Download date: 16. okt.. 2026

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maybe a too rose-coloured picture of the blue Arctic Ocean

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Publication date:
2009

Document Version
Publisher's PDF, also known as Version of record

Link to publication

Citation for pulished version (APA):
Christensen, S. A. (2009). *Are the northern sea routes really the shortest? maybe a too rose-coloured picture of the blue Arctic Ocean*. Danish Institute for International Studies. DIIS Policy Brief Vol. 2009 No. March

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DIIS BRIEF

Executive summary

We hear a lot about changes in the extension of the ice cover in the Arctic Ocean. Reading the headlines in the newspapers one gets the impression that the Arctic Ocean will soon be ice-free.

Does this mean that world trade is finding new routes through the Arctic? Will we see heavy transit shipping between the continents any time soon?

No, that is much too early, says this brief.

March 2009

Are the northern sea routes really the shortest?

Maybe a too rose-coloured picture of the blue Arctic Ocean

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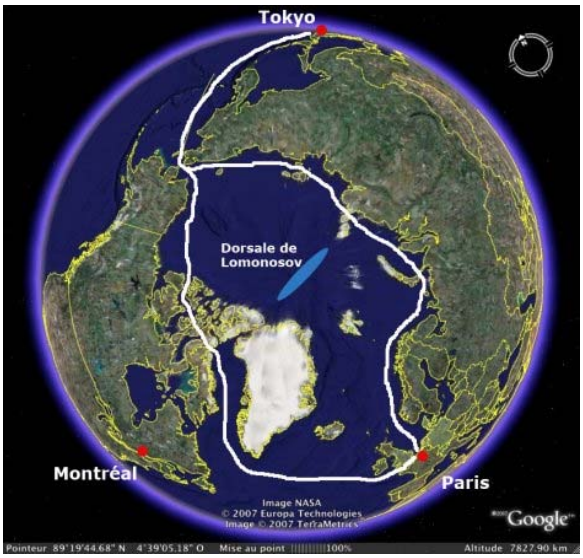
INTRODUCTION

Are the northern routes really shorter than the normally used routes and are the shipping companies interested in using them? These were some of the questions the Canadian researcher Frédéric Lasserre recently asked at a round table discussion in Reykjavik.[1]

His conclusions were remarkably sobering in light of the rose-coloured scenarios many of us have after maybe too hastily reading the headlines in the newspapers. Scenarios which talk about a comprehensive change in the international ship routes. Scenarios which talk about the Arctic Ocean as the new Mediterranean. Scenarios which not only pop up in our imagination and in the headlines but sometimes also colour the official assessments.[2]



THE DISTANCES

One often meets the assumption that the northern shipping routes between Europe and respectively the American west coast and the Asian east coast generally are considerably cheaper, shorter and faster than the alternatives through the Panama Canal and the Suez Canal.

This perception is often used as an argument for the usage of the northern sea routes because of the combination of higher prices on fuel and the increased melting of the Arctic ice.

Frédéric Lasserre does not paint with such bold strokes of the brush but is very concrete and has compared the distances between several important harbours by usage of the different sea routes. Many of the results are suitable for cooling down the most excited fantasies about the transit potential of the northern routes.

[1] Frédéric Lasserre, *Arctic sea ice and navigation: towards the opening of a maritime highway*? (Université Laval) in presentation at the academic roundtable "Security Prospects in the High North: Geostrategic thaw or freeze?", arranged by NATO Defense College, Rome, and University of Iceland, Reykjavik, January 29-30th, 2009. See also Frédéric Lasserre, La souveraineté canadienne dans le passage du Nord-Ouest, in *Options Politiques*, Mai 2007, pp. 34-41. Seen on http://www.irpp.org/po/archive/may07/lasserre.pdf

[2] In contrast, see the cautious and sober line in Sven Holtsmark, Cooperation rather than confrontation: Security in the High North, p. 4, in Research Briefing, January 2009, NATO Defense College, Rome.

In the EU Commission's recent *The European Union And The Arctic Region* the perspectives are seen in the following way: "EU Member States have the world's largest merchant fleet and many of those ships use transoceanic routes. The melting of sea ice is progressively opening opportunities to navigate on routes through Arctic waters. This could considerably shorten trips from Europe to the Pacific, save energy, reduce emissions, promote trade and diminish pressure on the main trans-continental navigation channels. But serious obstacles remain, including drift ice, lack of infrastructure, environmental risks and uncertainties about future trade patterns. Hence the development of Arctic commercial navigation will require time and effort." Formally, this is maybe a balanced assessment. Still, you may ask if it does not leave the reader with a somewhat too positive picture of the possibilities for large-scale transit shipping in the Arctic. (Communication from The Commission to The European Parliament and The Council: The European Union and the Arctic Region, COM(2008) 763 final, Commission of The European Communities, Brussels, 20.11.2008, par. 3.3.

Are the northern sea routes really the shortest?

Distance in km between harbours using various southern and northern routes

Route	Panama Canal	Northwest Passage	Northeast Passage	Suez and Malacca
London - Yokohama	23.300	15.930	13.841	21.200
Marseilles - Yokohama	24.030	16.720	17.954	17.800
Marseilles - Singapore	29.484	21.600	23.672	12.420
Marseilles - Shanghai	26.038	19.160	19.718	16.460
Rotterdam - Singapore	28.994	19.900	19.641	15.750
Rotterdam - Shanghai	25.588	17.570	15.793	19.550
Hamburg - Seattle	17.110	15.270	13.459	29.780
Rotterdam - Vancouver	16.350	14.330	13.445	28.400
Rotterdam - Los Angeles	14.490	15.790	15.252	29.750
Gioia Tauro (Italy) - Hongkong	25.934	24.071	21.556	14.093
Barcelona - Hongkong	25.044	23.179	20.686	14.693
New York - Shanghai	20.880	17.030	19.893	22.930
New York - Hongkong	21.260	18.140	20.982	21.570
New York - Singapore	23.580	20.310	23.121	18.770

Marginally longer route | Shortest route

All numbers calculated by Frédéric Lasserre in SIG Mapinfo, except the numbers for the Northeast Passage through the Kara Strait south of Novaya Zemlya which have been calculated in Google Earth by Svend Aage Christensen.

The *Northern Sea Route* is the Russian name for a number of shipping routes along the Russian north coast from the Kara Strait south of Novaya Zemlya in the west to the Bering Strait in the east. The *Northeast Passage* is broadly understood as the route between the North Atlantic Ocean and the Pacific Ocean north of Russia. The *Northwest Passage* is equivalently the broad name for the route between the North Atlantic Ocean and the Pacific Ocean north of Canada. The Northwest Passage comprises seven known, possible shipping routes.

As shown in the chart above from Lasserre's presentation the picture is very mixed and the gain in distance is to be found in the routes between the harbours located north of the respective oceans. It is also important that not all of the routes are equally relevant for the navigation. Maybe the routes to Hong Kong and Singapore are among the most important ones. With the dynamic development of the global transport patterns it is definitely difficult to predict where the largest future need for transit will be. Maybe this part of the development soon will favour the southern routes.

OBSTACLES FOR THE DEVELOPMENT OF THE SHIPPING INDUSTRY

In 2007 one of the global climate models which is used to predict the development of the ice cover in the Arctic Ocean showed that all of the Arctic Ocean might be ice-free for a short summer period in the middle of this century. Other models show that this might happen even earlier.

However, it is important to remember that this is just for a short summer period. No research and no simulations indicate that the Arctic Ocean is not going to be covered by ice the rest of this century. As far as we can see the ships will have plenty of ice to struggle with most of the year. At the same time it is worth mentioning that there are some ocean areas close to Canada, Greenland and north of Russia with shipping traffic year round. About 60 percent of the actual traffic in the Arctic regions is fishing vessels.

The word ice-free has to be regarded with reservation. Open water is defined by the World Meteorological Organization for the purposes of navigation as areas where the ice covers less than one-tenth of the surface. Drift ice will continue to slow down the ships also in the summer season and due to the increased melting of Greenland's ice cap there are going to be many more icebergs. This will mean lower speed and detours and thereby longer hours of sailing even though the route itself is shorter.

On top of that the insurance premiums are very high for Arctic sailing – when it is at all possible to obtain insurance. The difficulty in getting insurance is indeed a drag on the development of Arctic shipping. Furthermore, there are restrictions on the big ships because of the shallow depth of the water in the relevant passages. For instance the Union Strait is only 13 meters deep.

Lasserre's industry survey of the expectation of 130 shipping companies for the development of Artic transit show that there is limited expectation for container shipping and other freight types where time is of importance. The routes are regarded as complicated and risky. The uncertainty and variation regarding the ice cover and thereby risk for delays are too big. Furthermore, there are no suitable harbour facilities along the Northwest Passage if the ships get damaged on their way. Lastly, it is also a minus for certain freight types that there are no marketing possibilities on the route.

On the other hand, there is a bigger, although cautious, interest for shipping bulk with both solid and liquid cargo (mass freight) where the time factor is not as important. Here the variation of the ice conditions and the high insurance premiums also take away from the combined calculation and mean that there probably is less interest in Arctic transit than often thought. Here, Lasserre seems to share the opinion with one of the experienced voices in Arctic questions, the Canadian professor Franklyn Griffiths.[3]

The Danish shipping company Torm has started investing money in ships for Arctic sailing. Torm has calculated that 1 million Danish kroner and 12 days per trip can be saved by sailing between Europe and Asia via the Northern Sea Route. These numbers from a press release in the beginning of 2008 are meaningless when it is not specified which harbours have been used, at what time of the year, under what ice conditions, etc. It is rather uninteresting that 12 days can be saved on certain trips if one has to wait for one month for the right conditions. The press has probably also given the story too much importance. Today the shipping company says that it is too early to talk

[3] "Arctic Sovereignty and Security: Franklyn Griffiths". Seen on http://www.canadianinternationalcouncil.org/research/franklyngr

Lasserre's industry survey on Arctic transit

	Asia	North America	Europe	Bulk	Container	Dual
Interest for Arctic transit	2	6	3	5	2	3
Maybe/do not know yet	1	0	2	2	0	0
No interest	7	4	10	6	14	3

The container companies that answered account for 57% of world traffic.

4 North American companies and 2 European were already present in the Arctic.

about Arctic transit. The notable thing about the story is that the company has bought ships with specifications for Arctic sailing, Iceclass 1 A Super, which makes them suitable for sailing long distances under Arctic conditions for the purposes of destination traffic. But that's another story. Jan Fritz Hansen who is the deputy director of Danish Shipowners' Association mentions that as soon as one is south of Japan the savings on distance become less or disappear just as the sailing speed becomes limited in the Arctic areas. Jan Fritz Hansen generally does not see the route as an important alternative.[4]

WHERE THE BIGGEST INTEREST IS RIGHT NOW

The development right now in Arctic sailing is in what could be called local traffic. Experts talk about destination traffic in contrast to transit traffic. For example, cruises and traffic which serve the local communities or directly or indirectly have to do with extraction of resources or preparation for this.[5] On the Northern Sea Route, between the Kara Strait south of Novaya Zemlya and the harbour Dudinka at Yenisey, sailing has taken place all year round since the winter season of 1978/79 but naturally often assisted by icebreakers.

The main reason for the destination sailing is the large occurrence of oil, gas and minerals especially in the Russian and Canadian parts of the Arctic regions. Due to the fact that the climate changes increase the season for sailing it becomes more lucrative to utilize these occurrences. This means that the shipyards have their order books full of orders for ice strengthened cargo ships (STX Europe ASA, Finnyards, Mitsubishi), most of them to be used in the Russian part of the Arctic regions. In addition the Russian Minister of Industry has recently talked about building three new Russian shipyards to be able to meet the increased demand for platforms for Arctic conditions.

4 *Børsen*, Copenhagen, 19 May, 2008

5 For the current activity in Greenland, see List of mineral and petroleum licences in Greenland. 16 January 2009. Bureau of Minerals and Petroleum, Government of Greenland. Seen on http://www.bmp.gl/minerals/list_of_licences.pdf

However, there is also a limiting factor because the rough nature makes all operations costly and time consuming in addition to the general economic slump and the declining prices on for instance oil and gas.

Still there is an expectation that the intra-Arctic and the destination navigation in the Arctic regions will develop within the next few years.[6]

The outlined development within intra-Arctic and destination navigation is in itself sufficient to substantiate the current thoughts regarding a coordinated effort for increasing the maritime safety in the Arctic Ocean. One does not have to imagine extensive transit traffic for this work to be meaningful. Concentration for example is being put on efforts for better cooperation between the relevant international organizations and to work on ideas for distributing and strengthening binding international standards for all aspects of navigation in the Arctic regions.

This is taking place both in consideration for the maritime safety and the protection of the inhabitants and the milieu in the Arctic regions.

CONCLUSION

According to certain climate models the whole Arctic Ocean is thought to become ice-free a short period during the summer around the middle of this century. Other models show that this might happen even earlier.

However, it is important to remember that this might only happen for a short summer period. No research and no simulations show that the Arctic Ocean will not be covered by ice at any time the rest of this century. As far as we can predict, ships will have to struggle with ice.

Lasserre concluded that despite the melting of the ice, great variations of ice cover is expected in the near future and that the transit routes therefore are not of interest in the short time horizon except for some kinds of bulk shipping (mass transport) with ice strengthened ships.

On the other hand, the intra Arctic "local" and destination navigation which attend to the need of the Arctic regions or resource extraction is expected to grow continuously.

The climate prognoses point to a quicker opening of the Northeast Passage than of the Northwest Passage. Russia already has a part of the infrastructure and services in place at the Northern Sea Route but there are obviously many flaws if the quantity of traffic is to be increased.

The big question is whether the conditions discussed in this brief will really lead to a considerable expansion of heavy transit shipping in the region. Before our view on Arctic transit becomes too rose-coloured it would benefit to listen carefully to the experience and expectations of the sea captains and the shipping companies and read once more what the climate prognoses actually say.

[6] The Russians have an advantage in their many icebreakers, see Oleg Bukharin, Russia's Nuclear Icebreaker Fleet, in *Science and Global Security*, 14:25-31, 2006.

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