, 2022).

76 Kamrul Hossain, "Governance of Arctic Ocean Marine Resources: US and International Perspectives" in *Climate Change Impacts on Ocean and Coastal Law*, Ed. Randall S. Abate (Oxford University Press, 2015) pp. 273–97: <https://research.ulapland.fi/en/publications/governance-of-arctic-ocean-marine-resources-us-and-international-> (accessed February 1, 2023).

77 Benjamin Hofmann, "Oil Pollution and Black Carbon in the Arctic: Dynamic Shipping Governance in a Rapidly Warming Region" in *Routledge Handbook of Marine Governance and Global Environmental Change*, Ed. Paul G. Harris (London, 2022): <https://doi.org/10.4324/9781315149745-24> (accessed February 1, 2023).

78 Michael Paul, "Arctic Repercussions of Russia's Invasion" (see Note 69).

79 Heather Exner-Pirot and Evan T. Bloom, "Opinion: Does the Arctic Council Make Sense Without Russia? Russia's Illegal Invasion of Ukraine Means It Can't Be Business as Usual. As a Result, Arctic Relations Are in Turmoil," *National Post*, November 10, 2022: <https://nationalpost.com/opinion/opinion-does-the-arctic-council-make-sense-without-russia/wcm/27f30b45-d718-4e55-be74-d01499a784e3/amp/> (accessed February 1, 2023).

The prospects for Arctic governance beyond the Arctic Council are a bit more positive. Work within treaty-based international organizations, such as the UNFCCC, International Maritime Organization, and International Civil Aviation Organization, still goes forward. Further, most aspects of scientific cooperation that did not involve Russia to begin with have been largely unaffected. These activities, along with the networks and collaborations of the Arctic Indigenous communities (other than in Russia) as well as cooperation with non-Arctic observer states, will likely be strengthened.

Russia's aggression against Ukraine has changed the geopolitics of the Arctic, resulting in consequential adverse side effects for Arctic Indigenous Peoples and global knowledge on climate change. The dynamics of this change have global climate impacts, and the long-term disruption of joint research with Russia will considerably weaken scientific advancements and environmental management in the region. Navigating this complex situation will require significant political attention and continuous assessment by Arctic States, non-Arctic States, and NATO members.



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DGAP receives funding from the German Federal Foreign Office based on a resolution of the German Bundestag.

Publisher

Deutsche Gesellschaft für
Auswärtige Politik e.V.

ISSN 2198-5936

Editing Helga Beck

Layout Luise Rombach

Design Concept WeDo

Cover picture © IMAGO / YAY Images



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