

Emerging Arctic Opportunities

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

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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 Russian'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.

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