

NEW DEVELOPMENTS IN THE ARCTIC: PROTECTING THE MARINE ENVIRONMENT FROM INCREASED SHIPPING

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Abstract

It is generally accepted that the Arctic is warming at a rapid pace. Studies have shown that with this warming trend, sea ice and glaciers are melting and thus sea levels are rising. However, the situation might be more severe than originally anticipated. The ice is retreating a lot more quickly than was projected, with an absolute low point in 2007. A second low point occurred in 2008 and September 2010 provided us with the third lowest sea ice extent in the satellite record. Maybe even more important than the decline in sea ice extent, is the fact that the ice volume is decreasing with it. The ice pack is becoming more and more vulnerable to melting due to the decline in the amount of old, thick ice and it appears that five-year or older ice has nearly completely disappeared from the Arctic.

This Arctic melt opens up new possibilities for (trans) Arctic shipping. Of particular importance was key finding #6 of the Arctic Climate Impact Assessment (ACIA) report, which stated that "Reduced sea ice is very likely to increase marine transport and access to resources". Indeed, due to this warming trend, the Northwest Passage, the Northern Sea Route and maybe even the Central Arctic Route in the future, are opening up. In the fall of 2008 the first commercial ship transported cargo from the east through the Northwest Passage and in 2009 two German cargo vessels, the MV Beluga Fraternity and the MV Beluga Foresight were the first foreign flag ships to sail the entire Northern Sea Route. This year navigation has really picked up in the Northern Sea Route and therefore 2010 can be viewed as the breakthrough year for trans-Arctic commercial shipping, with more voyages planned for 2011.

These new developments are again raising questions concerning the outstanding maritime boundaries in the area, the legal status of the waters concerned, the efficiency of current solutions and the extent of national jurisdiction. As national legal regimes will need to adapt, substantial changes are to be expected to meet these new challenges. Meanwhile, as shipping increases, the stress on the already fragile environment increases with it, which results in great concerns regarding the preservation and protection of the environment. Environmentalists warn about the dangers of vessel-source pollution and emphasize that the lack of infrastructure, information and mandatory legislation, are issues that should urgently be addressed at an international level.

This paper will provide insights about recent developments in the Arctic in the above-mentioned areas.

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Introduction

The predicted substantial growth in (trans-)Arctic shipping is expected to pose significant stress to the already fragile environment. An assessment report on Arctic marine shipping by the Arctic Council, published in 2009,² provides an overview of the actual and potential impacts on the environment and biodiversity in the Arctic from shipping. The 2009 Arctic Marine Shipping Assessment (AMSA) Report divides these environmental considerations into three groups, namely the “vulnerability of Arctic species and ecosystems”, “ship based impacts” and “potential disturbances from shipping and shipping activity in the Arctic”. Obviously the particularly sensitive Arctic environment will need a rather high level of protection for these risks, as they will become even more significant in view of the predicted increase in shipping activity.

From an international legal perspective, the shipping activities not limited to the waters over which one single Arctic rim country exercises sovereignty or jurisdiction with respect to navigation according to international law are of particular interest. In view of the expected increase in Arctic shipping, especially Canada and even more so the Russian Federation, as will be seen, will play an important role as gatekeepers to circumpolar navigational routes connecting the Atlantic and the Pacific Oceans.

Some Arctic coastal States have already adopted a mixture of mandatory and voluntary standards for navigation in their waters,³ but global bodies primarily perform the international regulation of vessel-source pollution. This is consistent with the 1982 United Nations Law of the Sea Convention,⁴ according to

² Arctic Council, *Arctic Marine Shipping Assessment Report*, 2nd printing 2009, available at <http://www.pame.is/images/stories/PDF_Files/AMSA_2009_Report_2nd_print.pdf>, hereinafter 2009 AMSA Report. One of the present authors contributed to this 2009 AMSA Report (see *ibid.*, p. 188).

³ For a good overview, see the study commissioned by the Marine Safety Division of Transport Canada, Ottawa, Canada part of Canada’s contribution to the Arctic Council’s Arctic Marine Shipping Assessment: D.L. Vander Zwaag and A. Chircop (eds.), *Governance of Arctic Marine Shipping* (Halifax: Marine & Environmental Law Institute, 2008), 108 p., available at <<http://arcticportal.org/uploads/vZ/6u/vZ6uVo9aTTQv45iwI93oFw/AMSA-Shipping-Governance-Final-Report—Revised-November-2008.pdf>>. One of the present authors contributed to this study (see *ibid.*, p. i). The national legal frameworks of Canada and the Russian Federation received special attention in this study (see *ibid.*, p. 50–68). For a more elaborated analysis of the Canadian legislation, see for instance L. Clark, ‘Canada’s Oversight of Arctic Shipping: the Need For Reform’, 33 *Tulane Maritime Law Journal*, No. 1, 2008, 79–110, and of the legal framework applicable in the Russian Federation, see for instance E. Franckx, ‘The Legal Regime of Navigation in the Russian Arctic’, 18 *Journal of Transnational Law and Policy*, No. 2, 2010, 327–342.

⁴ United Nations Convention on the Law of the Sea (10 December 1982), 1833 *U.N.T.S.* 3. Hereinafter 1982 LOS Convention.

which, as a general rule, unilateral coastal State prescription is only allowed under certain conditions. Most of the 1982 LOS Convention's provisions on vessel-source pollution are laid down in Part XII, entitled Protection and Preservation of the Marine Environment and are principally aimed at flag and coastal States. Their prescriptive jurisdiction is linked to, and at the same time limited by the notion of "generally accepted international rules and standards" (GAIRAS) and relates to pollution of the marine environment by vessels. Flag State prescriptive jurisdiction is mandatory and must have at least the same level as GAIRAS.⁵ This means that flag States can therefore order their vessels to adapt to more stringent standards than GAIRAS. On the other hand, coastal State prescriptive jurisdiction is optional and therefore, when exercised, cannot be more stringent than the level of GAIRAS.⁶ There is however an exception, which provides the coastal States with a broader prescriptive and enforcement jurisdiction within their own Exclusive Economic Zone (EEZ) than is the case with the application of the above-mentioned general rule, namely Article 234 of the 1982 LOS Convention.⁷ Consequently, this exception gives broad prescriptive and enforcement jurisdiction in ice-covered areas, and is worded as follows

Coastal States have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels 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. Such laws and regulations shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence.⁸

Therefore, Arctic coastal States are legally positioned to play a leading role in developing and enforcing appropriate rules and standards in their EEZ. At the same time it is clear that only the IMO can adopt global rules and standards for shipping. Indeed, there is a particular relationship between the global functionality of the IMO on the one hand and the special legislative and enforcement jurisdiction of the Arctic coastal States on the other hand.⁹ Then again,

⁵ *Ibid.*, Art. 211(2).

⁶ *Ibid.*, Art. 211(5).

⁷ K. Gustafson Juras, J.E. Noyes and E. Franckx, *Law of the Sea in a Nutshell* (St. Paul, Minnesota, West Publishing Company, 2010), p. 399, where it is stated: "This Article provides the only instance in the LOS Convention where national rules concerning vessel-source pollution do not have to conform to generally accepted international rules and standards".

⁸ 1982 LOS Convention, *supra* note 4, Art. 234.

⁹ A. Chircop 'International Arctic Shipping: Towards Strategic Scaling-up of Marine Environment Protection', in: Nordquist, Moore, Heidar (eds.), *Changes in the Arctic Environment and the Law of the Sea* (Leiden, Martinus Nijhoff Publishers, 2010), pp. 181–185.

as shipping activity in the Arctic increases, one should question the long-term effectiveness of these national rules and standards. Shipping is by its very nature an international activity and hence must be addressed as such, bearing in mind that shipping will likely traverse the maritime zones of more than one State and possibly high sea areas as well. Coastal regulations alone will not be able to adequately address the challenges presented by Arctic shipping. To assure that overall shipping is conducted in an environmentally sound fashion, a uniform and comprehensive system seems to be necessary. With the expected increase in navigation, new possibilities arise for the international community and the Arctic States in particular, to influence the next generation by setting out mandatory regulations¹⁰ in view of the fact that at the moment very little mandatory international standards apply specifically to the Arctic. The IMO has taken cognizance of this need and is preparing a binding draft polar code for navigation in ice-covered waters as a follow-up to the recently revised non-binding polar guidelines. The draft is expected to be presented in 2012. However, this is not enough. The 2009 AMSA Report recommended that, next to mandatory regulations, identifying particularly sensitive sea areas and exploring the need for the designation of special areas be considered.¹¹

The present contribution will first look into the facts before moving into the legal aspects of the increased shipping in the Arctic. Starting from an update on global warming in the Arctic, the most recent developments during the last Arctic shipping seasons (ending with the shipping season 2010) will first be briefly depicted. This will constitute the backdrop against which some legal developments aimed at the protection of the fragile Arctic marine environment against such increased shipping will subsequently be analyzed.

Likely increase in Arctic navigation

For a long time the Arctic ice-cover was a sufficient deterrent for international shipping companies tempted to plot their ship movements based on maps with a polar projection. Instead a more traditional Mercator projection was relied upon. Characterized by the fact that the scale increases from the equator to the Poles, where it becomes infinite, a Mercator projection of the World not only represents the North Pole as a long line, distorting all sense of distance in the area, but also makes it very hard to even imagine a transpolar voyage. This vision, however, is changing. Whether increased shipping will contribute

¹⁰ I.G. Brosnan, 'The Diminishing Age Gap Between Polar Cruisers and Their Ships: A New Reason to Codify the IMO Guidelines for Ships Operating in Polar Waters and Make Them Mandatory?' 35 *Marine Policy*, No. 2, 2011, 262.

¹¹ 2009 AMSA Report, *supra* note 2, p. 7.

to the fact that the North Pole will become a new “spatial point center” of the world, as predicted by some,¹² obliging us all to look at the world rather from a polar azimuthal equidistant projection centered on the North Pole, as in the emblem of the United Nations, is maybe only a visionary long-term perspective at present. The fact remains, as will be seen next, that shipping companies might have good reasons to start seriously looking at such north polar projections of the world when determining the business plan of their companies for the years to come.

A. *Effect of global warming on Arctic shipping*

An appropriate starting point for the proper evaluation of the effect of global warming on Arctic shipping is most certainly the joint assessment effort of the Arctic Council and the International Arctic Science Committee undertaken at the beginning of the 21st century. This resulted in the Arctic Climate Impact Assessment of which a synthesis report was first published in November 2004,¹³ followed by the full scientific report of more than 1,000 pages in 2005.¹⁴ This assessment had been prepared over a period of five years with the involvement of more than 300 scientists, experts and members of the indigenous communities.¹⁵ Of particular importance for this paper is key finding number six of the 2004 ACIA Synthesis Report, entitled “Reduced Sea Ice is Very Likely to Increase Marine Transport and Access to Resources”.¹⁶ In addition to a reduction in annual average sea-ice extent of 5–10 per cent, most prominent in summer, a reduction in average thickness over the past few decades of 10–15 per cent was highlighted, with a 40 per cent reduction in the central Arctic Ocean.¹⁷ The report concluded on the basis of these findings that longer seasons with less severe ice conditions are to be expected with “improved ship accessibility around the margins of the Arctic Basin (although this will not be uniformly

¹² T. Valsson and G.F. Ulfarsson, ‘Future Changes in Activity Structures of the Globe Under a Receding Arctic Ice Scenario’, 43 *Futures*, No. 4, 2011, 455, where these authors argue: “As the Arctic has become free of ice, and hence with active shipping and resource exploitation, it becomes an important global area, with the North Pole as a spatial point center. In the far future, as the activity has reached a high degree, the new spatial point center of the Arctic can start to compete with the spatial linear center of the ribbon of today’s world”. With the “ribbon of today” these authors refer to the fact that mankind is at present living on a ribbon that surrounds the globe at lower latitudes.

¹³ S.J. Hassol (ed.), *Impacts of Warming Arctic: Arctic Climate Impact Assessment* (Cambridge: Cambridge University Press, 2004), 140 p. Hereinafter 2004 ACIA Synthesis Report.

¹⁴ C. Symon, L. Arris and B. Heal (eds.), *Arctic Climate Impact Assessment* (Cambridge: Cambridge University Press, 2005), 1042 p. Hereinafter 2005 ACIA Scientific Report.

¹⁵ *Ibid.*, p. iii.

¹⁶ 2004 ACIA Synthesis Report, *supra* note 13, pp. 82–85.

¹⁷ *Ibid.*, p. 82.

distributed)".¹⁸ The latter parenthetical remark concerns the difference the 2004 ACIA Synthesis Report makes between the Northwest Passage,¹⁹ where high year-to-year variability and the restricted nature of the waters inside the Canadian archipelago²⁰ result in "exceptionally complex sea ice conditions",²¹ and the Northern Sea Route²² where the number of navigable days will increase substantially over the next decades.²³ The 2004 ACIA Synthesis Report thus implies that international shipping will most probably pick up first in the Northern Sea Route. As will be demonstrated in the next part, this seems to be borne out by developments above the Eurasian continent during the most recent shipping seasons.

But before addressing these shipping developments, a few words need to be added on the time scale predicted by the 2004 ACIA Synthesis Report. Only one of the four models relied upon predicted an ice-free Arctic during the month of September by the middle of the 21st century. The other three did not predict that to happen during the present century.²⁴ A later study conducted by the Intergovernmental Panel on Climate Change (IPCC) concluded in early 2007 that in some projections the late-summer sea ice would disappear entirely

¹⁸ *Ibid.*

¹⁹ This is the Arctic shipping route between the Atlantic and Pacific Oceans along the northern coast of the North American continent.

²⁰ Resulting in an increased risk of icebergs, which are particularly dangerous for shipping.

²¹ 2004 ACIA Synthesis Report, *supra* note 13, p. 85.

²² This is what the Russians call part of the Northeast Passage, i.e. the Arctic shipping route between the Atlantic and Pacific Oceans along the northern coast of the Eurasian continent. The Russians distinguish between the Northeast Passage, which is the broader concept, and the Northern Sea Route, which starts in the West from the western entrances of Novaia Zemlia, thus normally excluding the Barents Sea and ends in the East at the Bering Strait, or vice versa. Besides this difference in lateral extent, the vertical extent also differs, implying once again that the Northeast Passage is the broader concept of the two: the Northeast Passage runs up to the North Pole whereas the Northern Sea Route is in principle limited to the 200 nautical-mile zone. It must nevertheless be noted that the practical application by the Russians of the just-mentioned distinction renders the difference between the two concepts much more blurred to the point one can even question its utility. For a discussion see E. Franckx 'Should the Law Governing Maritime Areas in the Arctic Adapt to Changing Climatic Circumstances?', in: Koivurova, Keskitalo and Bankes (eds.), *Climate Governance in the Arctic* (Berlin, Springer, 2009), pp. 131–133.

²³ 2004 ACIA Synthesis Report, *supra* note 13, p. 83. Confirming this general trend, while at the same time further distinguishing between the Barents, Kara and Laptev Seas, see I.I. Mokhov, V.C. Khon and E. Roeckner, 'Variations in the Ice Cover of the Arctic Basin in the 21st Century Based on Model Simulations: Estimates of the Perspectives of the Northern Sea Route', 415 *Doklady Earth Sciences*, No. 5, 2007, 759–763.

²⁴ 2005 ACIA Scientific Report, *supra* note 14, p. 193.

by the latter part of the 21st century,²⁵ allowing for an ice-free Northwest Passage and Northern Sea Route by 2080-2100.²⁶

But 2007 was also the year of an exceptional summer melt in the Arctic during the month of September, the lowest ever since satellite measurements started in 1979,²⁷ making certain scientists wonder whether summer ice would make it until 2050,²⁸ or even earlier.²⁹ Even before this exceptional summer, some had already argued that the IPCC findings were thought to be “conservative”,³⁰ predicting that an essentially ice-free summer Arctic was more likely to occur well within the present century.³¹ The summers of 2008 and 2009 broke no new record, but were nevertheless the second and third lowest years of satellite recorded sea-ice extent during the month of September.³² The summer of 2010, finally, dethroned the summer of 2009 from third place.³³ No wonder that scientists have since further downscaled the timing to the late 2020s.³⁴ Others

²⁵ S. Solomon, D. Qin, M. Manning, Z. Chen, K.B. Averyt, M.M. Tignor and H.L. Miller (eds.), *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007* (Cambridge: Cambridge University Press, 2007), p. 750. See also Core Writing Team, R. Pachauri and A. Reisinger (eds.), *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Geneva: IPCC, 2008), p. 46.

²⁶ See the map and legend reproduced in M. Parry, O. Canziani, J. Palutikof, P. van der Linden and C. Hanson (eds.), *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007* (Cambridge: Cambridge University Press, 2007), p. 659.

²⁷ To give an indication of the extreme nature of the ice decline, see J.C. Comiso, C.L. Parkinson, R. Gersten and L. Stock, ‘Accelerated Decline in the Arctic Sea Ice Cover’, 35 *Geophysical Research Letters*, No. L01703, 2008, 6, where these authors indicate that the ice cover on 14 September 2007 was about 25 per cent less than the previous record low, which happened only two years before, namely on 21 September 2005, and almost 40 per cent less than the climatological averages.

²⁸ R.A. Kerr, ‘Is Battered Arctic Sea Ice Down for the Count?’, 318 *Science*, No. 5 October 2007, 2007, 33–34.

²⁹ D. Cressy, ‘Arctic Melt Opens Northwest Passage’, 449 *Nature*, 2007, 267, predicting summer free ice conditions could occur as soon as within the next 40 years.

³⁰ J. Stroeve, M.M. Holland, W. Meier, T. Scambos and M. Serreze, ‘Arctic Sea Ice Decline: Faster than Forecast’, 34 *Geophysical Research Letters*, No. L09501, 2007, 1.

³¹ *Ibid.*, p. 5.

³² L. Polyak, R.B. Alley, J.T. Andrews, J. Brigham-Grette, T.M. Cronin, D.A. Darby, A.S. Dyke, J.J. Fitzpatrick, S. Funder, M. Holland, A.E. Jennings, G.H. Miller, M. O’Regan, J. Saville, M. Serreze, K. St. John, J.W.C. White and E. Wolff, ‘History of Sea Ice in the Arctic’, 29 *Quaternary Science Reviews*, No. 15/16, 2010, 1759.

³³ D. Perovich, W. Meier, J. Maslanik and J. Richter-Menge, ‘Sea Ice Cover: Arctic Report Card, Update for 2010’, available at <<http://www.arctic.noaa.gov/reportcard/seaice.html>>.

³⁴ M. Wang and J.E. Overland, ‘A Sea Ice Free Summer Arctic Within 30 Years?’, 36 *Geophysical Research Letters*, No. L07502, 2009, 4.

deny that a so-called tipping point has been reached,³⁵ since abrupt losses are often followed by equally abrupt recoveries during the following years.³⁶ But, these authors also predict ice-free summers well before the turn of the century, namely between 2060 and 2080.³⁷

These recent extraordinary years of limited summer ice cover in the Arctic also have a direct impact on future shipping perspectives in the Northwest and Northeast Passages. In 2007, for instance, for the first time in history, the Northwest Passage completely opened up, making it possible for a standard ocean-going vessel to sail through.³⁸ In 2008 both the Northwest and Northeast Passages opened up at the same time, which was said, once again, to be the first recorded occurrence.³⁹ Finally, in 2010 the US National Ice Center declared both the Northwest and Northeast Passages open for a certain period during the month of September, making it possible for two sailing expeditions, one Norwegian⁴⁰ and one Russian,⁴¹ to circumnavigate the Arctic using both passages during one and the same season.⁴²

Finally of special importance for Arctic shipping is the fact that scientists have noted that the shrinking of the ice extent during summer goes hand in

³⁵ S. Tietsche, D. Notz, J.H. Jungclaus and J. Marotzke, 'Recovery Mechanisms of Arctic Summer Sea Ice', 38 *Geophysical Research Letters*, No. L02707, 2011, 4.

³⁶ *Ibid.*, p. 1.

³⁷ *Ibid.*, p. 2, Figure 1. This period is somewhat extended on the lower end of the scale by key finding 6 of a 2011 scientific assessment conducted under the auspices of the Arctic Monitoring and Assessment Programme, which projects "a nearly ice-free summer within this century, likely within the next thirty to forty years". Arctic Council, *SWIPA 2010 Executive Summary: Snow, Water, Ice and Permafrost in the Arctic* (2011), p. 7.

³⁸ Press release of the National Snow and Ice Data Center (University of Colorado at Boulder) (hereinafter NSIDC Press Release), 1 October 2007, 'Arctic Sea Ice Shatters All Previous Record Lows: Diminished Summer Sea Ice Leads to Opening of the Fabled Northwest Passage', available at <http://nsidc.org/news/press/2007_seaiceminimum/20071001_pressrelease.html>.

³⁹ NASA Earth Observatory, 9 September 2008, 'Both Routes Around Arctic Open at Summer's End', available at <<http://earthobservatory.nasa.gov/IOTD/view.php?id=9078>>.

⁴⁰ It concerns a light 9.5 meters Corsair 31 trimaran, called *Northern Passage*. See 'Around the North Pole in Less than Three Months', Barents Observer, 24 September 2010, available at <<http://www.barentsobserver.com/around-the-north-pole-in-less-than-three-months.4822563-16334.html>> and 'The Northern Passage 2010', available at <http://www.explorapoles.org/expeditions/detail/the_northern_passage_2010/>, where a map can be found showing the exact route followed.

⁴¹ It concerns an 18 meters sailing boat, called *Peter I*. See 'Arkticheskaikrugosvetka' (Arctic voyage around the world), available at <http://new.rusarc.ru/?page_id=2141>, where the exact route followed can be consulted.

⁴² NSIDC Press Release, 4 October 2010, 'Weather and Feedbacks Lead to Third-lowest Extent', available at <<http://nsidc.org/arcticseaicenews/2010/100410.html>>.

hand with an overall marked decrease in Arctic ice thickness.⁴³ At the end of the summer melt of 2010 less than 15 per cent of the remaining ice was more than two years old, which contrasts sharply with the 1980s where this percentage still ranged between 50 and 60 per cent.⁴⁴ From an estimated mean average ice draft of 2.9 meters at the end of the 1980s,⁴⁵ scientists today rather believe that figure to be less than two,⁴⁶ or a reduction by more than 30 per cent over a time period of exactly 20 years.

This brief overview of scientific findings with respect to summer ice cover extent and thickness in the Arctic may suffice to illustrate that trans-Arctic shipping is definitively looming on the horizon. With the restricted area inside the Canadian archipelago, as explained above, the Northern Sea Route will particularly profit from these improved ice conditions.⁴⁷

⁴³ Polyak *et al.*, *supra* note 32, p. 1758. Within the central Arctic Ocean old ice of five years or more has declined by 88 per cent and ice of nine years or older has simply disappeared (*ibid.*, p. 1759). Arctic ice is thus becoming considerably younger, meaning thinner as well. J. Maslanik, J. Stroeve, C. Fowler and W. Emery, 'Distribution and Trends in Arctic Sea Ice Age Through Spring 2011', 38 *Geophysical Research Letters*, No. L13502, 2011, 5.

⁴⁴ NSIDC Press Release, 4 October 2010, *supra* note 42.

⁴⁵ R. Bourke and R. Garrett, 'Sea Ice Thickness Distribution in the Arctic Ocean', 13 *Cold Regions Science and Technology*, No. 3, 1987, 262.

⁴⁶ J.A. Maslanik, C. Fowler, J. Stroeve, S. Drobot, J. Zwally, D. Yi and W. Emery, 'A Younger, Thinner Arctic Ice Cover: Increased Potential for Rapid, Extensive Sea-ice Loss', 34 *Geophysical Research Letters*, No. L24501, 2007, 1–5.

⁴⁷ That the Northern Sea Route will most probably be opened first is generally supported by writers addressing this issue, either explicitly (see A. Chircop, 'The Growth of International Shipping in the Arctic: Is a Regulatory Review Timely?', 24 *International Journal of Marine and Coastal Law*, No. 2, 2009, 356) or implicitly (see for instance J. Ho, 'The Implications of Arctic Sea Ice Decline on Shipping', 34 *Marine Policy*, No. 3, 2010, 713–715, who only touches upon the Northern Sea Route or Northeast Passage without even mentioning the Northwest Passage. This author bases himself moreover on predictions made by the US National Intelligence Council to rely on the year 2013 as the starting date for a seasonally ice-free Arctic (*ibid.*, p. 714 and 715); see also C. Schofield and T. Potts, 'Across the Top of the World: Emerging Arctic Navigational Opportunities and Arctic Governance', 2009 *Carbon & Climate Law Review*, No. 4, 2009, 472–482. These authors distinguish between the Northwest Passage, the Northern Sea Route and a direct trans-Arctic route over the Pole as possible alternatives. Nevertheless, the ice conditions in the Northwest Passage are said to render navigation "considerably more hazardous" (*ibid.*, p. 476), whereas the trans-Arctic route "would potentially be competitive in the longer term" (*ibid.*, p. 477). Only with respect to the Northern Sea Route do these authors provide a practical example of its international commercial use (*ibid.*, p. 472 and 476–477)). That the Northern Sea Route will most probably be subject to increased international navigation before the Northwest Passage is moreover borne out by simulations of Arctic sea ice characteristics affecting the navigation along both routes performed by global climate models in comparison with observations. A prolongation of the shipping season at the end of the century, not requiring ice-breaker assistance, is estimated to be three to six months with respect to the Northern Sea Route and two to four months concerning the Northwest

B. Recent ship movements along the Northern Sea Route

Favorable ice conditions are of course one aspect facilitating shipping in the Arctic, but these have to be accompanied by favorable political conditions as well. This submission holds particularly true with respect to the Northern Sea Route, which for a long time simply remained off limits for foreign commercial ships, always in need of the infrastructure and ice-breaker assistance of the coastal State involved. Since the late 1960s the former Soviet Union has at times taken initiatives to open up the Northern Sea Route to foreign shipping, but these initiatives have never been very successful because no foreign commercial vessel ever took advantage of them: The first Soviet initiative in 1967 is thought to have been tacitly withdrawn because of the Suez canal crisis, and the Murmansk speech of Gorbachev 20 years later was short lived because of the dissolution of the Soviet Union in 1991.⁴⁸ Neither the *Tiksi* in 1989, a Soviet vessel chartered for hard currency,⁴⁹ nor the *Astrolabe* in 1991, a French ice class 1 super multipurpose offshore ship,⁵⁰ nor the *Uikku* in 1997, a Finnish flagged ice class 1A super oil tanker,⁵¹ were foreign ships making use of the passage for international commercial purposes.

Passage. V.C. Khon, I.I. Mokhov, M. Latif, V.A. Semenov and W. Park, 'Perspectives of Northern Sea Route and Northwest Passage in the Twenty-first Century', 100 *Climate Change*, No. 3, 2010, 766. Moreover, the Northwest Passage will suffer from penetrating thick multi-year ice (*ibid.*, p. 764) and will be characterized by a slower start in becoming less ice-infested only after 2030 (*ibid.*, p. 763).

⁴⁸ For more details about these initiatives, see Franckx, *supra* note 3, pp. 328–330.

⁴⁹ For a more detailed account on the voyage of the *Tiksi*, see E. Franckx, 'New Developments in the North-east Passage', 6 *International Journal of Estuarine and Coastal Law*, No. 1, 1991, 38–40. Even though there was a clear international commercial interest here in making use of the Northern Sea Route for transit purposes only (goods were loaded in Hamburg and unloaded in Osaka), the former Soviet Union was not inclined at that time to convoy a foreign flagged vessel through this sea route, but rather required the goods to be transported on a Soviet flagged vessel instead. Since it had no proper interest in the goods, as for instance in the case of the voyage of the Russian flagged vessel MV *Monchegorsk* making a transit passage in 2010 (see *infra* notes 72–73 and accompanying text), this attitude by the former Soviet Union can be considered as having undermined the true international commercial use of the route in the case of the *Tiksi*.

⁵⁰ For a more detailed account on the voyage of the *Astrolabe*, see E. Franckx, 'The Soviet Maritime Arctic, Summer 1991: A Western Account', 1 *Journal of Transnational Law and Policy*, No. 1, 1992, 140–144.

⁵¹ This vessel claims to be the first foreign flagged oil tanker to cross the whole Northern Sea Route. The purpose of the voyage was to transport diesel oil from Murmansk to Pevek. After having unloaded the cargo, the vessel continued its journey through the Bering Strait. See S. Lumminsivu, 'The M/t *Uikku* Navigated the Entire Northern Sea Route in 1997: The M/t *Uikku* was the First Western Oil Tanker to Navigate the Entire Northern Sea Route – World Records Also After Nordenskiöld, But for How Long?', available at <http://www.smu.fi/in_english/communication/the_m_t_uikku_navigated_the_enti/>. This vessel, however, had

One had to wait for the summer season of 2009 for the first crossing by a foreign flagged vessel of the Northern Sea Route for an international commercial purpose. It concerned the MV *Beluga Fraternity* and the MV *Beluga Foresight* two multi-purpose heavy lift carriers, both belonging to the German Beluga Group⁵² but flying the flag of Antigua and Barbuda. The company at first tried to make the voyage during the summer of 2008 but was unable to obtain the necessary permission from the Russian authorities in time.⁵³ Apparently the Beluga Group intended to make the crossing without having to rely on Russian icebreakers or other assistance “the cost of which would wipe out any benefits” according to a spokesman of the Beluga Group.⁵⁴ When they did accomplish the voyage in 2009, however, the two vessels, after having left Ulsan, South Korea, and stopping for inspection in Vladivostok,⁵⁵ met and convoyed with

been chartered since 1993 by a company, based in Murmansk, in which two Russian companies (the Murmansk Shipping Company and Primorsk Shipping Yards) and one Finnish company (Nemarc Shopping Oy) were a principal shareholder. Together with a sister ship, the M/t *Lunni*, they had been chartered to transport diesel oil and jet fuel to Russia’s estuaries. See M. Voytenko, ‘How Many Non-Russian Flagged Vessels Sailed Russian Northern Passage?’, available at <<http://www.odin.tc/eng/articles/617-How-many-non-Russian-flagged-vessels-sailed-Russian-Northern-Passage-.asp>>. As such, even though being a foreign flagged vessel, the M/t *Uikku* was working for the Russian authorities at the time of the 1997 crossing and was clearly not engaged in international trade. In 1998 the same vessel took part in an Arctic Demonstration and Exploratory Voyage, a research project funded by the European Union, during which she sailed from Murmansk to the Ob river estuary to load a cargo of gas condensate and then sailed back to Europe. Information available at <http://www.transport-research.info/web/projects/project_details.cfm?ID=21>. See also L.W. Brigham, ‘The Northern Sea Route, 1998’, 36 *Polar Record*, No. 196, 1999, 21–22. This voyage may have been closer to international trade, but the vessel only sailed a small part of the Northern Sea Route on this occasion (for the exact route followed, see *ibid.*, p. 22, Fig. 2). Besides the M/t *Uikku*, also a tanker flying the Latvian flag has been reported to have completed a full transit in 1997. L.W. Brigham, ‘The Northern Sea Route, 1997’, 34 *Polar Record*, No. 190, 1998, 220, who bases this information on a personal communication with the Northern Sea Route Administration. Despite the fact that further information on this particular crossing is missing, one can assume that the purpose of that transit was similar to that of the M/t *Uikku*. Indeed the same author wrote in 2001 that no through transit was carried on the Northern Sea Route during the years 1997–1999. L.W. Brigham, ‘The Northern Sea Route, 1999–2000’, 37 *Polar Record*, No. 203, 2001, 329 and 330.

⁵² Technical details of these two ships are available at <<http://www.beluga-group.com/en/flottendatenbank/mehrzweck-schwergutfrachter/f-series/>>.

⁵³ G. Garfield, ‘Trailblazer Beluga: A German Player is Planning to Send a Ship Through the Northeast Passage – Without Assistance’, 18 *Trade Winds*, 5 September 2008, available at <http://www.beluga-group.com/uploads/media/2008_09_08_TradeWinds_Trailblazer.pdf>.

⁵⁴ Statement by Niels Stolberg, President and CEO of the Beluga Group, as quoted in *ibid.*

⁵⁵ This inspection, together with the time required for obtaining the necessary clearances, took nearly a month. ‘Successful Transit of Northeast Passage’, *Ships Monthly*, December 2009,

Russian icebreakers as soon as they passed through the Bering Strait. When the vessels rounded the most northern and difficult part of their route, namely Vil'kitskii Strait,⁵⁶ they formed part of a convoy led by two Russian atomic icebreakers.⁵⁷ The ships first delivered 44 heavy modules to Novii Port, at the mouth of the Ob river, for a Russian power plant in Surgut upstream that river. From there they sailed to Archangelsk where they loaded 6,000 tons of steel pipe destined for Nigeria, and continued their trip to Rotterdam.⁵⁸ Even though the trip has been qualified as a success by the Beluga Group, the mandatory charges for the icebreaker escort were not disclosed.⁵⁹

In 2010 the same German company used two of its vessels, the MV *Beluga Fortitude*⁶⁰ and the MV *Beluga Houston*,⁶¹ two ice-hardened multipurpose heavy lift carriers sailing under the flag of Antigua and Barbuda, to deliver, once again, complex components destined for the Surgut power plant. Russian icebreakers escorted these vessels. But since the ships loaded in Norrköping, Sweden, and Rotterdam, the Netherlands, respectively, and later discharged again in Novii Port, returning to Rotterdam, this was only a partial use of the Northern Sea Route.⁶² At the end of the 2010 summer season, moreover, Rosmorport chartered the MV *Beluga Houston* to load two tugs built in the Leningrad region, one in the ship's hold and the other one on deck, and to deliver them to

available at <http://www.beluga-group.com/uploads/media/2009-12-01-Ships-Monthly-Successful-Transit_01.pdf>.

⁵⁶ About the difficult physical and legal nature of this strait, see E. Franckx, 'Non-Soviet Shipping in the Northeast Passage, and the Legal Status of ProlivVil'kitskogo', 24 *Polar Record*, No. 151, 1988, 269-276.

⁵⁷ 'Northeast Passage Journey Successful: Beluga Vessels Call Siberian Port', Breakbulk Magazine, 9 September 2009, available at <<http://www.breakbulk.com/node/810>>.

⁵⁸ *Ibid.* See also 'Successful Transit of Northeast Passage', *supra* note 55.

⁵⁹ 'Successful Transit of Northeast Passage', *supra* note 55. As duly stressed by a privileged observer of the Northern Sea Route. See L.W. Brigham, 'The Fast-changing Maritime Arctic', 136 *U.S. Naval Institute Proceedings*, No. 5, 2010, 55, who moreover remarks that in the Northwest Passage during that same shipping season the only passages had been made by yachts and ice-strengthened tour vessels (*ibid.*, p. 56).

⁶⁰ Technical details of this ship are available at <<http://www.beluga-group.com/en/flottendatenbank/mehrzweck-schwertgutfrachter/f-series/>>.

⁶¹ The *MV Beluga Houston* was only delivered to the Beluga Group earlier that same year. It belongs to the H class of the company, meaning it is able to carry larger and heavier project cargoes than the other ships of the company mentioned earlier, which all belong to the F class. See J. Nodar, 'Beluga Shipping Takes Delivery of New Ship', *The Journal of Commerce Online*, 19 January 2010, available at <<http://www.joc.com/maritime/beluga-shipping-takes-delivery-new-ship>>.

⁶² 'Safely Passing the Ice Floes on the Way to Siberia', 24 August 2010, as available at <[http://www.beluga-group.com/en/search/?tx_indexedsearch\[sword\]=arctic2010#Press-Pressreview](http://www.beluga-group.com/en/search/?tx_indexedsearch[sword]=arctic2010#Press-Pressreview)>.

Vladivostok.⁶³ But this operation missed an international component for it only used a foreign flag to move goods within Russian waters.⁶⁴

A better example for present purposes is therefore the voyage during the summer of 2010 of the MV *Nordic Barents*, an ice-class 1A bulk carrier flying the flag of Hong Kong and owned by the Norway-based Tschudi Shipping Company. The ship left the port of Kirkeness, Norway, with a cargo of 41,000 tons of iron ore concentrate to be unloaded just twelve days later in China. Note that this ship did not stop at a Russian port to load or unload. It therefore represents the first instance that a true transit passage for international commercial purposes took place by a foreign flagged vessel using the Northern Sea Route merely as a shipping lane relying the Atlantic and Pacific Oceans.⁶⁵ The MV *Nordic Barents* was escorted by Russian nuclear icebreakers as well⁶⁶ and completed the entire passage of the Northern Sea Route in nine days.⁶⁷

Only ten days earlier, the SCF *Baltica* had completed its voyage from Murmansk to Ningbo, China, where it delivered 70,000 tons of gas condensate. The ship is an ice-class 1A super tanker flying the Liberian flag and belonging to the Sovcomflot Group, one of Russia's largest infrastructure companies with headquarters in St. Petersburg. Novatek, the largest independent gas producer in Russia, ordered the transport. Three nuclear icebreakers escorted

⁶³ 'Rosmorport Sends Tugs to Its Vladivostok Branch', 186 Lekko International, November/December 2010, pp. 325–326, available at <http://www.pellaship.ru/pdf/lekko_international_186.pdf>; 'Opening the Northern Sea Route', Asia Maritime, September/October 2010, available at <<http://www.thisisasiamaritime.com/ckfinder/userfiles/images/2010102195859400.pdf>>.

⁶⁴ This is also part of the reason why the voyage of the *Georg Ots*, the first non-ice strengthened passenger ship ever to traverse the Northern Sea Route will not be listed here: it "only" sailed under icebreaker escort from Murmansk to Vladivostok, thus lacking an international commercial interest. "Georg Ots" Passenger Ferry Made an Unprecedented Passage Through the NSR: Satellite Imagery Helped Optimizing the Route', ScanEx Newsletter, 1 October 2010, available at <http://www.scanex.ru/en/news/News_Preview.asp?id=n18316175>. Moreover, the ship flew a Russian flag. 'Passenger Ship Traverses the Northeast Passage', Maritime Arctic, 30 September 2010, available at <<http://maritime-arctic.com/2010/09/30/passenger-ship-traverses-the-northeast-passage/>>. With a capacity of 368 passengers and 107 cars, there might of course have been foreign passenger on board, but the international commercial context of interest here relates to the shipping aspect of the voyage. It completed the crossing of the Northern Sea Route in only seven days. See A. Rohlen, 'Tor Viking – A Late Return from Alaska to Europe – A New Possibility to Link Atlantic and Beaufort Sea Basins for the Off-shore Industry?', Arctic Passion Seminar, Helsinki, 3 March 2011, PowerPoint presentation available at <http://www.akerarctic.fi/Arctic_Passion_2011-TransAtlantic-Tor_Viking_Trip_through_NSR-Rohlen.pdf>, slide 22.

⁶⁵ "MV Nordic Barents" Makes Historic Voyage', Barents Observer, 26 August 2010, available at <www.barentsobserver.com/mv-nordic-barents-to-make-historic-voyage.4812338-16175.html>.

⁶⁶ "MV Nordic" Gets Icebreaker Assistance', Barents Observer, 8 September 2010, available at <www.barentsobserver.com/index.php?id=4816926>.

⁶⁷ Rohlen, *supra* note 64, slide 22.

the ship.⁶⁸ This is so far the largest ship having made the passage.⁶⁹ Doubts can be raised as to whether it is appropriate to mention this voyage in the present list. Even though according to Russian terminology the SCF *Baltica* completed the Northern Sea Route during the summer of 2010,⁷⁰ it did not really use the Northeast Passage linking the Atlantic and Pacific Oceans because the Barents Sea, where it started its journey, is normally defined as a marginal sea of the Arctic Ocean.⁷¹ On the other hand, of course, the ship is flying a foreign flag and an international commercial interest is clearly present.

Following the just-cited rule of thumb, mention should also be made of the summer 2010 voyage of the MV *Monchegorsk*,⁷² running a commercial test voyage between the port of Murmansk and Shanghai. The vessel belongs to the Russian mining company Norilsk Nickel. It is an ice-strengthened container ship flying the Russian flag. After having started to ship its own products to Western Europe, the company now intends to start exporting its own products to the Far East as well by means of the Northern Sea Route. The vessel left Murmansk on September 15 loaded with metal, unloaded at Shanghai and returned with consumer goods for Norilsk. The importance of this trip is that it made history by sailing the Northern Sea Route without icebreaker assistance both on the out- and inbound voyages.⁷³

Finally, a brief mention should be made of the passage of the Swedish vessel *Tor Viking II*, itself a class 10 icebreaker, whose work in US waters had been delayed and was urgently needed back in the Baltic Sea.⁷⁴ This was again an

⁶⁸ 'First High-tonnage Tanker Through Northeast Passage', Barents Observer, 17 August 2010, available at <<http://www.barentsobserver.com/index.php?id=4809756>>.

⁶⁹ It is a 100,000 ton tanker, with a length of 250 meters and a beam of 44 meters. By comparison, the MV *Nordic Barents* has a length of 189 meters and a beam of 30 meters. The tonnage of the SCF *Baltica* is double of what the International Northern Sea Route Program (1993–1999) had predicted to be the maximum cargo if a northerly route were to be followed without port calls. R.D. Brubaker and C.L. Ragner, 'A Review of the International Northern Sea Route Program (INSROP) – 10 Years On', 33 *Polar Geography*, No. 1–2, 2010, 19. As stated, the ship was only carrying 70,000 tons of gas condensate at that time, but it did make a so-called technical anchorage at the port of Pevek. Sovcomflot, 'SCF Baltica Completes Her Voyage from Murmansk to Ningbo (China)', Press Release of 8 September 2010, available at <<http://www.scf-group.com/npage.aspx?anim=1&cs=5&cid=113&cs2=1&curDate=1-9-2010&d=72347>>.

⁷⁰ It did so in nine and a half days. See Rohlen, *supra* note 64, slide 22.

⁷¹ This also explains why ship movements between Norilsk and West-European ports have not been included in the present listing.

⁷² The ship has a length of 168 meters and a beam of 26 meters.

⁷³ 'First Ever Round-trip Voyage Without Icebreaker', Barents Observer, 17 November 2010, available at <<http://www.barentsobserver.com/first-ever-round-trip-voyage-without-icebreaker.4848358-116320.html>>.

⁷⁴ Unlike the *Polar Sea* saga of 1985, which stirred a severe diplomatic row between the United States and Canada when this US icebreaker sailed through the Northwest Passage for very

historic voyage, since it was the first time in Russian history that the passage was made that late in the season. The *Tor Viking II* met a Russian nuclear icebreaker after passing the Bering Strait and it took both icebreakers nine days to make the crossing of the Northern Sea Route, rounding the northern tip of Novaia Zemlia on Christmas day.⁷⁵ Though the *Tor Viking II* is a foreign flagged vessel making use of the Northern Sea Route to sail from the Pacific to the Atlantic, the international commercial interest could be questioned, even though in this case the economic gain was directly related to the shipping aspects of the voyage.

This short overview shows that the summer of 2010 has been exceptional indeed as far as the use of the Northern Sea Route for international commercial purposes is concerned. A wide variety of crossings were made during that year. And even though many of them were “a first ever” when considering their specific characteristics, not all were directly relevant for present purposes. Nevertheless, the above-made analysis of the use of the Northern Sea Route during the shipping season 2010 confirms the somewhat prophetic words of one commentator: “When the future history of the Arctic will be written, 2010 will be marked as the breakthrough year for commercial shipping along the Northern Sea Route”.⁷⁶

At the same time, while this route is being mastered and prepared for international shipping,⁷⁷ it remains a harsh environment where the possibility of accidents cannot be totally excluded. Despite the assistance of nuclear icebreakers and despite the fact that the oil tankers have the highest ice-class, collision may still occur, as was painfully illustrated in this same exceptional year [2010]. Two tankers belonging to the Murmansk Shipping Company, the MT *Indiga*

similar reasons (as described in E. Franckx, *Maritime Claims in the Arctic: Canadian and Russian Perspectives* (Dordrecht, Martinus Nijhoff Publishers, 1993), pp. 89–101), here instead letters of mutual thanks were exchanged, praising the good cooperation between both vessels *en cours de route*. Rohlen, *supra* note 64, slide 31, where two letters, one in English and one in Russian, are reproduced.

⁷⁵ Rohlen, *supra* note 64, slide 31.

⁷⁶ T. Nilsen, ‘The Future History of the Arctic is Now’, Barents Observer, 2 September 2010, available at <<http://www.barentsobserver.com/index.php?id=4814307>>. Again, this sharply contrasts with the Northwest Passage where the first real transit transport of goods still has to take place. See G. Wilkman and M. Niini, ‘Arctic Transit: The Northern Sea Route and the Northwest Passage Offer Enormous Opportunity While Posing Enormous Challenge’, *Marine Technology*, 2011, 34–40.

⁷⁷ At present, for instance, the Russian Federation is considering the building of two hubs for the Northern Sea Route. In the west it concerns the construction of a new port in Murmansk Bay and in the east the further development of the port of Petropavlovsk for that specific purpose. ‘Russians Plan Arctic Hub’, Breakbulk Online, 10 December 2010, available at <<http://www.breakbulk.com/ports-terminals/russians-plan-arctic-hub>>.

and the MT *Varzuga*,⁷⁸ both A1 super ice-class oil tankers flying the Russian flag, collided on 16–17 July. At that time they were each transporting 13,300 tons of diesel fuel from Murmansk to Chukotka. At the time of the incident, two nuclear icebreakers accompanied them. The hull of the MT *Indiga* was damaged but no spill was reported.⁷⁹

This factual background sets the stage for an analysis of the legal developments, discussed in the next part, which appear to be necessary in order to cope with this projected increase of shipping in the Arctic in the near future.

From voluntary Arctic guidelines to a mandatory polar code

A. Pollution of the marine environment in Arctic waters

Within the Arctic environment the 2009 AMSA Report highlights the following possible consequences of increased shipping in the area.⁸⁰ Arctic species are especially vulnerable to potential environmental stresses such as oil spills, accidental discharges, ship strikes and disturbances. The growing presence of ships in the areas where species gather and in migration corridors used by marine mammals and birds will most likely result in a particularly hazardous situation. With regard to “ship based impacts”, a distinction can be made between accidental discharges and operational discharges into the water and ship emissions into the air. Oil spills and accidental discharges of other toxic chemicals will possibly constitute the most serious threat to the Arctic ecosystems as a result of increased shipping. Because of the particular environmental conditions of the Arctic, that is the presence of ice, the extreme weather conditions, the problem of visibility, exceptional hazards and little human infrastructure, an adequate response and cleanup of these possible spills form a major challenge for the region for which mankind remains essentially unprepared. At the same time one has to acknowledge that vessels do produce a range of substances in their natural mode of operation, such as oil, ballast water, grey water, bilge water, garbage, etc., which will eventually have to be discharged at some point. Such operational discharges are regulated through the International Convention for

⁷⁸ It is interesting to note that the MT *Indiga* and the MT *Varzuga* are the same vessel as the *Lenni* and the *Uikku*, which in the past had been chartered by the former Soviet Union for similar purposes (see *supra* note 51). They were both sold to the Murmansk Shipping Company after 25 years of service in 2003. At that time they also changed flag.

⁷⁹ ‘Arctic Oil Tankers Collided’, Barents Observer, 19 July 2010, available at <<http://www.barentsobserver.com/index.php?id=4801363>>.

⁸⁰ 2009 AMSA Report, *supra* note 2, p. 134–151. The following paragraph is based on this report.

the Prevention of Pollution by Ships (MARPOL).⁸¹ In theory, these discharges should not pose a particular threat to the Arctic since they concern small amounts of legally discharged substances. Even though the MARPOL regulations have significantly reduced pollution in the marine environment, they have not eliminated discharges altogether. If these international rules and regulations are not strictly followed, even a small amount of illegally discharged oily sludge could cause substantial environmental damage. The last above-mentioned impact from shipping concerns the emission into the air of, among others, carbon dioxide, methane, nitrogen oxides, sulphur oxides and particulate matter. Because of these emissions resulting from shipping activity, increased shipping will most probably contribute to global climate change and to health impacts in the Arctic. Apart from these direct impacts, shipping activity also causes some potential disturbances to the marine environment. These potential disturbances consist of sound and noise produced by ships as a by-product of their operation, damage caused by ice-breakers, vessel strikes on mammals and the introduction of invasive species through ballast water discharge, hull fouling, cargo operations and casualties or shipwrecks.

B. Development of a code for ships operating in polar waters

The polar regions received little attention in the 1982 LOS Convention and thus only one article directs the future development of international maritime traffic in the Arctic.⁸² As mentioned above, Article 234 of the 1982 LOS Convention provides coastal States with broader prescriptive and enforcement jurisdiction within their EEZ in ice-covered waters than is normally the case in more temperate waters. Unfortunately, this article does not excel in clarity.⁸³ Of particular interest is one of the fundamental questions regarding this article, namely whether the notion of “due regard” obliges coastal States to observe at least GAIRAS concerning the design, construction, manning or equipment

⁸¹ International Convention for the Prevention of Pollution by Ships (Nov. 2, 1973), 1340 *U.N.T.S.* 184, amended by Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973 (Feb. 17, 1978), 1340 *U.N.T.S.* 61. Hereinafter MARPOL.

⁸² B. Yeager and R. Huebert, *A New Sea: The Need for a Regional Agreement on Management and Conservation of the Arctic Marine Environment* (Oslo, WWF International Arctic Programme, 2008), p. 21.

⁸³ See for instance the presentation of Kristin Bartenstein at the 39th Annual Conference of the Canadian Council on International Law, Northern Exposure: International Law and the Challenge of the Arctic, October 28–30, 2010, Ottawa, Canada. On October 29 this author revisited Article 234. This contribution was based on an article which appeared shortly afterwards: K. Bartenstein, ‘The ‘Arctic Exception’ in the Law of the Sea Convention: A Contribution to Safer Navigation in the Northwest Passage?’, 42 *Ocean Development and International Law*, No. 1, 2011, 22–52.

of vessels, or not.⁸⁴ In the early 1990s, Canadian officials launched the idea of a polar code in anticipation of the expected future increase of shipping in the Arctic. The idea was to have a common set of rules and regulations for Arctic shipping before an increase in shipping would make such a harmonization impossible. This initiative led to a series of meetings held in the early 1990s under the auspices of the IMO.⁸⁵ The object of the polar code was “to provide that all ship operations in Polar Waters meet internationally acceptable standards”.⁸⁶ Originally the idea was that a set of mandatory rules would be developed and that these rules would apply to both polar regions. This was however opposed by the United States in 1999 which stated that not only should the code be limited to the Arctic instead of trying to cover both polar regions, but also that it would be premature to develop a set of mandatory rules at that time. Instead, the United States insisted on the development of Arctic guidelines instead of a polar code.⁸⁷ These considerations were accepted by the Maritime Safety Committee (MSC), which decided to further develop the proposed regulations as recommendatory and therefore non-binding guidelines.⁸⁸ This can be viewed as regrettable because such a binding regime could be key in securing the ultimate objective of Article 234 by giving concrete content to the “due regard” notion to be found therein.⁸⁹

These prolegomenae finally resulted in the development of the Guidelines for Ships Operating in Arctic Ice-covered Waters, approved in 2002.⁹⁰ The

⁸⁴ K. Hakapaa, E. Franckx, E.J. Molenaar ‘International Law Association London Conference (2000). Committee on Coastal State Jurisdiction Relating to Marine Pollution. Final Report’, in: Franckx (ed.), *Vessel-source Pollution and Coastal State Jurisdiction: The Work of the ILA Committee on Coastal State Jurisdiction Relating to Marine Pollution (1991–2000)*, (The Hague, Kluwer Law International, 2001), p. 102.

⁸⁵ Yeager and Huebert, *supra* note 82, p. 22.

⁸⁶ O. Jensen, ‘Arctic Shipping Guidelines: Towards a Legal Regime for Navigation Safety and Environmental Protection?’, 44 *Polar Record*, No. 229, 2008, 108.

⁸⁷ MSC/71/20/11. Code on Polar Navigation. Submitted by the United States, 19 February 1999. In this document submitted to the Maritime Safety Committee, the United States pointed at the vast differences between the Arctic and the Antarctic, in particular the difference in ice conditions, geography and the fact that the Antarctica already has its Antarctic Treaty System, making it undesirable and unnecessary to capture both regions in one agreement. It further commented on some aspects of the draft code for some being too detailed at the moment while for others too vague to have substantial future importance. It also highlighted the ambiguity the code contains regarding the non-mandatory nature of some clauses. Lastly the US stressed that a mandatory code was not to be favored for the time being and that, as is the normal course of action, guidelines should be developed instead, to be reconsidered at a later time when experience is gained.

⁸⁸ Jensen, *supra* note 86, p. 109.

⁸⁹ Hakapaa, Franckx, Molenaar, *supra* note 84, p. 105.

⁹⁰ MSC/Circ.1056; MEPC/Circ.399 of 23 December 2002. Guidelines for Ships Operating in Arctic Ice-covered Waters. Adopted by the MSC at its seventy-sixth session (2–13 December

2002 Arctic Guidelines include, besides a general part, three other parts on construction, equipment and operation, each subdivided into chapters. The 2002 Arctic Guidelines were intended to address those provisions that were considered necessary beyond the existing requirements of other applicable conventions or codes and must be regarded as additional not only to the SOLAS Convention,⁹¹ but also to the MARPOL Convention, STCW⁹² and the ISM⁹³ code.⁹⁴ The 2002 Arctic Guidelines promote safety of navigation and the prevention of vessel-source pollution. They were heavily criticized for having substantial shortcomings.⁹⁵ Moreover, questions were raised regarding the impact of a non-binding legal regime. The 2002 Arctic Guidelines not only are recommendatory, but also they are to be interpreted “as providing recommendations rather than mandatory direction”.⁹⁶ The document invites member governments to bring the regulations to the attention of all parties concerned with the operation of ships in Arctic ice-covered waters. They are thus by definition not legally binding. The effectiveness of these 2002 Arctic Guidelines depends on cooperation of all the parties involved. Actual application is only possible through state practice and compliance by the international shipping community. Meanwhile the 2002 Arctic Guidelines have been revised to also cover the Antarctic sea area. In addition, they have been updated to acknowledge the technical, technological and regulatory developments since their approval in 2002. This revision resulted in the Guidelines for Ships Operating in Polar Waters as first agreed upon by the Sub-Committee on Ship Design and Equipment (DE) when it met for its 52nd session in 2009.⁹⁷ The MSC later approved the Guidelines for Ships Operating in Polar Waters at its 86th session,⁹⁸ and the IMO Assembly subsequently adopted them on 2 December 2009.⁹⁹ The

2002) and by the MEPC at its forty-eight session (7–11 October 2002). Hereinafter 2002 Arctic Guidelines.

⁹¹ International Convention for the Safety of Life at Sea (Nov. 1, 1974), 1184 *U.N.T.S.* 2.

⁹² International Convention on Standards of Training, Certification and Watch keeping for Seafarers (July 7, 1978), 1361 *U.N.T.S.* 190.

⁹³ A/18/Res.741. The International Safety Management Code. Adopted on 4 November 1993.

⁹⁴ Jensen, *supra* note 86, p. 109.

⁹⁵ These shortcomings included, among others, the lack of clearly defined training qualifications for operating a vessel in ice-covered waters and insufficient regulations concerning the problems and risks associated with icing.

⁹⁶ 2002 Arctic Guidelines, *supra* note 90, P-1.3. This recommendatory nature is further stressed in the definition of the word “Guidelines” (*ibid.*, G-3.8) as well as in the introductory paragraphs of this MSC and MEPC circular.

⁹⁷ DE/52/21 of 14 April 2009, Report to the Maritime Safety Committee on its Fifty-second Session pp. 26–29.

⁹⁸ MSC/86/26/Add.2 of 12 June 2009, Report of the Maritime Safety Committee on its Eighty-sixth Session, p. 69.

⁹⁹ A/26/Res.1024 of 18 January 2010. Guidelines for Ships Operating in Polar Waters. Adopted on 2 December 2009. Hereinafter 2009 Polar Waters Guidelines. See also International

2009 Polar Waters Guidelines must still, as the title suggests, be considered as non-mandatory recommendations.¹⁰⁰

Although both the 2002 Arctic Guidelines and the 2009 Polar Waters Guidelines provide important guidance, the fact remains that, because of their soft law nature, these guidelines' contribution is rather limited and their effect stays basically untested.¹⁰¹ The 2009 AMSA Report acknowledged this situation and advised, in its recommendations, that:

The Arctic states, in recognition of the unique environmental and navigational conditions in the Arctic, decide to cooperatively support efforts at the International Maritime Organization to strengthen, harmonize and regularly update international standards for vessels operating in the Arctic. These efforts include:

- *Support the updating and the mandatory application of relevant parts of the Guidelines for Ships Operating in Arctic Ice-covered Waters (Arctic Guidelines); and,*
- *Drawing from IMO instruments, in particular the Arctic Guidelines, augment global IMO ship safety and pollution prevention conventions with specific mandatory requirements or other provisions for ship construction, design, equipment, crewing, training and operations, aimed at safety and protection of the Arctic environment.*¹⁰²

Despite the above-mentioned criticism, these guidelines provide a valuable tool when trying to achieve universal shipping standards in the Arctic. The revised 2009 Arctic Waters Guidelines are already adopted by the IMO Assembly thus guaranteeing that they do not violate existing international instruments. Also, much of the groundwork has already been accomplished by the IMO and by relying on these presently non-binding guidelines one would therefore save time and enhance the chances of a binding regime of becoming operational in the not too distant future. Moreover, the IMO is internationally accepted as the primary regulator of marine shipping and as such will be confronted with less opposition from the global shipping community.¹⁰³

Together with the approval of the revised 2009 Polar Waters Guidelines, a proposal was set forward to develop mandatory requirements for their

Maritime Organization, *Ships operating in polar regions*, available at <<http://www.imo.org/OurWork/Safety/SafetyTopics/Pages/PolarShippingSafety.aspx>>.

¹⁰⁰ The very restrictive language of the 2002 Arctic Guidelines (*supra* note 96) was simply retained. See 2009 Polar Waters Guidelines, *supra* note 99, P-1.4. Contrary to the 2002 Arctic Guidelines, the word "Guidelines", with its further emphasis on the recommendatory nature, no longer appears under the section definitions in the 2009 Polar Waters Guidelines (see *ibid.*, G-3). The IMO merely "recommends Governments to bring the annexed Guidelines to the attention of shipowners, ship operators, ship designers, shipbuilders, ship repairers, equipment manufacturers and installers and all other parties concerned with the operation of ships in polar waters" (*ibid.*, operational para. 4).

¹⁰¹ Jensen, *supra* note 86, p. 111.

¹⁰² 2009 AMSA Report, *supra* note 2, p. 6.

¹⁰³ S.J. Dresser, 'Safeguarding the Arctic from Accidental Oil Pollution: The Need for a Binding, Region-specific Shipping Regime', 16 *Southwestern Journal of International Law*, No. 2, 2010, 536.

application in the polar regions. A draft of the mandatory polar code is expected by 2012.

At the MSC 86th session in February 2009 a proposal was submitted by Denmark, Norway and the United States, upon adoption of the revisions to the 2002 Arctic Guidelines, to add a new work program item to the agendas of the DE Sub-Committee in order to develop mandatory requirements for application in the polar regions.¹⁰⁴ The proposal reads:

There are no international regulations in effect for ships operating in these locales that specifically address the safety and environmental concerns arising from operating in such remote and harsh locales and that the establishment of mandatory requirements would correct a significant gap in the existing regulations for ships operating in the Polar Regions.

This proposal, together with the proposal by Argentina and Chile for the development of additional safety measures¹⁰⁵ and the justification prepared by DE 52 for the inclusion in the work program of a new item on “development of a code for ships operating in polar waters”,¹⁰⁶ supported by the United Kingdom,¹⁰⁷ led the MSC to agree to include a high-priority item on “Development of a Mandatory Code for Ships Operating in Polar Waters” in the work program of the DE Sub-Committee, with a target completion date set for 2012. Subsequent to the MSC proposal, Denmark, Norway and the United States directed the same document to the 59th session of the MEPC where it found support in NGO quarters.¹⁰⁸ At the 60th session of the MEPC, Norway submitted a document, which provided an overview of environmental issues to be considered in relation to the development of a code for ships operating in polar waters.¹⁰⁹ Norway did not present a concrete proposal or draw conclusions, but simply offered an overview of possible questions that could warrant further consideration in

¹⁰⁴ MSC/86/23/9 of 24 February 2009. Mandatory Application of the Polar Guidelines. Submitted by Denmark, Norway and the United States. Hereinafter MSC/86/23/9.

¹⁰⁵ MSC/86/23/2 of 27 January 2009. Safety Measures for Navigation in the Antarctic Area. Submitted by Argentina and Chile.

¹⁰⁶ MSC/86/23/17 of 16 April 2009. Justification for New Work Programme Items Proposed by the DE Sub-Committee.

¹⁰⁷ MSC/86/12/4 of 8 April 2009. Comments on the Report of the Sub-Committee on Ship Design and Equipment. Submitted by the United Kingdom.

¹⁰⁸ MEPC/59/20/5 of 8 May 2009. Mandatory Polar Code. Submitted by Friends of the Earth International (FOEI), Greenpeace International, IFAW and WWF; MEPC/59/20/7 of 22 May 2009. Mandatory Requirements for Polar Shipping. Submitted by the World Wide Fund for Nature (WWF). In these proposals, FOEI, Greenpeace International, the International Fund for Animal Welfare (IFAW) and WWF expressed their support and provided additional observations on the submission by Denmark, Norway and the United States.

¹⁰⁹ MEPC/60/21/1 of 12 January 2010. Environmental Aspects of Polar Shipping. Submitted by Norway.

light of the development of a meaningful environmental chapter in the code. The submission was however only briefly discussed at the meeting and the MEPC decided to refer the document to DE 54. Norway used the comments received at the MEPC 60 to rework document MEPC 60/21/1¹¹⁰ before submitting it to DE 54.¹¹¹ Together with the submission of the reworked document, Norway submitted a report prepared by Det Norske Veritas on “Regular operational emissions and discharges from shipping in polar areas”, giving a clear and comprehensive overview of particular environmental aspects.¹¹² At the same time, two documents were submitted by NGOs providing their view on additional MARPOL provisions needed and wider environmental provisions to be included in the mandatory polar code.¹¹³

C. Environmental and other considerations to be considered when drafting a polar code

The idea is that, taking into account the existing conventions that already apply to the polar waters, the environmental chapter in the new code should address any additional requirements deemed necessary to ensure environmentally friendly operation in the polar areas. The following is an overview of the proposed environmental considerations put forward by Norway and the following NGOs: FOEI, IFAW, WWF, Greenpeace International, Pacific Environment and CSC.

Additional MARPOL provisions

Annex I, prevention of pollution (accidental and operational) by oil. As a normal consequence of ship operations, oil is routinely released into the marine environment. From a legal perspective these operational discharges of oil can be divided into two types: oil resulting from machinery spaces such as bilge oil, and oil resulting from cargo areas of oil tankers, slop oil. The MARPOL regulations foresee that small amounts of these operational discharges are allowed and do not pose a significant threat to the marine environment when released

¹¹⁰ DE/54/INF.5 of 20 August 2010. Environmental Aspects of Emissions and Discharges from Shipping During Regular Operation in Polar Areas. Submitted by Norway. Hereinafter DE/54/INF.5.

¹¹¹ DE/54/13/7 of 20 August 2010. Environmental Aspects of the Code. Submitted by Norway. Hereinafter DE/54/13/7.

¹¹² DE/54/INF.5, *supra* note 110.

¹¹³ DE/54/13/8 of 20 August 2010. Additional MARPOL Provisions for the Polar Code. Submitted by FOEI, IFAW, WWF, Pacific Environment and CSC [Clean Shipping Coalition]. Hereinafter DE/54/13/8; DE/54/13/9 of 20 August 2010. Wider Environmental Provisions for the Polar Code. Submitted by FOEI, IFAW, WWF, Pacific Environment and CSC. Hereinafter DE/54/13/9.

from an appropriate distance from the shoreline.¹¹⁴ However, due to the Arctic's sensitive waters and imperiled marine life and ecosystems, more stringent oil pollution discharge standards for ships operating in the area are desired. For that reason, a ban on vessel discharges of oil or oily mixtures into Arctic waters, as is already the case in Antarctic waters,¹¹⁵ is proposed.¹¹⁶ Next to these operational discharges, the risk of accidental discharge of oil will increasingly be present. If this already poses a great risk in temperate waters, accidental pollution causes even greater risks in polar waters due to the special circumstances of the area. Combating oil spills in polar waters would be complicated, time-consuming and moreover, practically nigh impossible.¹¹⁷ The question has been raised whether the MARPOL regime regarding on board emergency plans and equipment is adequate for polar shipping. Due to the threat of substantial and irrevocable environmental harm, inserting a ban on the use and carriage of heavy fuel oil by vessels operating in polar waters might be needed.¹¹⁸

Annex II, control of pollution by noxious liquid substances in bulk. The discharge of noxious liquid substances poses the same risks, threats and problems for polar waters as is the case with oil spills. Even though the current transportation of these goods is quite marginal, due to the possibly severe consequences, it should be addressed in the code. Norway noticed that precautionary measures should be considered as necessary.¹¹⁹ The NGOs go even further by proposing that vessel discharges of noxious liquid substances or mixtures be prohibited,¹²⁰ just as they are for Antarctic waters.¹²¹

Annex III, prevention of pollution by harmful substances carried by sea in packaged form. As a form of accidental discharge, loss of containers and goods during bad weather are considered a safety hazard and in addition a potential pollution problem depending on the content.¹²² As shipping in the polar waters increases, losses will occur, especially considering the difficult weather conditions. Packages or their contents will float around or sink, making navigation in the polar waters more difficult. The presence of ice forms constitutes an additional complicating factor while open sea in these areas is scarce and often

¹¹⁴ DE/54/INF.5, *supra* note 110, p. 15.

¹¹⁵ Protocol on Environmental Protection to the Antarctic Treaty (4 October 1991), 30 *International Legal Materials* 1455, Annex IV, Art. 3.

¹¹⁶ DE/54/13/8, *supra* note 113, p. 2.

¹¹⁷ DE/54/13/7, *supra* note 111, p. 2.

¹¹⁸ *Ibid.*

¹¹⁹ *Ibid.*

¹²⁰ Protocol on Environmental Protection to the Antarctic Treaty, *supra* note 115, Annex IV, Art. 4.

¹²¹ DE/54/13/8, *supra* note 113, p. 3.

¹²² DE/54/INF.5, *supra* note 110, p. 20.

used by marine life for several purposes. The question to be answered here is whether the present design criteria should be adapted accordingly.¹²³

Annex IV, prevention of pollution by sewage from ships. Vessels, when operating, produce several categories of waste regulated in MARPOL Annexes IV and V. Sewage or black water consists of body wastes and wastes from toilets and such. Grey water consists of waste water from sinks, baths, showers and laundry.¹²⁴ The problem of black and grey water is acute, in view of the fact that cruise activity is picking up rapidly and cruise ships, depending on their size, have the potential of discharging as much waste as a small town. Such discharges are very problematic for the vulnerable polar areas because, in comparison to other waters, the polar marine environment is less tolerant of rapid changes in the nutrient status of the water column or seabed. It also has a heightened vulnerability due to the presence of sensitive wildlife species and coastal communities that are dependent on marine ecosystems. It is therefore very probable that existing regulations will prove to be inadequate for the polar waters and must be strengthened. This could be mitigated through a banning of all discharges of treated or untreated sewage, the creation of “no discharge zones” or the requirement of advanced waste water treatment systems on board all vessels.¹²⁵

Annex V, prevention of pollution by garbage from ships. Some categories of regular waste are allowed to be dumped into the sea depending on the distance to shore.¹²⁶ Stricter regulations are already applicable in the Arctic and Antarctic. However, food waste discharges still pose a certain threat. Arguments have been made in favor of a complete ban on garbage discharges or to identify mandatory discharge distances from more sensitive sites as an alternative. In addition, it has been proposed that Special Area status under MARPOL Annex V should be awarded to the Arctic through the polar code.¹²⁷

¹²³ DE/54/13/7, *supra* note 111, p. 3.

¹²⁴ DE/54/INF.5, *supra* note 110, pp. 16–17.

¹²⁵ DE/54/13/8, *supra* note 113, pp. 3–4. An example of such “no-discharge zones” and “advanced waste water treatment systems” can be found in the Clean Water Act of the United States; Water pollution prevention and control, 33 U.S.C. §1322. Also, when operating in the applicable waters of Alaska, each cruise vessel should maintain a legible Sewage and Greywater Discharge Record Book; 33 C.F.R. part 159.

¹²⁶ The MEPC at its 61st session approved amendments to revise and update MARPOL Annex V regulations. One of the main changes concerns the inclusion of a new requirement specifying that discharge of all garbage into the sea is prohibited, except as expressly provided otherwise (food wastes discharges will remain permitted). Information available at <<http://www.imo.org>>.

¹²⁷ DE/54/13/8, *supra* note 113, pp. 4–5. Special area designation under MAPROL Annex V has been granted to the Mediterranean Sea, the Baltic Sea, the Black Sea, the Red Sea, the “Gulfs” area, the North Sea, the Antarctic area (south of latitude 60 degrees south), and the wider Caribbean region including the Gulf of Mexico and the Caribbean Sea. These special areas

Annex VI, prevention of air pollution from ships. Soot and particles resulting from air emissions are regarded as a major pollutant because of their association with serious public health problems and their effects on ice melting.¹²⁸ The Arctic Council called attention to the accelerating effect on global climate change resulting from ship emissions of greenhouse gases and other pollutants in the 2009 Tromsø Declaration. This declaration notes

*...that preserving the unique Arctic environment and protecting the Arctic against potentially irreversible impacts of anthropogenic climate change depends mainly on substantially reducing global emissions of CO₂ and other greenhouse gases...and recognize[s] that reductions of emissions have the potential to slow the rate of Arctic snow, sea ice and sheet ice melting in the near-term.*¹²⁹

Here too the question needs to be raised whether or not existing regulations are sufficient, or whether additional regulations are needed.¹³⁰ Vessels operating in the fragile polar regions should take the lead by setting a precedent with respect to reducing air emissions that negatively impact health, the environment and climate.¹³¹

Other considerations

Noise pollution. Noise pollution is generally regulated neither in polar nor in any other maritime areas. Nonetheless, recent assessments address this issue as being a relevant particular challenge in polar waters. Underwater noise can interfere with the ability to communicate, to navigate, or to detect prey and predators. Noise can even result in permanent hearing loss, displacement from preferred habitat and death of marine species. The IMO has taken cognizance of the effects of underwater noise through an MEPC Correspondence Group, but so far the work has not focused on polar regions specifically.¹³² Because of the

are operational in all mentioned areas, except for the Black Sea and the Red Sea where a lack of notifications on the existence of adequate reception facilities has to be noted of MARPOL parties whose coastlines border the relevant areas. Information available at <<http://www.imo.org>>.

¹²⁸ *Ibid.*, pp. 5–7.

¹²⁹ Arctic Council, *Tromsø Declaration*, 29 April 2009, available at <http://arctic-council.org/article/2009/4/the_tromso_declaration_ratified>. This statement has been supported by a number of studies, including: Core Writing Team, Pachauri and Reisinger, *supra* note 25; J.J. Corbett, D.A. Lack, J.J. Winebrake, S. Hardder, J.A. Silberman, M. Gold, 'Arctic Shipping Emissions Inventories and Future Scenarios', 10 *Atmos. Chem. Phys. Discuss.*, No. 4, 2010, 10271–10311; S.C. Amsrup, E.T. DeWeaver, D.C. Douglas, B.G. Marcot, G.M. Durner, C.M. Bitz, D.A. Baily, 'Greenhouse Gas Mitigation Can Reduce Sea-ice Loss and Increase Polar Bear Persistence', *Nature*, No. 468 (16 December), 2010, 955–958.

¹³⁰ DE/54/13/7, *supra* note 111, p. 4.

¹³¹ DE/54/13/8, *supra* note 113, p. 6.

¹³² MEPC/57/INF.4 of 17 December 2007. Shipping Noise and Marine Mammals. Submitted by the United States; MEPC/58/19 of 25 June 2008. Minimizing the Introduction of

particular environmental features of polar regions, measures need to be adopted which will decrease the risk of harm proposed to marine life. The methods for reducing the harmful effects by noise emissions can be divided into two groups. The first group dealing with active protection would attack noise pollution by addressing the source, while the second group with passive protection would shield the victims of emissions. When confronted with underwater noise, the most viable approach would be to address the source.¹³³ One possibility is to include rerouting measures to avoid certain areas in sensitive periods, lower speed, and alternative engine and hull designs to make ships more silent.¹³⁴

Ballast water discharges. The threat posed by spreading alien species through ballast water to the marine ecosystems is generally accepted. In 2004 the IMO International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) was adopted in London.¹³⁵ The convention, which is expected to enter into force in 2016, sets out general requirements to control pollution through ballast water. The MEPC, at its 61st session in 2010 readdressed the need for countries to ratify the Convention to achieve its entry into force at the earliest opportunity. It is set to enter into force twelve months after not fewer than 30 States have become parties to the Convention. At the moment, 27 States have ratified this legal instrument.¹³⁶ The problem with respect to the polar waters is that not all states are parties to the convention and effective implementation is to be awaited. It has been recommended that the polar code should require that the provisions of the Convention be applied to all ships operating in polar waters and to consider necessary additional restrictions.¹³⁷

Anti-fouling systems. The use of anti-fouling compounds is regulated by the IMO International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention). The latter entered into force in 2008.¹³⁸

Incidental Noise from Commercial Shipping Operations into the Marine Environment to Reduce Potential Adverse Impacts on Marine Life. Submitted by the United States; MEPC/58/INF.19 of 1 August 2008. Information on Noise from Commercial Shipping Operations and Marine Life. Submitted by Australia; Resolution 61/222 adopted by the General Assembly on 16 March 2007, UN Doc.A/RES/61/222 (2007), para. 107.

¹³³ N. Matz-Lück 'Underwater Pollution by Vessel Noise: A European Perspective', in: Franckx, Gautier (eds.), *The Exercise of Jurisdiction over Vessels: New Developments in the Fields of Pollution, Fisheries, Crimes at Sea and Trafficking of Weapons of Mass Destruction* (Brussels, Bruylant, 2010), p. 108.

¹³⁴ DE/54/13/9, *supra* note 113, pp. 3–4.

¹³⁵ International Convention for the Control and Management of Ships' Ballast Water and Sediments (13 February 2004), IMO Doc. BMW/CONF/36.

¹³⁶ MEPC/61/12/1 of 8 July 2010. Outcome of the One Hundred and Fourth Session of the Council (C 104). Note by the Secretariat, p. 6.

¹³⁷ DE/54/13/9, *supra* note 113, p. 4.

¹³⁸ International Convention on the Control of Harmful Anti-fouling Systems on Ships (5 October 2001), IMO Doc. AFS/CONF/26 (2001).

But, as is the case with the BWM Convention, not all states are parties to the AFS Convention and effective implementation is therefore not assured. Again it is recommended that the draft mandatory polar code require that the provisions of the AFS Convention are applied to all vessels operating in polar waters and the need for additional provisions be considered.¹³⁹

Vessel strikes on marine mammals. Vessel strikes on marine mammals do not pose a significant risk for the marine ecosystem. They do, however, pose a severe threat to vulnerable species, particularly cetaceans.¹⁴⁰ The IMO has recently addressed this problem and issued voluntary guidelines on the subject of ship strikes.¹⁴¹ To ensure adequate levels of marine mammal protection in polar waters, it is proposed that other measures or tools be considered for inclusion in the draft mandatory polar code.¹⁴²

Conclusions

If the 2010 shipping season has been exceptional in many respects as far as international commercial use of the Northern Sea Route is concerned, the 2011 shipping season is expected to be more so. Not less than 15 orders for nuclear icebreaker assistance had already been received for 2011 before the end of the 2010 season.¹⁴³ A substantial increase in the tonnage of the transported goods is moreover predicted for the next shipping season: 150,000 tons of oil, 400,000 tons of gas condensate and 600,000 tons of iron ore are planned to be shipping through the Northern Sea Route.¹⁴⁴ By using different kinds of routes, it is also clear that the shallowness of certain areas is being avoided and that larger and larger ships are starting to make the transit. As specifically remarked during the above-mentioned overview of last year's passages, icebreaker assistance for non-Russian flagged vessels has so far been compulsory. The exact costs involved have up till now not really been part of the public domain. Nevertheless, their impact on the future commercial success of the use of the Northern Sea Route for international commercial purposes seems to be detrimental, as revealed by

¹³⁹ DE/54/13/9, *supra* note 113, pp. 4–5.

¹⁴⁰ DE/54/INF.5, *supra* note 110, p. 20.

¹⁴¹ MEPC/Circ. 674 of 31 July 2009. Guidance Document for Minimizing the Risk of Ship Strikes with Cetaceans.

¹⁴² DE/54/13/9, *supra* note 113, p. 5.

¹⁴³ '15 Orders for Nuclear Icebreaker Assistance in 2011', Barents Observer, 11 September 2010, available at <<http://barentsobserver.com/15-orders-for-nuclear-icebreaker-assistance-in-2011.4817937-16149.html>>.

¹⁴⁴ 'More Oil and Ore along Northern Sea Route', Barents Observer, 11 February 2011, available at <<http://barentsobserver.com/more-oil-and-ore-along-northern-sea-route.4884187-116320.html>>.

a recent study.¹⁴⁵ The competitive advantage over the more traditional routes using either the Panama or the Suez Canal has been recently calculated; it will only be present if these ice-breaking fees can be reduced by 85, or even better, 100 per cent.¹⁴⁶ Only in the latter event will the route be truly competitive in all the scenarios envisaged by the authors.¹⁴⁷ The conclusion to be drawn therefore is that, despite the many uncertainties that surround the future use of the Northern Sea Route, the fact seems undeniable that its use will increase during the years to come. And in that, it does not differ much from the predictions with respect to the ice-situation along the Northern Sea Route for the shipping seasons to come: whether the ice will diminish, and eventually one day disappear in summer time appears not to be the question asked anymore, but rather the tricky question of when one can expect these changes to materialize. The trend towards better ice conditions and, consequently, to increased navigation in the Arctic is, in other words, clearly discernable at present.

As far as the legal framework is concerned, it should be clear, considering the number of environmental considerations proposed to the DE Sub-Committee working on the development of the draft mandatory polar code, that a comprehensive, adequate and uniform regime regarding pollution prevention is needed for the Arctic. The Arctic is already a fragile environment and will be particularly vulnerable to the actual and potential impacts from increased shipping activity. As mentioned above, a very high level of protection will be needed for the Arctic and should best be addressed on an international level. The contribution of the non-binding 2009 Polar Waters Guidelines has been limited to say the least and national legislation too will most likely prove insufficient to adequately address the dangers for the environment posed by increased (trans-) Arctic shipping. The lack of an international, binding and region-specific pollution prevention regime can therefore be viewed as an important gap in the legal framework governing the Arctic. The IMO has taken cognizance of this need and has, through the DE Sub-Committee, commenced work on a draft polar code, an initiative that surely should be encouraged to fulfill its objective of providing that “all ship operations in Polar Waters meet internationally acceptable standards”.¹⁴⁸

¹⁴⁵ M. Liu and J. Kronbak, ‘The Potential Economic Viability of Using the Northern Sea Route (NSR) as an Alternative Route Between Asia and Europe’, 18 *Journal of Transport Geography*, No. 3, 2010, 434–444.

¹⁴⁶ *Ibid.*, p. 443.

¹⁴⁷ The different scenarios concerned mainly the evolution of bunker prices and the number of days the Northern Sea Route would become navigable in the future. *Ibid.*, p. 441.

¹⁴⁸ As already quoted, *supra* note 86 and accompanying text.