Arctic: The New Front

Sailing through the Northern Sea Route: Opportunities and Challenges

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Because of global warming, the thinning ice in the Arctic is opening up the region for navigation for a few months in the summer season. The Arctic littoral countries (Canada, Norway, Denmark [Greenland], Russia and the United States), shipping companies and several other stakeholders (the EU and Asian countries such as China, Japan, Singapore and South Korea) are closely tracking shipping related developments in the Arctic and developing strategies to exploit the Northern Sea Route (NSR).

This article argues that the NSR offers a mixed bag of opportunities and challenges and would require the technological upgrade of platforms, navigational facilities, trained human resource and a cargo base to encourage shipping companies to deploy vessels along the new routes. Furthermore, stakeholders would need to be conscious of the adverse impact of commercial and human activity on the Arctic ecology.

Routes

The NSR is a shorter maritime route connecting Asia to Europe through the Arctic Ocean, compared to the traditional route through the Mediterranean Sea–Suez Canal–Indian Ocean–Strait of Malacca–South China Sea. As yet, however, the NSR has not become popular among shipping companies, and this is due to several reasons: the harsh sea conditions; a lack of ships/icebreakers; and a similar dearth of trained crew and cargo. Consequently, international shipping has largely stayed away from the NSR — although some cargo ships, research vessels, warships (including nuclear submarines), fishing vessels, and cruise liners offering an ‘Arctic experience’ have sailed through the NSR. During the 1990s, in the post-Soviet era, small quantities of ores, oil and gas, were transported to Russian destinations.

However, there is now a growing interest in navigating through the NSR, though only for a short period of the year. The number of vessels sailing through the NSR has increased in the last three years: There were four vessels in 2010; 34 in 2011; and 46 in 2012.¹ There has also been an appreciable increase in the cargo volume, from 0.800 million tons in 2011 to 1.30 million tons in 2012. An LNG tanker sailed from Hammerfest, Norway to Tobata, Japan in 2012, covering 6,000 miles through the NSR and saving nearly 20 days. According to some estimates, cargo volumes could increase 10 times to 19 million tons by 2020.²

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However, it is important to note that only 10 vessels sailed through the NSR in 2011, while the rest docked at ports in Russia. This compares quite unfavourably with the 18,000 annual transits through the Suez Canal. Also, the transportation costs of cargo through the NSR can be quite high, and may not be favoured by shipping companies who are driven by volume and profits. Clearly, the advantages of shipping cargo through the Suez Canal are much higher when compared with the NSR, and will continue to be so in the future unless there is rapid development of infrastructure and a rise in the volume of cargo.

Ice class vessels and icebreakers

The transporting of cargo through the NSR is highly dependent on the availability of ice capable ships and icebreakers. Shipbuilding yards in Europe are closely following shipping related developments in the Arctic region. For instance, Acker Arctic, a well-known shipbuilding company, has built a number of ships and offshore platforms to support the shipping industry, energy exploration and also polar research vessels. It is now designing such vessels for China and the Canadian Coast Guard. Likewise, some shipyards in China, Japan and South Korea have drawn up plans to build ice capable commercial and research vessels.

At another level, the demand for icebreakers is on the rise. These vessels are both nuclear and non-nuclear propelled and are capable of cutting through the ice and creating a passage for ice capable cargo vessels. A convoy of two to three vessels follows the icebreaker and navigates though harsh, icy sea conditions. Russia has the largest number of icebreakers in its inventory and it has drawn up plans to build several new nuclear and non-nuclear powered icebreakers for use in the NSR.

The International Maritime Organisation (IMO) has laid down mandatory standards for ships operating in the Arctic and the Polar Code establishes standards for ship construction and operation in polar waters. This would help standardise shipbuilding standards, classification and navigation requirements for ships operating in the Arctic region.

Ports

There are three major ports with terminal facilities in the Arctic – Churchill (Canada), Murmansk (Russia), Prudhoe Bay (US) – through which large volumes of cargo are shipped on an annual basis. As far as the NSR is concerned, other than Murmansk, only a few ports along the route are fully geared for providing bunkering, repair facilities, and rest and recuperation for the crew. Furthermore, they are spread along the Russian coast.

As part of its Arctic strategy, Russia has plans to modernise some of its existing ports and develop new facilities to boost shipping and transportation through the NSR. These will facilitate the movement of cargo, offer repair facilities, search-and-rescue and emergency response systems. Consequently, Russia has declared its intention to privatise (fully and partially) several state transportation and other infrastructure companies. The Russian government has also announced privatisation of river ports to ensure efficient management of shipping and commercial operations. In the Far East, Russia has begun to develop the port of Petropavlovsk at Kamchatka as an eastern hub.
Search and rescue

Search and rescue (SAR) is an important aspect of international shipping and transportation. The increasing scientific, commercial and leisure traffic in the Arctic necessitates the availability of adequate systems and assets for responding to SAR and accidents at sea, which are caused by collisions, on-board fires, machinery breakdowns and human and medical emergencies. Given the remoteness and vastness of the Arctic region, SAR operations require more resources than can be mobilised by any one country.

The Arctic Marine Shipping Assessment 2009 Report recommended that Arctic states should develop and implement ‘a comprehensive, multi-national Arctic Search and Rescue (SAR) instrument, including aeronautical and maritime SAR, among the eight Arctic nations and, if appropriate, with other interested parties in recognition of the remoteness and limited resources in the region’. In 2009, the Arctic Council Ministers signed the Tromsø Declaration because as ‘maritime activities in the Arctic increase, there will be increasing need for Arctic search and rescue services’ and there was a requirement ‘to negotiate an international instrument on cooperation’.

The Arctic Council nations have agreed to coordinate in accordance with a legally binding agreement negotiated under the aegis of the Arctic Council for safe shipping in the Arctic region. As per this treaty, the Arctic Council members, i.e., the United States, Canada, Russia, Denmark, Iceland, Sweden, Finland and Norway will have specific areas of responsibility in the SAR operations. The Agreement provides for the structured coordination of international maritime SAR in the Arctic. It also allocates areas of responsibility to conduct SAR operations. The Russian ministry of emergency situations has announced that it plans to establish centres along its Arctic coastline which will be manned on a permanent basis and support SAR activities in the region. These are welcome developments and may serve as an incentive for the shipping companies to take more interest in transporting cargo through the NSR.

Crew, navigation and communication

As discussed above, the unique Arctic conditions necessitate ice class vessels. Further, these vessels need to be manned by specialist personnel, both deck and engine room. Usually, the ship’s crew can safely navigate ships through warmer waters but they would require different skill sets and expertise to navigate in Arctic conditions. A good knowledge of ice and snow conditions, the ability to understand, interpret and execute surface data from satellite pictures, and the ability to navigate safely in all types of ice conditions are mandatory. Norway and Russia have sought a review of the Convention and Code relating to onboard crews and suggested that under the STCW Convention there must be mandatory minimum requirements for the training and qualification of navigators serving on ships operating in ice-covered waters.

While, there are significant developments underway with regard to the technological aspects of making the NSR attractive, the big challenge is the availability of physically fit crews to undertake voyages in harsh and frigid conditions. They should be able to withstand fatigue caused by darkness, which often leads to the degradation of alertness, make decisions and respond to complex emergencies, and also possess the capacity to operate machinery in sub-zero conditions.

It is important to note that specialist crews would naturally demand higher wages, which would add to the overall cost of transportation. In essence, transiting the NSR would involve higher costs of transportation and significant geographical and
operational challenges, as well as a higher insurance premium for both crew and cargo including ships, which would all have an impact on economic viability.

Furthermore, mariners and shipping companies are also concerned about the lack of reliable nautical charts of the Arctic region. According to a shipping official:

Decent charts really don’t exist... aids for navigation don’t exist, emergency response capability does not exist, so there’s things that need to be done before you can really support shipping up there... there are a lot of things overall that are still far from certain in terms of the practicalities of working.\(^7\)

The ships would also require special navigation and communication instruments. It is important to note that satellite communication poses a challenge in the higher latitudes. Meanwhile, Russia has put in orbit three Meridian-series communication satellites, which can serve both military and civilian users. These are capable of supporting communication between ships, aircraft and the shore stations. Russia plans to expand this communication network to other regions along the NSR including northern Siberia and the Far East.\(^8\)

The World-Wide Navigational Warning System (WWNWS) was expanded into the Arctic waters at the 15th session of the IMO Sub-Committee on Radio Communications, Search and Rescue.\(^9\) The Arctic has been divided into five ‘NAVAREA/METAREA’ zones to provide weather, wind and the ice information to vessels transiting through the Arctic. The responsibility for these zones has been divided amongst Canada (NAVAREA/METAREA XVII and XVIII), Norway (NAVAREA/METAREA XIX) and the Russian Federation (NAVAREA/METAREA XX and XXI). The Arctic NAVAREA coordinators also announced that it would be possible for their national meteorological departments to broadcast two weather bulletins daily.

**Environmental concerns**

While the international community is upbeat about the Arctic as the new reservoir of resources (oil and gas and metals and minerals) and shipping routes, the focus is also on the adverse impact of the human footprint on the Arctic flora and fauna. Polar bears, whales, seals, and a variety of fish and birds are highly vulnerable to shipping activity as well as the commercial exploitation of resources. In this context, the IMO Secretary-General, Efthimios E. Mitropoulos, remarked that:

The opening up of the Arctic will be a double-edged sword. Depending on your perspective, it represents either a world of new business opportunities or, on the other hand, an unwelcome extension of the human footprint into areas still, at the moment, predominantly pristine.\(^10\)

Furthermore, the impact of ballast water discharge can potentially disturb the fragile natural habitat with the entry of predatory marine organisms.

On another level, the Arctic waters have already witnessed extensive nuclear dumping. Several thousand containers of nuclear waste were dumped into the Barents and Kara Seas in Russia’s Arctic. Likewise, a Soviet nuclear-powered icebreaker (the *Lenin*) had two serious accidents, ‘whose consequences are still felt today in the form of environmental degradation’.\(^11\) The Kola Peninsula is home to the Russian Northern Fleet at Severomorsk near Murmansk and the region continues to witness movement of nuclear platforms. However, given the secret nature of their activities, nuclear accidents are rarely made public.
In another incident, in 1984, rough seas caused reactor waste from the nuclear icebreaker, Lepse, to seep into the water, which contaminated the cargo compartment, forcing the vessel to return to port. With nuclear waste still in the hold and leaking, the vessel was declared dangerous and was docked in harbour for over 15 years.

Russia has announced that it will undertake a ‘thorough clean up’ of the Arctic region and remove the rusting fuel barrels dumped during the Soviet era, and has also made assurances that any future industrial project in the Russian part of the Arctic will be commissioned only if it conforms to strict environmental standards.

Conclusion
It is true that sea commerce through the NSR Arctic will increase in the coming years and will also offer huge business opportunities. The shipping industry is waiting to capitalise on the new route. However, there are a number of natural, technological and human challenges that will need to be overcome. Hazardous sailing conditions arising from floating ice, chilly winds, foggy conditions, poor visibility, seasonal darkness, and extreme remoteness will potentially impact shipping. At the technological level, safe navigation is dependent on reliable nautical charts, efficient onboard navigation systems, satellite communication, and reliable search-and-rescue arrangements. Likewise, human challenges arising from crew fatigue, both physical and psychological, are also a serious issue. Above all, the environmental impact of increased shipping activity in the Arctic needs to be taken into account.

A number of regulatory mechanisms have been initiated by the UN, the Arctic Council and the Arctic countries to ensure that shipping through the Arctic is safe and secure, both from the perspective of the crew, shipping companies and the environment.

Notes
2. ‘Russian Arctic LNG Tanker Reaches Japan After Traversing Northern Sea Route’, Alaska Dispatch, December 5, 2012.
9. Expansion of World-Wide Navigational Warning System into Arctic Waters Marked by IMO, WMO and IHO Chiefs, IMO Briefing No. 11, March 8, 2011.
10. Ibid.