Arctic Shipping: Future Prospects and Ocean Governance

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The Last Frontier

The Arctic, despite centuries of speculation, remains one of the world’s last potential shipping frontiers. The maritime potential of the region is alluring as it offers a number of shorter, and potentially more prosperous, trade routes between Europe and Asia. Proving the viability of these routes, however, has not been straightforward; rather it has been the story of few triumphs among many disasters, the most famous of which is the ill-fated Franklin expedition of 1845. The shipwrecks, grave sites, and human remains that now paint the Arctic landscape and ocean floor are proof of the region’s natural prowess and strong will to remain pristine and unconquered by human pursuits of globalization.

Thick multi-year ice and a harsh and unpredictable climate have been the major factors limiting development, however this is now changing. Because of natural and human-induced climate change, the Arctic is warming at twice the rate of the global average and with this warming has come a positive feedback loop of melting sea ice—additional black space among a traditionally white landscape—causing enhanced absorption of solar radiation and subsequent warming with continued ice retreat. The open water season has increased by more than five days per decade in the Northwest Passage and by up to 19 days per decade in other regions of the Arctic.¹ Being that thick and unpredictable sea ice has historically been the dagger that slayed even the most decorated of Arctic explorers, and the strongest of ships, its retreat would seem to facilitate the long awaited opening of the region for global maritime trade and transport—the shifting of global trade patterns and with that the potential for altered global power dynamics.

¹ J.C. Stroeve et al., “Changes in Arctic Melt Season and Implications for Sea Ice Loss,” *Geophysical Research Letters* 41, no. 4 (2014): 1216–1225, doi.org/10.1002/2013GL058951.
Shipping in a Changing Arctic

The link between climate change and Arctic shipping has captured popular imagination, prompting hundreds of media articles and now dozens of high profile studies in journals such as *Nature Climate Change* and *Geophysical Research Letters*. Most speculate a rapid and potentially momentous increase in Arctic shipping activity related to climate warming by the end of the twenty-first century, but the relationship between ice and ships is long-standing and complicated. Less ice could mean more opportunities, but it could also mean increased risk. Thick multiyear sea ice of the Arctic Ocean that used to be intact is now melting, calving apart, traveling south and choking up fundamental shipping routes, particularly in the Northwest Passage.

Just because travel routes through the Arctic may become more physically viable does not mean we will see an immediate or even future shift toward Arctic routes over existing southern routes, where infrastructure, tradition, and global dependence has already been established. Despite much speculation, commercial container shipping in the Arctic is still not a commercial reality, in large part because shorter distances do not always equate to quicker shipping times. In an industry where timeliness and reliability are a necessity, it is unlikely that Arctic routes, which remain plagued with uncertainty due to unpredictable ice and weather conditions as well as freezing spray that can cause delays, will emerge as a preferred route in the near-term future.\(^2\) There are also countless other factors influencing commercial ship operations such as commodity prices, insurance structures, infrastructure needs, ship design, technology development, and regulatory regimes that will continue to limit future maritime trade in the region. In fact, until we can control the weather, the price of natural resources, and maybe even the stock market, it is improbable that climate change will itself catalyze Arctic maritime trade and commercial shipping in Arctic Canada to the extent that is often speculated.

There is, however, a class of vessels that has already increased in intensity as a direct result of changing Arctic conditions. Tourism ships, including passenger vessels (cruise ships) and pleasure craft (yachts), have increased by 75 and 400 percent respectively in Arctic Canada since 2005. Svalbard, Norway, and Greenland now attract between 20,000 and 50,000 cruise visitors annually and additional growth, especially among private yachters is anticipated.

\(^2\) Transportation Research Board of the National Academies, *Safe Navigation in the U.S. Arctic: Summary of a Workshop, October 15–16, 2012, Seattle, Washington*, Conference Proceedings on the Web 11 (Washington, DC: Transportation Research Board, 2013), http://onlinepubs.trb.org/onlinepubs/conf/CPWi1.pdf.
These vessels can more easily adapt to changing conditions by altering itineraries and planned shore excursions, and in fact they often seek out versus avoid icebergs and ice flows to view ice dependent wildlife and stunning Arctic scenery. Compounding these growth factors is a new niche tourism market that has been labelled ‘last chance tourism’, which is a phenomena whereby tourists are visiting the Arctic with increased intensity to explicitly see the region before it disappears, melts or becomes irreversibly changed.3

From Ship to Shore: Regional Risks and Opportunities

In large part due to the rapid increase in cruise tourism traffic, but also because of increases in fishing ships, community re-supply vessels, and government and research activities, total ship traffic by kilometers traveled in the Canadian Arctic has almost tripled over the last 25 years. Most of the increase has occurred in the Northwest Passage, Hudson Strait, and along the eastern coast of Baffin Island (see Figure 1).4 These trends reflect growth patterns in Arctic shipping activity that is occurring globally. For example, traffic through Russia’s Northern Sea Route increased by 33 percent in 2016; non-Arctic nations such as China and South Korea are building and operating ice breakers for research and trade exploration; cruise operators are for the first time investing in and constructing purpose built ice-strengthened luxury cruise liners; and advances in technology could mean autonomous (crewless) vessels traversing Arctic sea routes within the next 30 years. Through expected technological change, political will, and under the right economic conditions we will see commercial traffic opportunities across the Arctic, and in particular through the Northwest Passage of the Canadian Arctic.

All of Canada is highly reliant upon maritime trade and transport, an industry that was valued at CA$205 billion in 2015,5 but it is the Arctic that is perhaps the most dependent since it consists of large island chains and remote continental shoreline that in many areas is only accessible by sea or by air.

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3 R.H. Lemelin, J. Dawson and E.J. Stewart, eds., Last Chance Tourism: Adapting Tourism Opportunities in a Changing World (London: Routledge, 2013).
4 L. Pizzolato, et al., “The Influence of Declining Sea Ice on Shipping Activity in the Canadian Arctic,” Geophysical Research Letters 43, no. 23 (2016): 12,146–12,154, doi.org/10.1002/2016GL071489; J. Dawson, et al., “Temporal and Spatial Patterns of Ship Traffic in the Canadian Arctic from 1990 to 2015,” Arctic (In press).
5 Council of Canadian Academies (CCA), The Value of Commercial Marine Shipping to Canada: The Expert Panel on the Social and Economic Value of Marine Shipping to Canada (Ottawa: CCA, 2017), xiii.
Increased shipping opportunities in Arctic Canada could be highly advantageous given the potential for enhanced economic development in mining, tourism, and fisheries, and for re-supply services. However, there are significant risks, including the potential for vessel incidents, safety issues and security threats, environmental disturbances, degradation of historic or culturally significant sites, and negative outcomes for local residents, especially Inuit, who continue to use the marine environment for subsistence and livelihoods. Compounding these risks are a lack of maritime infrastructure or salvage capabilities, insufficient availability of bathymetric charts, and limited search and rescue capacity.

**Collaborative Governance for a Sustainable Future**

Global effort is needed to establish effective governance regimes for safe and sustainable Arctic shipping that involves infrastructure investment and enhances economic and sovereignty-related opportunities while mitigating...
impacts related to safety, security of the environment, and protection of local culture. What makes the potential development of effective and innovative Arctic shipping governance so promising right now is the pace at which Arctic maritime trade is currently evolving and the urgency with which society has treated this challenge. Thus far, we have been afforded time and political attention in order to work together as a global community towards shared initiatives and approaches to Arctic shipping governance.

For example, in response to the 2004 Arctic Climate Impact Assessment, the Arctic Marine Shipping Assessment (AMSA), for the first time attempted to comprehensively examine global shipping trends across Arctic regions and to identify governance needs for the changing patterns in Arctic transportation trends. Many of the AMSA recommendations have already come to fruition including the establishment of joint search and rescue and oil spill response and preparedness agreements, envisioning of an integrated Arctic shipping corridors framework for marine traffic support and management, and importantly, the development and implementation of the Polar Code.

The Polar Code is a mandatory international regime adopted by the International Maritime Organization (IMO) that sets out regulations for shipping in polar regions, principally relating to ice navigation and ship design. The Code, established to support safe and environmentally friendly shipping in Arctic and Antarctic waters, goes beyond existing IMO conventions (MARPOL, SOLAS, STCW) and can be utilized to create a certain level of regulatory consistency among Arctic nations that complements, and in some cases extends, national level regulation. Implementation of the Polar Code is a major milestone and

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6 Arctic Council, *Impacts of a Warming Arctic: Arctic Climate Impact Assessment, ACIA Overview Report* (Cambridge: Cambridge University Press, 2004).

7 Arctic Council, *Arctic Marine Shipping Assessment 2009 Report* (Arctic Council, April 2009).

8 “Agreements,” Arctic Council, last updated 25 May 2017, http://www.arctic-council.org/index.php/en/our-work/agreements.

9 See R. Chéniér et al., “Northern Marine Transportation Corridors: Creation and Analysis of Northern Marine Traffic Routes in Canadian Waters,” *Transactions in GIS* (2017): 1–13, doi.org/10.1111/tgis.12295; The PEW Charitable Trusts, *The Integrated Arctic Corridors Framework: Planning for Responsible Shipping in Canada’s Arctic Waters* (April 2016), http://www.pewtrusts.org/~media/assets/2016/04/the-integrated-arctic-corridors-framework.pdf, accessed 21 November 2017.

10 “Shipping in Polar Waters: Adoption of an International Code of Safety for Ships Operating in Polar Waters (Polar Code),” International Maritime Organization (IMO), http://www.imo.org/en/mediacentre/hottopics/polar/pages/default.aspx, accessed 21 November 2017.

11 “List of IMO Conventions: Key IMO Conventions,” IMO, http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Default.aspx, accessed 22 November 2017.
represents an excellent foundation as the first mandatory and internationally implemented requirement for ships operating in polar waters. However, more work is needed to strengthen the Code in areas where consensus among flag states was not found, to enhance enforcement capabilities, and to deal with emerging issues such as heavy fuel oil and black carbon among other environmental protection provisions. One particular criticism of the Code is that the consensus-based nature of its development has led it to be ‘watered down to the lowest common denominator’. Some already existing national level shipping governance regimes are more stringent than the Polar Code leading some proponents to question the utility of the Code generally. Regardless, the world is making significant steps forward to the safe and sustainable management of shipping in Arctic waters via collaborative initiatives and shared visions for governance.

It is incumbent upon all of us to put in the necessary time and sustained effort to making sure the Arctic marine environment does not become an example of how integrated and shared leadership frameworks for Arctic shipping governance have failed, but instead as an analogue for innovative and adaptive governance in the face of rapid global environmental and economic change. Much of the world has been explored and discovered but the Arctic remains a frontier in many regards and as such presents us with the opportunity to establish effective, innovative, and tailor-made governance approaches. Commercial ship traffic is increasing in Arctic regions albeit at a pace that is much slower than many have speculated. Yet, there is no doubt that the commercial Arctic traffic will, at some point and through a variety of influencing factors beyond just climate change, increase in the future. We need to be ready for this eventuality.