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## Opening of Arctic Sea Routes: Turning Threat into Opportunity

By Joshua Ho

### Synopsis

*The opening of Arctic sea routes caused by global warming could present challenges to existing hub ports like Singapore. Traversing the Northern Sea Route would cut transit time and reduce operational costs. However, they also present opportunities to be capitalised on.*

### Commentary

LONG DISMISSED as scientifically unfounded, global warming has now been accepted as a new reality that will have a direct impact on the safety, security and the environment of human habitation. The effects of climate change as a result of global warming include the increase in adverse weather events; water shortages; sea level rise and consequential flooding and destruction of coastlines. There will be a decrease in crop yields due to increasing temperatures and a reduction in water supply; and an increase in temperature-related illnesses and deaths.

Some traditional activities like agriculture, fisheries and tourism might be reduced or even disappear altogether in regions that are heavily affected by climate change. Societies that are not able to adapt to climate change will experience great suffering. However, there are some positive aspects associated with global warming. The opening of new sea lanes that can reduce transit times between destinations is one of them.

### Arctic Marine Shipping Assessment Report

According to the Arctic Council's Arctic Marine Shipping Assessment (AMSA) 2009 Report, there is a possibility of the Arctic Ocean becoming ice-free for a short period in summer as early as 2015. This would mean the disappearance of multi-year ice, which would not last during the summer melt season. Notwithstanding the prognosis of an early opening of Arctic routes, like the Northern Sea Route, the AMSA assesses that transit traffic in the Northern Sea Route may not be more regular until around 2025.

AMSA estimates that regular trans-polar summer transport (four months) will occur towards the middle of the century, from 2040 onwards. When this happens, tremendous shipping benefits would accrue as transiting the Northern Sea Route above Russia between the North Atlantic and the North Pacific would trim about 5,000 nautical miles and a week's sailing time from that via the Suez Canal and Malacca Strait. Financial savings associated with using this shorter route are estimated at about USD 600,000 per vessel. This may have an adverse impact on existing regional hub ports like Singapore which have long been a nexus of East-West shipping. Despite the threats that could be presented to a transit hub port like Singapore, there are also opportunities which could be capitalised on.

### **Opportunities for New Platforms**

Firstly, with the opening of the Arctic routes and the Arctic in general for oil exploration, there would be an increasing need for new offshore rigs, special-purpose offshore facilities and vessels which can withstand the cold and harsh Arctic environment. Singaporean shipbuilders who have already attained world-class standards are in a position to capitalise on this new market.

Already Keppel Offshore and Marine Ltd (Keppel O&M) have signed an agreement with LUKOIL to cooperate in building new platforms. They have already delivered two ice breakers, two ice class anchor handling tug supply vessels, two ice class rescue vessels and an ice class floating storage and offloading vessel in 2009, which were built according to the standards and rules of the Russian Maritime Register of Shipping (RMRS). More Singaporean shipbuilders can start to capitalise on this opportunity as Russia has released plans to build a total of 40 ice resistant oil platforms, 14 offshore gas terminals, 55 ice resistant tankers and storage tankers and 20 gas carriers in the future.

### **Opportunities for R&D in Ship Technology**

Secondly, as the Arctic environment is relatively clean at the moment, it is very susceptible to marine pollution. To protect the marine environment, the Arctic Council will likely impose stringent marine environmental regulations for ships that transit the waterway. This will require cleaner ships that have low carbon emissions and are more energy efficient. Some research and development could be undertaken. These may include improvements in hull design to reduce underwater resistance, special coatings to reduce fuel use, and the development of new ship engine technologies fueled by LNG and hydrogen.

There is also a need for stronger and more powerful vessels to transit the Arctic as well as to extract natural resources which lie beneath the Arctic basin; this lends itself to further research and development. Examples of such ships would include double acting ships where the vessel is able to use both its stern and bow interchangeably during navigation through different ice conditions.

Another example would be the development of oblique icebreakers with azimuth propulsion that could rotate and break ice sideways. Again, as Singapore is home to world-class ship builders, these firms could capitalise on the development of new types of ships to meet the projected demand.

### **Opportunities for Port Development**

Finally, with the opening of the Northern Sea Route, there would be an increasing need for ports to service ships that ply the route as the existing ports have a rather rudimentary infrastructure. PSA International is one of the leading global port groups with investments in 28 port projects in 16 countries across Asia, Europe and America. With its extensive experience in port development, PSA International is well placed to develop ports along the Northern Sea Route in cooperation with partners in Russia.

While the opening up of the Arctic sea routes, in particular the Northern Sea Route, could have an adverse impact on Singapore as a hub port, it also presents opportunities in new shipbuilding, research and development into ship technology, as well as in port development. Firms operating in these areas should quickly capitalise on the new opportunities that arise as the Arctic routes open earlier than expected due to the unexpected and accelerated rates of global warming.

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