

Regulation of Arctic Shipping in Canada and Russia

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Abstract

As Arctic navigation increases and states work, both at the international and the domestic level, at ensuring legal readiness, this article takes a closer look at regulation of Arctic Shipping in Canada and Russia. The analysis first focuses on the current domestic regimes that have developed over the past decades. It highlights that dissimilar political, economic and environmental contexts have shaped not only different shipping patterns off the Canadian and Russian coasts, but also dissimilar coastal state approaches that do not seem to converge noticeably under the influence of the Polar Code. The analysis then turns to challenges that lay ahead as existing regimes could be called into question due to receding ice cover and may need to adapt to evolving shipping patterns and technological innovations.

Keywords: *Arctic, navigation, law, Canada, Russia*

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1 Introduction

As global warming causes drastic physical changes in the Arctic, human activity has increased in the region. Not so long ago, ice, cold temperatures, extreme light

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cycles and remoteness were natural barriers to the development of large-scale and sustained activities, although human settlements have existed since “time immemorial.” Over the last 300 years, southern fascination has given rise to many famous and lesser-known expeditions to explore this “frontier.”¹ Commercial shipping, for its part, first developed in the Russian Arctic at the end of the nineteenth century, but became more significant from the 1930s onwards, when the Union of Soviet Socialist Republics (USSR) set its sights on developing the Northern Sea Route (NSR), dedicating to the task a new government department, the Chief Administration of the Northern Sea Route.² The centralized approach it embodied has shaped the legal and institutional landscape of the NSR ever since. Until recently, the Northern Sea Route Administration was the authority in charge. In 2019, the Northern Sea Route Directorate, a new unit of the State Atomic Energy Corporation, Rosatom, took over with a broad mandate not only to administer, but also develop the NSR.³ By contrast, in Canada, administration and regulatory oversight of Arctic activities has always been organized according to the remit of the different relevant government departments, in particular Transport Canada, Fisheries and Oceans, Natural Resources, Indigenous and Northern Affairs, and Global Affairs.

During the Cold War, the Arctic acquired strategic importance.⁴ At the same time, resource exploitation in Siberia was driving significant economic developments in the Russian Arctic, thus prompting the construction of ever more capable ships, including nuclear-powered icebreakers, to transport resources and supply communities.⁵ When the strategic importance of the Arctic declined at the end of the Cold War and the economy of the collapsing USSR faltered – dragging down commercial shipping in the NSR as well – attention shifted. Thanks in particular to Gorbachev’s impetus,⁶ which eventually led to the creation of the Arctic Council,⁷ peaceful international cooperation on environmentally sound and sustainable development of the region became the new goal. However, rapidly warming temperatures, receding ice cover, growing communities and an increasing thirst for natural resources are on track to change, once again, the fate of the Arctic.

Many of the current activities in the high North are shipborne. Community resupply and transportation of extracted resources rely on vessels, as do marine tourism and marine scientific research. As Arctic navigation appears to have become more manageable, the old vision of a short shipping route connecting northern Europe to the northeast of Asia or the northwest of America has regained traction.⁸

Modern-day development of institutional and regulatory frameworks for Arctic navigation started in the 1970s. In 1971, the Administration of the Northern Sea Route, a newly created entity of the Soviet Ministry of the Maritime Fleet, was tasked with “ensuring the safety of arctic navigation” and “taking measures to prevent and eliminate the consequences of pollution of the marine environment and the northern coast.”⁹ By then, the NSR had become a domestic shipping route between the westernmost part of the USSR and the Bering Strait, used mostly for regional shipping¹⁰ and exclusively by Soviet vessels.¹¹ It was opened to foreign vessels only in 1991.¹²

Canada developed its own legal regime in reaction to the 1969 and 1970 voyages of the U.S. tanker *S. S. Manhattan* sent through the Northwest Passage (NWP) by Humble Oil to test the feasibility of shipping oil from its extraction site in Prudhoe Bay to the east coast of the United States.¹³ The threat of an accidental oil spill in the vulnerable Canadian Arctic thrust the issue of Canada's authority to regulate international shipping – and thus the issue of the legal status of the NWP – into the domestic and international limelight and prompted Canada to adopt the *Arctic Waters Pollution Prevention Act* (AWPPA).¹⁴ The latter still forms the core of Canada's legal regime on Arctic shipping. In addition to legal requirements, Canada also implemented incentive measures to enhance environmentally sound and safe navigation. In 1977, the now mandatory NORDREG was adopted as a voluntary ship reporting system (SRS) combined with vessel traffic services (VTS).¹⁵ A broad approach to enhancing the safety of navigation lives on in the current development, under Canada's Oceans Protection Plan,¹⁶ of low-impact shipping corridors provided with improved infrastructure, navigational support and emergency response services.¹⁷

This article aims to take a closer look at the regulation of Arctic shipping in Canada and Russia, the two Arctic coastal states with the most consequential regimes of coastal state regulation. The focus will be first on the current domestic regimes developed over the past decades and then turn to challenges that lay ahead as these regimes may need to adapt to the changing physical and economic environment of the Arctic.

2 Salient features of Canadian and Russian regulation of Arctic shipping

In this first part, salient features of Canadian and Russian regulation of Arctic shipping will be outlined. These include the geographical scope of the domestic regimes, portrayed in a first step, as well as substantive rules of pollution prevention, measures of shipping safety and additional navigation-related measures, described in a second step. Where relevant, references will be made to the broader international legal context, in particular the United Nations Convention of the Law of the Sea (LOSC)¹⁸ and the jurisdiction under Article 234 as well as other relevant instruments, such as the Polar Code,¹⁹ that prompted amendments to the MARPOL²⁰ and the SOLAS²¹ conventions as of 1 January 2017.

2.1 Geographical scope of the domestic laws and related issues

Canadian 'arctic waters' are defined in the AWPPA as

the internal waters of Canada and the waters of the territorial sea of Canada and the exclusive economic zone of Canada, within the area enclosed by the 60th parallel of north latitude, the 141st meridian of west longitude and the outer limit of the exclusive economic zone;

except where the international boundary with Greenland does not entitle Canada to an exclusive economic zone (EEZ) of 200 nautical miles in breadth.²² When the

AWPPA was first adopted in 1970, it applied to a strip around the Canadian Arctic Archipelago of maximal 100 nautical miles in breadth.²³ As part of Canada's Northern Strategy,²⁴ it was extended in 2010 to match the maximal breadth of the EEZ and jurisdiction provided under LOSC Article 234.²⁵

In 1970, neither the concept of EEZ nor the jurisdiction over ice-covered waters existed, meaning that aspects of Canada's new law were likely *ultra vires*.²⁶ When the Third United Nations Conference on the Law of the Sea (UNCLOS III) negotiations opened in 1973, Canada, building upon the legitimacy of its pollution prevention legislation for the Arctic, aimed to expand coastal state jurisdiction so as to allow such domestic legislation. Negotiations to this effect took mostly place among Canada, the Soviet Union and the United States and resulted in Article 234, also known as the "Arctic exception."²⁷

Most of Canada's Arctic shipping law, such as the *Arctic Shipping Safety and Pollution Prevention Regulations* (ASSPPR)²⁸ and the *Shipping Safety Control Zones Order*,²⁹ applies to Canada's "arctic waters." NORDREG does so as well, but additionally applies to some Arctic areas further south, including Hudson Bay, Ungava Bay, James Bay and some inland waters.³⁰

Canada's Arctic Archipelago is an integral part of these "arctic waters." The NWP, a set of several routes³¹ – not a single passage, despite its name – passes through the Archipelago connecting the central Arctic Ocean and the Atlantic Ocean. For Canada, as clearly asserted in 1973,³² the waters of the Arctic Archipelago – and the NWP – are historic internal waters over which it has full sovereignty. Canada's position is controversial and was famously challenged in 1985, when the U.S. coast guard vessel *Polar Sea* crossed the NWP, refusing to seek permission for the transit.³³ In response, Canada drew baselines around the Arctic Archipelago to "define the outer limit of [its] historical internal waters."³⁴ Echoed by the European Community, the United States argued that there was "no basis in international law to support the Canadian claim."³⁵ Instead, it has long asserted freedom of navigation – as part of the transit passage regime – to be applicable to the NWP.³⁶ Given their pragmatic "agreement to disagree,"³⁷ this difference of views does not impede cooperation between the United States and Canada.

On the Russian side, despite longstanding Soviet and later Russian practice of law-making and law enforcement regarding Arctic navigation, the geographical scope of the rules was, for a long time, not clearly specified. A 1926 decree established the outer limits of the Russian Arctic based on the sector theory by referring to the western and eastern meridians of longitude.³⁸ When systematic state administration of the NSR started in 1932 with the establishment of the Northern Sea Route General Directorate,³⁹ the latter was tasked "to develop the final Northern Sea Route from the White Sea to the Bering Strait, equip it, keep it in good order and ensure the safety of navigation along it."⁴⁰ Seen as a comprehensive transport route through the Russian Arctic, the NSR was, again, defined only by its western and eastern limits.⁴¹ The 1965 USSR rules on mandatory icebreaker pilotage, for

their part, simply referred to the Arctic straits, that is, Vilkitsky, Shokalsky, Laptev and Sannikov Straits.⁴² In the 1971 USSR statute that asserted special rights to regulate navigation in the NSR, still no mention was made of its geographical scope.⁴³ This changed in the aftermath of the adoption of the LOSC. The *Rules of Navigation along the Northern Sea Route* adopted in 1990 by the Ministry of the Maritime Fleet of the Soviet Union described the NSR as

located in internal waters, territorial sea (territorial waters) or economic zone of the USSR adjacent to the northern coast of the USSR, its national transport communication, including routes suitable for ice passage of ships, the outermost points of which are limited in the west by the Western entrances to the Straits of Novosibirsk and the meridian north of Cape Zhelaniya, and in the east by the Bering Strait parallel to 66°N and the meridian of 168°58'37" west longitude.⁴⁴

Although reference to the “economic zone of the USSR” deviates from the usual “exclusive economic zone,” the definition remained unchanged for more than 20 years. In 2012, an amendment to the *Code of Merchant Shipping of the Russian Federation* (*Merchant Shipping Code*) revised the geographical scope.⁴⁵ Article 5.1 defines the NSR now as

the water area adjacent to the northern coast of the Russian Federation, covering internal sea waters, the territorial sea, the contiguous zone and the exclusive economic zone of the Russian Federation and bounded from the east by the line of demarcation of maritime spaces with the United States of America and the parallel of Cape Dezhnev in the Bering Strait, from the western meridian of Cape Zhelaniya to the archipelago Novaya Zemlya, the eastern coastline of the archipelago Novaya Zemlya and the western borders of the Straits Matochkin Shar, Kara Gate, Ugra Shar.⁴⁶

This definition determined the geographical scope of the subsequently adopted 2013 *Rules of Navigation in the water area of the Northern Sea Route*.⁴⁷ The alignment of the outer limit of the NSR with that of the EEZ arguably indicates that Russia considers LOSC Article 234 as the basis of its domestic navigation regulations. Another indicator to this effect is the recently abandoned plan to expand the NSR to the Barents Sea, the White Sea, the Pechora Sea, the Bering Sea and the Sea of Okhotsk on the grounds that they would not fall under the Article 234 jurisdiction because they lack the required ice cover.⁴⁸ Recently, the Government of the Russian Federation enacted new *Rules of Navigation in the water area of the Northern Sea Route* (2020 *Rules of Navigation*).⁴⁹ While appendix No. 3 details the 28 districts of the NSR and their boundaries, the outer limits of the water area appear unchanged.

Interestingly, another federal law characterizes the NSR as an “historical national unified transport line of communication of the Russian Federation.”⁵⁰ In the legal literature, it has also been described as an “indivisible transport route.”⁵¹ Indeed, the Russian legal regime treats the NSR as such by applying a uniform set of rules regardless of whether the status of the concerned maritime area is that of internal waters, territorial sea, contiguous zone, EEZ or strait. However, despite its purported

character as “historically established” and an “indivisible” route, and despite assertion of authority over international navigation, Russian law stops short of explicitly claiming sovereignty on historical grounds over the entire NSR.⁵² An exception is the 1985 decree establishing the USSR baselines for the Arctic coast and islands that asserts that certain areas of the White Sea, Cheshskaya Bay and Baydaratskaya Bay “are, as waters historically belonging to the USSR, internal waters.”⁵³ The 1985 baselines are still in force. Although the current approach to the establishment of baselines, patterned after the LOSC, and the internal procedure to be followed is set forth in a law adopted in 1998,⁵⁴ no new baselines have been declared so far.

Russian control over international navigation in the NSR is challenged and, as in the Canadian case, the United States, among others, calls for the respect of “freedom of navigation.”⁵⁵ It should be recalled, however, that Arctic navigation is still a specialized niche sector and to most states, legal issues concerning the breadth and depth of Arctic coastal state jurisdiction are, if at all, of symbolic more than of practical relevance. To Canada and Russia, current uncertainties are, at least for the time being, “convenient ambiguities” that allow them to impose their vision of safe Arctic navigation.

2.2 Pollution prevention, safety of navigation and navigational measures

While navigation has become more feasible, it remains hazardous and subject to harsh conditions. Among the challenges are strong winds, snow and snowstorms, reduced visibility due to fog, extreme winter temperatures and long polar nights. Sheer remoteness from navigational support and services compounds risks.⁵⁶ Although the shrinking and thinning ice cover makes shipping easier in some respects, the ice is also more prone to break up, and empirical data suggests that drifting ice is less predictable, creating serious hazards for navigation, particularly in narrow straits and channels.⁵⁷ In short, Arctic shipping still comes with risks for ships, their crews, the environment and coastal communities significant enough to call for regulatory measures.

Both Canadian and Russian legal regimes provide requirements to ensure pollution prevention and safety of navigation. At the heart of Canada’s AWPPA is the zero-discharge principle.⁵⁸ In response to the entry into force of the Polar Code, Canada adopted the ASSPPR in 2018, replacing the regulations that originally implemented the zero-discharge principle.⁵⁹ The ASSPPR incorporate the safety-related provisions of the Polar Code by reference,⁶⁰ but proceed selectively with respect to the Polar Code’s pollution prevention requirements to maintain the level of protection established under the zero-discharge rule of the AWPPA. Consequently, some of the Polar Code’s allowances, for example for oil and oily mixtures, did not become part of Canada’s law.⁶¹

The ASSPPR do not only apply to Canadian-flagged vessels navigating in polar waters; save exception, they also apply to foreign-flagged vessels navigating in

Canada's "arctic waters."⁶² Most of these requirements are based on the international consensus reached under the Polar Code. Yet, there are some exceptions. They include, besides the aforementioned more stringent discharge prohibitions, the transitional obligation to respect a zone/date system (ZDS), according to which operation of a given class of vessels in a given zone is restricted to certain periods,⁶³ and the obligation for smaller, non-SOLAS vessels to have an ice-navigator on board for navigation outside the ZDS.⁶⁴

Regarding the Russian Arctic, requirements on pollution prevention and safety of navigation applicable to shipping in the NSR are provided by the 2020 *Rules of Navigation*. As under the Canadian regime, discharge of oil and oil-containing products is prohibited.⁶⁵ Storage tank capacity for the collection of oil residues and waste needs to be sufficient for the duration of the voyage.⁶⁶ Ballast water tanks "adjoining external side above operating waterline" are to be heated between November and June.⁶⁷ Ships also need to have aboard fuel, fresh water and provisions sufficient for the "maximum possible duration of navigation"⁶⁸ in addition to supplementary emergency equipment, including a searchlight, spare lamps, warm clothes and a sufficient number of immersion suits.⁶⁹ These requirements are arguably designed to ensure the vessel's autonomy. The 2020 *Rules of Navigation* include the Polar Ship Certificate requirement of the Polar Code,⁷⁰ but they do not otherwise reflect the Polar Codes' pollution prevention and safety provisions. Russia, while recognizing the Polar Code requirements through the Polar Ship Certificate and a general reference to "requirements for equipment and supply of the ship [...] stipulated by international treaties of the Russian Federation,"⁷¹ appears to reserve the right to impose its own rules for navigation in the Northern Sea Route.

Another recent change to the *Merchant Shipping Code*, adopted in the context of an ambitious policy designed to develop the NSR, introduced a restriction concerning the domestic shipment of oil and gas.⁷² Since February 2018, save for some exemptions, only Russian-flagged vessels have been allowed to transport these and related substances produced on Russian territory or on territory under Russian jurisdiction.⁷³

In addition to pollution prevention and safety requirements, both Canadian and Russian regulations set forth navigational measures. The Canadian NORDREG was among the first components of Canada's regime on Arctic navigation. It applies to commercial vessels of a certain size or engaged in transporting pollutants or dangerous goods⁷⁴ in "arctic waters" and some areas further south.⁷⁵ The concerned vessels report to Canadian authorities their planned course and later their regularly updated actual course,⁷⁶ providing information on their identity and features, the number of persons aboard, but also on deficiencies potentially affecting operations, the amount of oil on board and their ice class.⁷⁷ In return, vessels receive essential information for safe navigation, such as weather forecasts, ice conditions, as well as navigational guidance and routeing suggestions.

Since NORDREG became compulsory in 2010,⁷⁸ vessels have been required to obtain clearance prior to entering the "arctic waters."⁷⁹ Within the International

Maritime Organization (IMO) Maritime Safety Committee, Canada's decision to make NORDREG mandatory drew criticism, notably from the United States.⁸⁰ Canada's objective to ensure safety of navigation was generally supported, but the regulation's restrictive impact on navigation was considered incompatible with "freedom of navigation."⁸¹ Disagreement centered on Canada's decision to act without seeking prior IMO approval.⁸² In response, Canada asserted that Article 234 provided "a complete legal justification in international law for NORDREG."⁸³ Not all delegations were satisfied with Canada's position,⁸⁴ but the discussion had no further consequences.

Navigation in the NSR is subject to obtaining prior authorization.⁸⁵ This is not a mere formality, as applications were rejected in more than 150 cases between 2013 and 2019.⁸⁶ The permit to sail, to be requested at least 15 working days in advance,⁸⁷ is granted provided the vessel complies with the relevant requirements on safety of navigation and pollution prevention.⁸⁸

Among the conditions that may be imposed on vessels is ice-breaking assistance, which is prescribed depending on the prevailing ice conditions.⁸⁹ It is provided by Russian-flagged icebreakers for a fee⁹⁰ and may give rise to convoy operations.⁹¹ Under the 2020 *Rules of Navigation*, the principle of icebreaker escort to ensure safety of navigation applies depending on the area and the vessel's ice class.⁹² Currently, only vessels of the ice-class Arc9, that is, of the highest ice-strengthened class, are allowed to navigate independently in all areas of the NSR at any time of the year, while for all other vessels ice-breaking assistance may be mandatory depending on the area of the NSR, prevailing ice-conditions and, for some vessels, the time of year.⁹³ Ships without ice-strengthening and non-Arctic ships with ice-classes 1 to 3 are allowed to sail only between 1 July and 15 November, with mandatory ice-breaking assistance when warranted by ice-conditions⁹⁴. Russia has the most substantial fleet of icebreakers in the world, which is a crucial asset for an extended Arctic shipping season. Ice pilot assistance, which may also be imposed, is provided by an experienced ice pilot for a fee with the objective of assisting the shipmaster with safe navigation through ice.⁹⁵

As under the Canadian NORDREG, a vessel navigating the NSR has to provide authorities at least once per day with various data, such as the vessel's coordinates and itinerary, the amount of fuel on board as well as meteorological and ice information.⁹⁶ Vessels operating in the NSR receive navigational-hydrographic and hydrometeorological support.⁹⁷

What emerges from this overview is that Canada and Russia have developed robust domestic regimes over the past fifty years. These remained essentially unaltered by the Polar Code. Indeed, Canada added the Code's requirements to its domestic law, but maintained a few of its pre-existing more stringent requirements on pollution prevention. Russia mainly added the new Polar Vessel Certificate to its domestic regime. Both states obviously assume that they have the necessary jurisdiction to impose their own regimes. Canada's decision to make the Polar Code and additional

requirements applicable to its own vessels is certainly covered by its flag state jurisdiction.⁹⁸ However, both states also impose requirements on foreign vessels, some of which go beyond the international consensus forged under the Polar Code. Given the uncertainties surrounding assertions of sovereignty – and the additional fact that Canada’s “arctic waters” beyond the Archipelago are not considered historical internal waters – it is in both states’ interest that their requirements can be based on Article 234.

During the Polar Code negotiations, Canada – supported at some point by Russia⁹⁹ – lobbied to ensure continued coastal state jurisdiction under Article 234.¹⁰⁰ In Canada’s view the issue is settled,¹⁰¹ thanks to two conflict clauses.¹⁰² Article 234 explicitly covers prevention of vessel-source pollution and it seems reasonable to argue that safety requirements contributing to pollution prevention are within the provision’s (implicit) scope.¹⁰³ However, restrictions that pursue unrelated economic or political purposes or are discriminatory, and thus disrespect the provision’s “functionalist” approach and “due regard” clause or its explicit non-discrimination principle, may be impossible to justify under Article 234. There might be pushback against such measures, since even NORDREG, a measure otherwise recognized as legitimate, has encountered resistance in the past. However, in the broader context of multilayered ambiguities regarding the depth and breadth of Arctic coastal state jurisdiction, such controversies may never be settled once and for all to the satisfaction of all.

3 Future challenges

As physical changes intensify and new technologies develop, Arctic shipping is likely to be reshaped. In this context, Canada and Russia may be prompted to rethink their approach to Arctic shipping. This section will shed light on future challenges for domestic law-making with respect to receding ice cover, varied realities of Arctic shipping and the potential impact of new technologies on standard-setting.

3.1 Receding ice cover and Article 234

It appears from the above discussion that Canada and Russia rely, at least in part, on the jurisdiction provided by Article 234 for their domestic legal regimes on Arctic shipping. Reliance on Article 234 poses challenges with respect to its material scope, as mentioned above. However, with receding ice cover in the Arctic, its geographical scope may also be at stake, for Russia more so than for Canada. Indeed, ocean currents and winds push the ice away from the Russian coast and towards the North American continent, where it gathers at the western side of the Canadian Arctic Archipelago.¹⁰⁴ Despite significantly declining ice cover in the Russian Arctic, drifting ice, ice floes and icebergs continue to pose serious hazards to vessels, warranting regulation.¹⁰⁵

The language pertaining to the applicability of Article 234 is convoluted. Under Article 234, coastal states may act

in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance.

Upon closer inspection, the clause may be broken down into three distinct criteria. Firstly, the words “ice-covered areas within the limits of the exclusive economic zone” delimit the coastal state’s jurisdiction with reference to the zonal approach of the law of the sea, fitting the jurisdiction into the LOSC’s framework of maritime zones. It is not clear whether the jurisdiction is confined to the coastal state’s EEZ or whether the outer limits of the EEZ are to be interpreted as the outer limits of the jurisdiction, thus creating a jurisdiction that spans the territorial sea, potential straits used for international navigation and the EEZ. In their respective practice, Canada and Russia embrace the latter interpretation.¹⁰⁶ Secondly, the specific geographical scope of the jurisdiction is defined by the area’s physical condition, “where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation.” Thirdly, the phrase “pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance” further circumscribes the geographical scope of the jurisdiction with reference to the area’s sensitivity to pollution. The word “and” introducing this third criterion suggests a cumulative series of conditions.

The second and the third criterion – “severe climatic conditions and the presence of ice cover” as well as the sensitivity to pollution – are interlinked and may both be affected by rising temperatures. Indeed, cold environments are characterized by slow degradation rates and low volatility of chemical compounds, which explains, together with a short growing season and low biodiversity, their enhanced sensitivity to pollution. Yet, rising temperatures are unlikely to make the Arctic environment more resilient to pollution. They are more likely an additional stressor, enhancing the need for protective measures.

Insofar as the scope of application of Article 234 is at least in part defined by reference to the presence of sea ice, loss of sea ice may prove problematic. With ice measurably receding, the crucial issue is to determine to what extent the provision’s reference to ice cover is to be taken literally. Ice cover appears in three instances. Firstly, Article 234 is titled “ice-covered areas.” Secondly, the same wording is used to outline the type of jurisdiction. Finally, it reappears in a slightly different phrase – “the presence of ice covering such areas” – in the second criterion regarding the provision’s applicability. While the first two references to ice cover seem to play a mere descriptive role, the third reference could be interpreted as spelling out a condition

for the applicability of Article 234, especially since it is followed by the phrase “for most of the year.”

Instead of taking a literal approach, it is possible to conceive of the reference to ice cover as figurative. This has been suggested in the past¹⁰⁷ and may be borne out by the provision’s negotiation context. At the time of UNCLOS III, the issue of climate change was little known beyond the scientific community, and negotiators were probably unaware of the possibility of diminishing ice cover due to global warming. Furthermore, although Article 234 has always been considered an “Arctic exception,”¹⁰⁸ framing it explicitly as such by using the word “Arctic” might have been problematic in the improbable, but not impossible, case of a change in the legal status of Antarctica. Antarctic waters could arguably be considered “ice-covered waters” under Article 234, but given the “frozen” claims of sovereignty over the continent, there were – and still are – no generally recognized coastal states to exercise the jurisdiction.¹⁰⁹ The expression “polar region” may have been avoided to discourage use of Article 234 by the claimant states for Antarctic waters. Finally, the phrase “for most of the year” conveys that marine areas like the Baltic Sea, where ice regularly forms in winter, but disappears completely in the warmer seasons, are not encompassed by the provision’s geographical scope of application.

Ice, including the related hazards for navigation and ecological sensitivity, continues to be a defining feature of the Arctic. The purpose of Article 234 thus remains, and it seems reasonable not to interpret the changes affecting the region as depriving coastal states of the jurisdiction designed for its protection, precisely when ecological disruption and growing human activity put an increasing strain on ecosystems.

3.2 Different legal approaches for different types of navigation

While Russia and Canada have a history of domestic law-making with regard to Arctic shipping, comprehensive multilateral standard-setting is just beginning. IMO work towards a binding instrument started in the aftermath of the 1989 *Bahia Paraiso* and *Exxon Valdez* oil spills.¹¹⁰ The process was arduous and yielded only non-binding guidelines¹¹¹ before the Polar Code was finally adopted in 2014/2015. Since then, IMO negotiations have addressed issues left out by the Polar Code. A ban on heavy fuel oils was decided in late 2020,¹¹² but negotiations are ongoing on black carbon emissions¹¹³ and regional arrangements for port reception facilities.¹¹⁴ While Polar Code requirements on safety of navigation (chapter 9) and voyage-planning (chapter 11) still do not apply to non-SOLAS ships, they have prompted the adoption of non-mandatory guidelines for pleasure yachts and fishing vessels.¹¹⁵ Noise, grey water and invasive species introduced through ballast water or hull fouling are among the issues still unaddressed or addressed only on a non-binding and non-Arctic specific basis. If history is any guide, it will take time to reach international consensus on these issues and coastal states, although they sometimes slow the pace of change on some issues,¹¹⁶ may feel compelled to take more immediate action on others

based on Article 234. They might also seek a level of protection superior to the one achievable by international compromise. Furthermore, multilateral standards may not always be considered the most effective way to address issues specific to a given area as conditions of navigation vary significantly across the Arctic.

Russia, for example, pursues ambitious plans for the NSR. When the route opened to foreign vessels in 1991, traffic had declined dramatically due to the severe crisis of the post-Soviet era. Recovery was slow and the 1987 record transport volume of 6578 thousand tons was exceeded only in 2016.¹¹⁷ Currently, cargo destination shipping is the biggest segment. Transit shipping amounted to a mere 0.7% of the total tonnage in 2015. It evolved, but remained below 3.5% between 2016 and 2018, with a total of less than 500,000 tons in 2018.¹¹⁸ Russia seeks to greatly increase this segment to an annual cargo volume of 80 million tons by 2025 so as to transform the NSR into a “globally competitive transport artery.”¹¹⁹ Accordingly, the infrastructure development plan scheduled to run until 2035 is designed to turn the NSR into a full-featured international transit route.¹²⁰ The recent institutional change that propelled Rosatom to the forefront of the state-promoted development plans occurred in this context.¹²¹

Russia is also intent on stimulating the tourism sector. The Ministry of Economic Development recently instructed Rostourism, the state agency for tourism, to prepare a program for developing cruise shipping in the Arctic,¹²² including proposals regarding port infrastructure, cruise routes, onshore activities and promotion.¹²³ Before the pandemic, interest in the Russian Arctic on the part of Russian and foreign tourists was expected to increase cruise shipping and to contribute to the sustainable socioeconomic development of the territory.¹²⁴ There has been hardly any seaborne tourism in the Russian Arctic so far, and its development may be slowed by the pandemic, but the fact that it is supported at the highest level may prefigure timely regulatory action.

In the Canadian Arctic, although shipping has been on the rise, drifting ice at the western entrance to the Archipelago and an increasing number of icebergs and growlers at the eastern entrance produced by the disintegrating Greenlandic ice sheet continue to impede navigation.¹²⁵ The NWP is therefore unlikely to become a widely used transit route, while destination shipping is expected to experience sustained growth throughout the Canadian Arctic.¹²⁶ Shipping is mainly driven by community resupply, resource exploitation and local fisheries. Absolute numbers are very low, however, ranging from 110 destination voyages in 2005 to 384 in 2017, with nearly half by cargo ships.¹²⁷ Transit traffic is marginal and the impressive growth of 6 to 32 between 2005 and 2017 is mainly due to pleasure crafts and adventurers.¹²⁸

Coastal states may be compelled to impose tailor-made measures to adapt to evolving shipping patterns. The sector of smaller pleasure crafts and adventure ships is most likely to grow in the Canadian Arctic. These ships pose and face particular risks that are barely addressed by current international standards. Compared to their size (and holding tank capacity), they generate a high volume of grey water not regulated under the Polar Code, but restricted from discharge under the Canadian

AWPPA. Many international safety standards remain non-compulsory for non-SOLAS vessels.¹²⁹ Cruise shipping has been predicted to grow as well, at least slowly,¹³⁰ although the pandemic may significantly affect the trajectory of this segment. Although crossings, such as that of the *Crystal Serenity*, with more than 1,500 people aboard, may remain exceptional,¹³¹ emergencies involving a larger number of people are a major concern. Infrastructure to enable fast and effective search and rescue is sparse in the Canadian Arctic where there are no ports, only a few, small settlements; and limited equipment spread over a vast region. Coastal state measures to enhance prevention and ensure a high degree of autonomy of the vessels in the event of an emergency may seem appealing.

The bulk cargo segment, servicing communities and mines, is also expected to grow in the Canadian Arctic.¹³² As shipping routes interfere with wildlife habitats and hunting areas of Indigenous communities, mitigation measures may be called for. Speed limits (wildlife-strike prevention) and restrictions on ice-breaking (habitat protection) are among the issues discussed.¹³³ At the moment, problems concern waters considered internal by Canada, but elsewhere coastal state action may require other jurisdictional bases, including Article 234.

In short, domestic law-making in Canada and Russia is likely to continue, even in the era of international standard-setting. This raises the issue of the relationship between coastal state jurisdiction under Article 234 and related domestic law on the one hand, and international rules and standards, including the Polar Code, on the other. Given the conflict clauses,¹³⁴ it cannot be argued that the coastal state must not depart from the Polar Code standards.¹³⁵ However, since the Polar Code's rationale – a uniform legal environment based on international consensus – remains, the argument may live on in a slightly different way. Coastal state requirements are indeed likely to be assessed against the “new baseline” purportedly established by the Polar Code.¹³⁶ The latter – the argument could go – strikes the balance sought by the due regard clause of Article 234 based on internationally agreed upon scientific evidence, with the consequence that any stricter coastal state requirement will be up against a stringent standard of justification.¹³⁷ However, considering the conflict clauses and the absence of any link in the wording of Article 234 between coastal state jurisdiction and international law-making, such a restrictive understanding of the provision seems misguided. As long as the conditions of Article 234, notably that of due regard to both environment-related and navigation-related considerations, are complied with, coastal states arguably have the right to adopt and enforce requirements that are more restrictive than the Polar Code and that address issues not covered by it.¹³⁸

3.3 Technological innovations

Technical and technological innovations, such as advancements in ice-strengthening and ice-breaking capacity of vessels, winterization, forecasting and communication are likely to have an impact on Arctic navigation and may eventually influence legal

developments as well. While innovation is conceivable or even in the making, routine implementation may be slow. This is particularly true for technologies related to vessel design that are impossible to retrofit onto existing vessels and for navigational infrastructure that can be developed based on broad cross-sector concertation only. High costs and significant uncertainties may be further impediments.

Ice-strengthening and ice-breaking capacity of vessels may extend the shipping season and eventually even enable year-round Arctic navigation, at least in the Russian Arctic.¹³⁹ Operation of ice-going vessels is generally more expensive and often not cost-effective in ice-free conditions. Such ice-free conditions may, however, occur increasingly in Arctic summers and be faced by ice-going vessels deployed in more southern areas during the off-season of Arctic shipping. To some extent, versatile ship design, such as double-acting vessels equipped with azimuth thrusters that adapt to the prevailing conditions,¹⁴⁰ can help avoid operation inefficiencies of conventional designs, but such technologies increase acquisition costs.

Beyond ice-strengthened ship hulls, which address ship-ice interactions, a range of technical and design features contribute to improve ship system reliability and operability. Also referred to as “winterization,” they help adapt ships and ship equipment for operation in low temperatures. Through anti-icing, de-icing or anti-freezing strategies, winterization addresses issues of freezing equipment and liquids, potentially compromising system operability, as well as atmospheric and sea spray icing, which may cause dangerous ice accretion on the vessel.¹⁴¹ The goal is to maintain the ship’s stability and equipment performance, in particular regarding critical navigation equipment (propulsion, steering, power generation) and lifesaving equipment. Needless to say, winterization comes at a cost as well, both in terms of acquisition and maintenance.¹⁴²

Weather and ice forecasting are crucial for planning and en route decision-making. Information on wind, waves, air and water temperature, for example, may allow users to take the necessary precautions to avoid or manage sea spray icing. However, weather forecasting is less reliable in high latitudes, due to scarce in-situ data and the fact that forecasting models are designed for lower latitudes.¹⁴³ Ice forecasting, for its part, although still in its infancy, is making significant progress.¹⁴⁴ For the moment, however, such forecasting initiatives are mainly research oriented.¹⁴⁵ Despite growing datasets, interoperability of the various initiatives remains limited.¹⁴⁶ Furthermore, from an applied perspective, a significant challenge is to produce – and convey – customized datasets that are able to support specific user needs.¹⁴⁷ Forecasts that are sufficiently reliable and precise for operational purposes require sophisticated instruments and algorithms.¹⁴⁸ Once mature, however, they may significantly improve voyage planning and selection of safe routes.

Communication in high latitudes, for both voice and data transfer, has long been a significant problem.¹⁴⁹ Systems for voice communication, including Iridium satellites and radio transmission, have improved. By contrast, data-heavy communication for weather and ice forecasts or ice charts and other navigational help requires

broadband infrastructure, which is underdeveloped in the Arctic. Such infrastructure depends on geostationary satellites, which currently do not cover areas north of 70–75 degrees of latitude due to the curvature of the earth. Satellite-based augmentation systems that improve the accuracy of GPS are equally unavailable.¹⁵⁰ Enhanced data capacity and stable, reliable connections may greatly improve safety of navigation and speed up emergency interventions.

The main obstacle for such technologies to become available and routine is the fact that many of them require tremendous investments, that is, ships with special features, massive datasets, satellites, etc., while the return on investment is highly uncertain.¹⁵¹ It is indeed contingent on the establishment of Arctic seaways as viable shipping routes, which depends in turn on the physical developments in the Arctic, the needs of the regional and the global economy and congruent decisions made by a diverse range of actors, including shipping and technology companies, insurers and states. Russia, at the forefront of state-promoted development of Arctic shipping and in keeping with its ambitious plans for the NSR, recently included in its infrastructure development plan, scheduled until 2035, the provision of satellite infrastructure to ensure communication in areas north of 70 degrees of latitude.¹⁵²

The advent of new technologies may enable greater vessel autonomy, enhance safety of navigation and reduce risk of pollution, thus prompting legal adaptations. The use of specific technologies may become mandatory, either by way of an IMO instrument, provided international consensus can be achieved, or else by coastal state regulation based on Article 234. In the latter case, the debate on the depth and breadth of Arctic coastal state jurisdiction beyond pollution standards may be reignited. At the same time, as vessels become increasingly able to ensure their own safety and reduce environmental risks, a number of current coastal state measures may become more difficult to maintain. Ship reporting and vessel traffic services, such as NORDREG, and decision-making authority over issues such as ice-pilot assistance or icebreaker escorts, as under the Russian regime, may also become more difficult to justify.

4 Conclusion

Russia and Canada's respective legal frameworks of Arctic shipping differ greatly. This may be surprising, as the context of Arctic navigation seems similar in both states at the most fundamental level, when compared to navigation in more temperate regions, in terms of geographic, climatic and economic conditions. Similarities even extend to the realm of policy and legal issues. Both states have long claimed sovereignty over parts of the Arctic Ocean off their coasts, as well as the jurisdiction necessary to subject international navigation to domestic law in a unilateral manner. A closer look reveals, however, that there is not only a significant difference in the factual conditions prevailing in both states, including ice cover, navigability of the waterways, infrastructure, and escort and search and rescue capacity. The political

and geopolitical contexts in which Canada and Russia operate also shape distinct policy strategies and, as seen in this paper, legal regimes that diverge in significant ways. Even the international standard-making process under the IMO does not seem to have set in motion greater “course convergence.”¹⁵³

Differences may become yet more prominent in the future, as Russia actively promotes the economic development of the NSR, while Canada displays no such ambition. Recent legal changes to the Russian Arctic shipping regime indicate that the protection of Russian economic interests is likely considered as important as the safety of navigation and environmental protection. The changes might also imply that Russia, emboldened by the interest of global economic players in the NSR, is inclined to test the limits international law imposes on its unilateral powers. By contrast, Canada, aware that Canadian Arctic waterways are mostly of Canadian interest and of modest economic prospect, is likely to persevere in a more cautious, but no less resourceful approach. It seems to focus on a strictly functional jurisdiction to ensure environmental protection and safety of navigation under Article 234 on the one hand, all while advocating for broad powers under that same provision on the other hand. Whereas Russia may choose to count on its might to assert its legal view of the NSR and to impose its legal conditions of Arctic shipping, Canada may prefer to keep a low profile, precisely with the objective of preserving its current latitude.

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NOTES

1. Among the best-known explorers are Barentsz, who set out on three expeditions to find a Northeast Passage between 1594 and 1597, perishing during the last, Bering, who ventured into the Russian Arctic from the northeast in 1741, and Franklin, who perished in the Canadian Arctic in 1847 on his third attempt to find the Northwest Passage.
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3. Federal Law (FL) No. 525-FZ, “On the introduction of amendments to certain legislative acts of the Russian Federation, 2018, amending Federal Law No. 317-FZ 2007, On the State Atomic Energy Corporation Rosatom, 2007.”
4. For the NSR see R. D. Brubaker and W. Østreg, “The Northern Sea Route Regime: Exquisite Superpower Subterfuge?,” *Ocean Development and International Law* 30(4) (1999): 299, and for the Canadian Arctic, see A. Lajeunesse, 2008. *Lock, Stock and Icebergs: Defining Canadian Sovereignty from Mackenzie King to Stephen Harper*, Calgary Papers in Military and Strategic

- Studies No. 1 (Calgary: Centre for Military and Strategic Studies, University of Calgary, 2008), accessed 19 August 2019, <https://journalhosting.ucalgary.ca/index.php/cpmss/article/view/36345/29298>.
5. Armstrong, "A History of the NSR," 39ff.
 6. M. Gorbachev, M., "The Speech in Murmansk at the Ceremonial Meeting on the Occasion of the Presentation of the Order of Lenin and the Gold Star Medal to the city of Murmansk," 1 October 1987 (Moscow, Novosti Press Agency), 23–31 [English translation], accessed 30 November 2019, https://www.barentsinfo.fi/docs/Gorbachev_speech.pdf.
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 10. Armstrong, "A History of the NSR," 39.
 11. L. Timchenko, "The Northern Sea Route: Russian Management and Jurisdiction over Navigation in Arctic Seas," in *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction*, eds. A. G. Oude Elferink and D. R. Rothwell, D. R. (The Hague: Martinus Nijhoff, 2001), 269–292, 275.
 12. This was envisioned by Gorbachev as early as in 1987, "The Speech in Murmansk." The 1990 *Regulations for Navigation on the Seaways of the Northern Sea Route* cleared the way for foreign navigation; see J. Solski, "Russia" in *Governance of Arctic Shipping - Balancing Rights and Interests of Arctic States and User States*, eds. R. Beckman et al., (Leiden: Brill/Nijhoff, 2017), 173, 180.
 13. T. L. McDorman, *Salt Water Neighbors* (Oxford: Oxford University Press, 2009), 67ff.
 14. *Arctic Waters Pollution Prevention Act*, SC 1969-1970, c 47 [AWPPA].
 15. Fisheries and Oceans Canada (DFO), "Vessel Traffic Reporting Arctic Canada Traffic Zone (NORDREG)," https://web.archive.org/web/20070206015755/http://www.ccg-gcc.gc.ca:80/cen-arc/mcts-sctm/mcts-services/vtrarctic_e.htm (archived content as of 6 February 2007, accessed 22 March 2019).
 16. Government of Canada, "Canada's Oceans Protection Plan," Office of the Prime Minister, 7 November 2016, <https://www.tc.gc.ca/media/documents/communications-eng/oceans-protection-plan.pdf>.
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 19. International Code of Safety for Ships Operating in Polar Waters (Polar Code), Amendments to the International Convention for the Safety of Life at Sea, 1974, Resolution MSC.386(94), 21 November 2014, in *Report of the Maritime Safety Committee on its Ninety-Fourth Session*, Annex 7, IMO Doc. MSC 94/21/Add.1; Amendments to the Annex of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, Resolution MEPC.265(68), 15 May 2015, in *Report of the Marine Environment Protection Committee on its Sixty-eighth Session*, Annex 11, IMO Doc. MEPC 68/21/Add.1

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21. International Convention for the Safety of Life at Sea Convention (1 November 1974, in force 25 May 1980) 1184 UNTS 278 (as amended) [SOLAS].
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23. *Ibid.*
24. Government of Canada, *Canada's Northern Strategy: Our North, Our Heritage, Our Future* (Ottawa: Minister of Indian Affairs and Northern Development and Federal Interlocutor for Métis and Non-Status Indians, 2009), 12.
25. Library of Parliament, "Legislative Summary of Bill C-3: An Act to amend the Arctic Waters Pollution Prevention Act" (Penny Becklumb, 13 February 2009), 8, <https://lop.parl.ca/static-files/PublicWebsite/Home/ResearchPublications/LegislativeSummaries/PDF/40-2/c3-e.pdf>.
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27. See K Bartenstein, "The 'Arctic Exception' in the Law of the Sea Convention: A Contribution to Safer Navigation in the Northwest Passage?," *Ocean Development and International Law* 42(1) (2011): 22.
28. *Arctic Shipping Safety and Pollution Prevention Regulations*, SOR/2017-286 [ASSPPR].
29. *Shipping Safety Control Zones Order*, CRC, c. 356.
30. *Northern Canada Vessel Traffic Services Zone Regulations*, SOR/2010-127, section 2 [NORDREG].
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38. Decree "On the Proclamation of Lands and Islands Situated in the Arctic Ocean as Territory of the USSR, 1926, *Sobranie Zakonov SSR*, No. 32, 203," cited by L. Timtchenko [sic], "The Russian Arctic Sectoral Principle: Past and Present," *Arctic* 50 (1997): 29, 30.

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41. A. L. Kolodkin and M. E. Volosov, “The Legal Regime of the Soviet Arctic: Major Issues,” *Marine Policy* 14(2) (1990): 158, 164.
42. Resolution No. 331-112 of the Council of Ministers of the USSR, “On the procedure of navigation in the Vilkitsky, Shokalsky, Laptev and Sannikov Straits,” 1965.
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54. FL No. 155-FZ, Article 4(2).
55. White House, “National Strategy for the Arctic Region,” 9.
56. S. Kum and B. Sahin, “A Root Cause Analysis for Arctic Marine Accidents from 1993 to 2011,” *Safety Science* 74 (2015): 206, 206.
57. A. Chircop, “Climate Change and the Prospects of Increased Navigation in the Canadian Arctic,” *WMU Journal of Maritime Affairs* 6 (2007): 193, 197.
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59. *Arctic Shipping Pollution Prevention Regulations*, CRC, c. 353 (repealed).
60. ASSPPR, section 6(1).
61. ASSPPR, section 16 *a contrario*.
62. ASSPPR, sections 6(1) and 7(1) (for the safety-related measures) and section 13 (for the pollution prevention measures), see reference to the ‘shipping safety control zone’ established in the ‘arctic waters’.
63. *Ibid.*, section 8(1) and schedule 1.
64. *Ibid.*, section 10.
65. 2020 *Rules of Navigation*, Article 41.
66. *Ibid.*, Article 39(a) and (b).
67. *Ibid.*, Article 39(d).
68. *Ibid.*, Article 39(c).
69. *Ibid.*, Article 38(c).

70. *Ibid.*, Article 5(g).
71. *Ibid.*, Article 38.
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73. *Merchant Shipping Code*, Article 4.
74. NORDREG, section 3.
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76. *Ibid.*, in particular sections 6 and 7.
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84. IMO, *Report of the Maritime Safety Committee on its Eighty-eighth Session*, IMO Doc. MSC/88/26, 15 December 2010, para 11.39.
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87. *Ibid.*, Article 7.
88. *Ibid.*, Article 5 (with particular reference to Polar Code requirements as attested by the Polar Code Certificate in para g).
89. *2020 Rules of Navigation*, Article 30 and Appendix No. 2.
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91. *2020 Rules of Navigation*, Article 30.
92. *Ibid.*, Appendix No 2.
93. *Ibid.*
94. *Ibid.*
95. *Ibid.*, Article 26.
96. *Ibid.*, Article 24.
97. *Ibid.*, Articles 27–28.
98. LOSC, Articles 92, 94.
99. IMO, *Russian Federation, Procedure of accounting for national regulations*, IMO Doc. DE 55/12/23, 1 February 2011, para 5.

100. IMO, *Canada, Development of a mandatory code for ships operating in polar waters: Proposed framework for the Code of Ships Operating in Polar Waters*, IMO Doc. DE 53/18/2, 20 November 2009, para 2.11.
101. IMO, *Canada, Amendments to the International Convention for the Safety of Life at Sea*, IMO Doc. MSC 93/10/12, 25 March 2014.
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112. *Prohibition on the use and carriage for use as fuel of heavy fuel oil by ships in Arctic waters*, Report of the Marine Environment Protection Committee on its seventy-fifth Session, 15 December 2020, MEPC 75/18/Add.1 Annex 8.

113. IMO, *Report of the Marine Environment Protection Committee on its Seventy-Sixth Session*, IMO Doc. MEPC 76/15, 12 July 2021, para 12.12.
114. IMO, *Report of the Marine Environment Protection Committee on its Seventy-Fourth Session*, IMO Doc. MEPC 74/18, 9 June 2019, paras 14.16–14.18.
115. *Guidelines for Safety Measures for Fishing Vessels of 24 m in Length and Over Operating in Polar Waters*, MSC.1/Circ.1641, 24 June 2021 and *Guidelines for Safety Measures for Pleasure Yachts of 300 Gross Tonnage and Above not engaged in Trade Operating in Polar Waters*, MSC.1/Circ.1642, 14 May 2021.
116. The recently adopted IMO ban on heavy fuel oils (HFOs) for Arctic waters, for example, includes a preferential possibility for Arctic coastal states to grant exemptions to their ships until 1 July 2029 (*Prohibition on the use and carriage for use as fuel of heavy fuel oil by ships in Arctic waters*, Report of the Marine Environment Protection Committee on its seventy-fifth Session, 15 December 2020, MEPC 75/18/Add.1 Annex 8).
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