

Emerging Arctic Opportunities

Dramatic increases expected in Arctic shipping, oil and gas exploration, fisheries, and tourism.

by MR. PAUL HOLTHUS
Executive Director
World Ocean Council



Ms. CAROLYN CLARKIN
Project Assistant
World Ocean Council

MR. JONATHAN LORENTZEN
Project Assistant
World Ocean Council

In 2004, some 6,000 vessels (approximately 60 percent of which were bulk carriers, and container or general cargo ships) transited Arctic waters either across the north Pacific and Bering Sea, along the coast of Iceland and the Norwegian Sea, or along the northern coast of Norway and then into the Barents Sea.¹

In North America, destination shipping has increased along the Beaufort Sea and Northwest Passage. In addition, vessels traveling through the Bering Strait nearly doubled from 2009 to 2010 (reaching 430 vessels per year).² Tugs and barges currently make dozens of resupply trips between Canada's Northwest Territory and the U.S. Beaufort Sea coastline from mid-July through the end of October,³ and vessels carrying goods to U.S. Arctic ports sail to Point Barrow or Prudhoe Bay through the Bering Strait and along Alaska's northern coastline.

Shipping Grows Amid Challenges

Growing demand for goods; increased exploration for oil, gas, and minerals; and associated infrastructure

development will increase destination shipping in the North American Arctic. These activities are constrained, however, by the limited number of deep-draft ports in the northern and northwestern Alaskan and Canadian Arctic. For example, most U.S. ports near the Bering Strait are less than 10 meters deep, far less than required for most seagoing ships.

Trans-Arctic shipping is concentrated within the Northern Sea Route (NSR), a 2,600-nautical mile route along Russia's northern border, and the Northwest Passage (NWP), which consists of multiple routes through the Canadian Arctic Islands from Baffin Bay to the Beaufort Sea.⁴

Currently trans-Arctic shipping occurs via the NSR from late summer to early autumn, and requires transit fees and Russian icebreaker escort. Beginning in 2009 with two vessels, NSR traffic doubled to four vessels in 2010—transporting 110,000 tons of cargo to China—including gas condensate from Russia and iron ore from Norway.⁵ In 2011, the number leaped to

34 Northern Sea Route voyages, carrying more than 820,000 tons of cargo in a five-month period.⁶

Trans-Arctic shipping via the NWP is currently not viable, as the Canadian Arctic Archipelago is one of the last parts of the region to still have significant ice congestion in the summer. In addition, warming conditions often allow icebergs from the most northern latitudes to be swept down to Northwest Passage routes. Seasonal variability, route complexity, depth restrictions, lack of adequate charts, limited infrastructure, high operating costs for icebreaker escorts, and high insurance rates also inhibit NWP use.⁷

Overall, Arctic shipping will be subject to new legal regulations such as the IMO Polar Code, with mandatory requirements for ship design, construction, equipment, operating, training, safety and response, and environmental measures.⁸

Offshore Oil and Gas

An estimated 90 billion barrels of oil, 1,670 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids lie north of the Arctic Circle. These reserves comprise roughly 13 percent of the world's undiscovered oil, 30 percent of undiscovered natural gas, and 20 percent of undiscovered natural gas liquids.⁹

Offshore oil and gas exploration is moving forward in the U.S. Arctic. More than one company has Arctic offshore leases in the Chukchi and Beaufort seas, and expects to begin drilling wells and operating floating rigs, with eventual production anticipated to be 500,000 barrels per day.¹⁰ More Arctic leases are expected in U.S. waters as a national strategy to promote energy exploration, development, and conservation proposes to make further offshore areas available.

Internationally, several major oil companies are involved in offshore exploration and drilling in other parts of the Arctic. For example, a number of companies have licenses to explore off Greenland—although exploratory wells failed to discover hydrocarbon reserves in Greenland waters in 2011.¹¹

Elsewhere, several companies have leases to drill near Tuktoyuktuk, Canada, where oil production is expected to begin by 2025.¹² Strategic cooperative agreements have been developed between Russian and Western companies to jointly develop Russia's Arctic oil fields near Siberia and in the Barents Sea, and establish the Arctic Research and Design Center for Offshore Development.¹³



The Arctic holds significant offshore oil and gas reserves.

The pace and location of Arctic oil and gas exploration and development depends upon profitability, jurisdictional issues, and regulatory arrangements. For example, in the Barents Sea, offshore oil and gas development is on the rise as a result of the 2010 political boundary agreement between Norway and Russia that provides for joint development of hydrocarbon resources that straddle the boundary.¹⁴

Fisheries

Arctic fisheries constitute about 10 percent of the world's catch, generating billions of dollars per year in revenues, representing 90 percent of the export earnings of Greenland, 33 percent of those of Iceland, approximately six percent for Norway, and less than one percent of the export earnings of the United States and Russia.¹⁵

Norway's Arctic region accounts for 37 percent of the country's fishery production, with \$1.8 billion of Norwegian cod exports in 2011.¹⁶ In Alaska, \$1.3 billion of fish and shellfish were harvested in 2009.¹⁷ At the same time, individual Arctic communities are almost wholly reliant on fisheries, fish processing, and marine mammals for their economic survival.

The Arctic Ocean includes a range of ecosystems, fish stocks, and fisheries, with significant differences between the Atlantic and Pacific sides of the region.





Commercial fishing activity is expected to expand in the Arctic as waters warm and ice recedes.

Fishing activity has recently expanded significantly in some areas. For example, the Greenlandic shrimp catch has increased significantly in the last decade.¹⁸ In the Canadian Arctic, fishing ship voyages expanded from 30 in 2005 to 221 in 2010, making fisheries by far the largest component of vessel activity in the Canadian Arctic.¹⁹

Arctic fisheries are governed by national, bilateral, and multilateral management arrangements that will affect future levels and patterns of fishing activity. Where fisheries take place in exclusive economic zones such as the North Atlantic, national regulations cover most state jurisdictional capacities. As diminishing ice coverage creates new fishing opportunities where management is not in place, Arctic states will have to develop regulations to discharge international obligations. For the U.S. Arctic waters north of Alaska's Bering Strait, the United States government has decided to close the area to commercial fishing until information is available to assess ecosystem health and develop sustainable fisheries management.²⁰

Tourism

With increased access to the Arctic comes the ability for cruise ships to transport large numbers of passengers to various locations throughout the area. Cruise tourism possibilities now include trips to the North Pole itself—once the most formidable challenge of Arctic exploration.

Overall, Arctic marine tourism has grown by 500 percent from 1994 to 2009.²¹ The trend is accelerating, with the number of Arctic cruise ship visitors doubling from 2004 to 2007, from 1.2 million to more than 2.4 million.²²

The majority of cruise tourism activity is along the coast of Norway, along the coast of Greenland, and through the Canadian portions of the Northwest Passage. In 2007, Norway received 1.13 million cruise ship passengers; and, in 2008, the number of cruise ship passengers visiting Greenland increased by about 30 percent annually.²³ The number of cruise ships visiting northern Canadian islands in 2006, such as remote Ellsmere and Baffin Island, doubled from 11 ships in the previous season to 22 ships.²⁴

Despite the popularity of Arctic cruises, northern waterways remain dangerous. Emergency response is a major challenge. In August 2010, for example, a cruise vessel carrying 128 passengers ran aground in the Northwest Passage after hitting an uncharted rock. While no one was harmed, it took the Canadian Coast Guard two days to reach the stranded vessel.²⁵



Cruise ship tourism is growing rapidly in the Arctic.

From 1972 to 2007, 27 polar cruise ships ran aground; also during this period, eight polar cruise ships sank, and 28 suffered disabling incidents caused by collisions, propulsion loss, or fire. In addition, from 1992 to 2007, there were a reported 42 pollution and environmental violations.²⁶

Continuing Challenges

The Arctic region will likely yield an economic bonanza in a variety of ways, from mineral extraction to living resources and adventure tourism. With the expected growth of economic development and realization of economic opportunities throughout the Arctic region, it will be essential to leverage inter-agency and international cooperation.

About the authors:

Mr. Paul Holthus is the founding executive director of the World Ocean Council. He previously held senior positions with the United Nations Environment Programme and was deputy director for the International Union for Conservation of Nature's Global Marine Programme. Since 1998, he has worked primarily with the private sector to develop practical solutions for the sustainable use of the marine environment and has travelled to more than 30 countries with companies, communities, industry associations, U.N. agencies, international nongovernmental organizations, and foundations.

Ms. Carolyn Clarkin is a project assistant for the World Ocean Council. She also serves as the social media vice chair for the Section on Environment, Energy, and Resources Marine Resources Committee, and provides research and writing support for the ABA SEER handbook *Ocean and Coastal Law and Policy*. She previously worked as a law clerk for the Environmental Law Institute, earned her Juris Doctor from the University of Virginia, and graduated from Bucknell University with a B.A. in environmental studies and political science.

Mr. Jonathan Lorentzen works for the Honolulu Marine Area and Coastal Zone Advocacy Council, alongside his research work with the World Ocean Council. He is a 2012 graduate from the George Washington University, and has a B.A. in international affairs.

Endnotes:

1. *Arctic Maritime Shipping Assessment*. Arctic Council Protection of Arctic Marine Environment, 2009, p. 72.
2. Murphy, Kim. *Coast Guard beefs up deployment in the U.S. Arctic*. Los Angeles Times, March 2012. Available at <http://articles.latimes.com/2012/mar/01/nation/la-na-nn-coast-guard-arctic-20120301>.
3. *Marine Traffic in the Arctic*. Analyse & Strategi, 2011, p. 18.
4. O'Rourke, Ronald. *Changes in the Arctic: Background and Issues for Congress*. Congressional Research Service, CRS 7-5700, June 2012, p. 15.
5. *Conference Concept Note*. 2012 North Pacific Arctic Conference, June 2012, p. 2.
6. Staalensen, Atele. *Shipping to double on Northern Sea Route*. Barents Observer, February 2012. Available at <http://barentsobserver.com/en/business/shipping-double-northern-sea-route>.

⁷ *Arctic Maritime Shipping Assessment*. Arctic Council Protection of Arctic Marine Environment, 2009, p. 114.

⁸ Progress on the Development of a Mandatory Polar Code. Antarctic and Southern Ocean Coalition, April 15, 2012, p. 3. Available at www.asoc.org/storage/documents/Meetings/ATCM/XXXV/Progress_on_the_Development_of_a_Mandatory_Polar_Code.pdf.

⁹ Robertson, Jessica & Brenda Pierce. *90 Billion Barrels of Oil and 1,670 trillion cubic feet of Natural Gas Assessed in the Arctic*. USGS Newsroom, July 2008. Available at www.usgs.gov/newsroom/article.asp?ID=1980&from=rss_home/.

¹⁰ Afontsev, Sergei. *Russian International Affairs Council, Outlook for foreign energy companies in the Arctic region*, April 11, 2012. Available at http://russiangouncil.ru/en/inner/?id_4=304.

¹¹ Swint, Brian. *Bloomberg, Cairn's \$600 Million Greenland Oil Campaign Ends in Failure*, November 2011. Available at www.bloomberg.com/news/2011-11-30/cairn-s-600-million-greenland-oil-exploration-campaign-ends-in-failure.html.

¹² *Arctic exploration licenses to be extended: companies say they lost time taking part in Arctic drilling review*. CBC News, July 2011. Available at www.cbc.ca/news/business/story/2012/07/03/north-beaufort-delta-exploration-licences-extended.html.

¹³ *Rosneft and ExxonMobil Announce Progress in Strategic Cooperation*. Exxon-Mobil Media Relations, April 2012. Available at <http://news.exxonmobil.com/press-release/rosneft-and-exxonmobil-announce-progress-strategic-cooperation-agreement>.

¹⁴ Eskeland, Gunnar S., and Line Sunniva Flottorp. *Climate change in the Arctic: A discussion of the impact on economic activity*. Statistics Norway: The Economy of the North, 2006, p. 83.

¹⁵ Arnason, Ragnar. *Global Warming and North Atlantic Fisheries: Attempting to Assess the Economic Impact*. University of Iceland Department of Economics, 2003, p. 114.16.

¹⁶ McGoodwin, James R. *Effects of climatic variability on three fishing economies in high-latitude regions: Implications for fisheries policies*. Elsevier Ltd, 2006, p. 57.

¹⁷ *Alaska's Fishing Industry: Background*. Resource Development Council for Alaska, Inc., 2009. Available at www.akrdc.org/issues/fisheries/overview.html.

¹⁸ Greenland Statistical Yearbook, 2010. Available at www.stat.gl.

¹⁹ Lasserre, Frédéric. *Arctic Shipping – The Ships will Come, but not for Transit*. Baltic Rim Economies. Quarterly Review 4, 2011.

²⁰ Winter, Allison. *U.S. Bans Commercial Fishing in Warming Arctic*. New York, NY: The New York Times, 2009. Available at www.nytimes.com/gwire/2009/08/21/21greenwire-us-bans-commercial-fishing-in-warming-arctic-33236.html.

²¹ *Arctic Marine Shipping Assessment 2009*. Arctic Council, Protection of the Arctic Marine Environment Group, 2009, p. 79.

²² E.J. Stewart et al. *Sea Ice in Canada's Arctic: Implications for Cruise Tourism*. Arctic. Vol. 60(4), February 2007, p. 370. Available at <http://pubs.aina.ucalgary.ca/arctic/Arctic60-4-370.pdf>.

²³ Snyder, John M. *Arctic Marine Tourism: Its History, Prospects, and Management*. Strategic Studies Inc., September 2008, p. 10. Available at <http://arcticportal.org/uploads/Ic/XH/IcxHWm1ZUDJtclBqqlTv3w/5-4-Arctic-Marine-Tourism-Its-History-Prospects-an.pdf>.

²⁴ Snyder, John, and Bernard Stonehouse. *Prospects for Polar Tourism*. CAB International, July 2007, p. 32.

²⁵ *Clipper Adventurer Runs Aground in Arctic*. Cruise Industry News, 2010. Available at www.cruiseindustrynews.com/cruise-news/4413-83010-clipper-adventurer-runs-aground-in-arctic-.html.

²⁶ *UNH/NOAA Report: Arctic Underprepared for Maritime Accidents*. Cruise Industry News, 2009. Available at www.cruiseindustrynews.com/cruise-news/2241-12909-unhnoaa-report-arctic-region-underprepared-for-maritime-accidents.html.