

Project information

Project title

Drivers for Arctic shipping: Transport alternatives, demand for minerals, and supply and demand of Russian icebreakers

Year

2014-15

Project leader

Eirik Mikkelsen

Participants

Norut: Anne Katrine Normann, Eirik Mikkelsen (project leader eirik.mikkelsen@norut.no), www.norut.no

Fridtjof Nansen Institute (FNI): Arild Moe, www.fni.no

Akvaplan-NIVA (APN): Rune Rautio, www.akvaplan.niva.no

Lawson Brigham

Capia: Stian Berger, www.capia.no

Flagship

Arctic Ocean

Funding Source

Fram centre

Summary of Results

The project had as main objective to better understand major drivers and barriers for development of Arctic shipping, particularly along the Northern Sea Route.

It had the following part objectives:

- 1) Map and analyse transport alternatives, policies and plans of the mineral sector in the different regions of the Russian North, and estimate increased future use of the NSR for mineral transport for these regions for the coming 20-30 years.
- 2) Establish an automated retrieval, management and presentation system for supply and demand data for Arctic relevant minerals that can be useful for assessing likely future production volumes of minerals from different deposits or regions of the Russian North.
- 3) Get an overview of oil and gas fields in northern Russia, transport options and company strategies of relevance for Arctic shipping.
- 4) Present and understand Russian perceptions of the need for icebreakers, and discuss consequences for Russian policy, contribute with our own assessment of the need.
- 5) Study the plans and assess the realism in building new and higher capacity railroads, and how this might affect future seawards transport on the NSR.
- 6) Determine/estimate actual shipping volumes of major minerals and metals from Russian Arctic regions/ports for 2012-2013, how they vary with world market prices, and review long-term forecasts of world market for the major relevant minerals and metals relevant for our study.

A comprehensive mapping of all the Russian mining industry has been performed. This includes about 390 Russian mineral and metal ore deposits and mines, and we have also considered railroads, Russian public development strategies (energy strategy, port strategy and railroad strategy), and strategies of the major companies of the Russian mining industry.

We have investigated the possibility to estimate how actual shipping volumes of major minerals and metals from Russian Arctic regions/ports for 2012-2013 vary with world market prices, and review long-term forecasts of world market for the major relevant minerals and metals relevant for our study. Statistics on shipping volumes of different types of minerals and metals out of Russian ports are not available, only export by region. However, this could be by different transport methods, including both shipping and railway. The mapping of the mining industry identified the minerals and metals particularly relevant for shipping in the Northern Sea Route. For these, as well as some others, we have gathered world market prices, Russian trade, export and transport data in an online database. The most important ones for NSR shipping are bauxite, coal, copper and nickel, and iron ore. The collection of data allows easy compilation, presentation in tables, diagrams and maps, and analyses. The database has also imported the actual shipping data based on AIS-signals (from www.Havbase.no) to facilitate the combined analysis of ship traffic and shipping volumes from the Northern Russian regions with world market prices for metals and minerals. With the resolution of the available data (spatial and temporal), as well as the uncertainty of what ship types that are actually used for shipping minerals/metals from the different ports/regions (dry bulk, container, general cargo) it has not been possible to reveal any clear links between the dataserries.

The organization of Russian icebreaking services and the status prospects for the icebreaker-construction program has been analysed. Also the expected need for icebreaking and possible alternatives to the present organization has been discussed, as well as the tariff regime of the Northern Sea Route Administration for sailing along the NSR.

An overview of the oil and gas fields and related industrial activities in the Russian North has been mapped. How the prospects for production ahead is, and how it could depend on Arctic shipping is discussed. Important factors for this includes the development of the world energy markets, both shifting importance of shale gas production and the volatility and reduction in petroleum prices, the sanctions of Russia from the EU and US following the Ukraine crisis, and the options of pipeline or LNG shipments for transport to markets. The most important project for the coming years, remembering that it takes many years to develop new petroleum fields into production, is the Yamal projects, and the shipping of LNG from Sabetta. This will give a significant volume of shipment and number of sailings both eastward and westward in the NSR.

A thorough information gathering on strategies for railway development and transportation policy has been collected as well as data on industrial development projects. The study to consider them in concert to see how development may affect the cargo potential of the Northern Sea Route is well in preparation.

For the Management

See conclusions

Published Results/Planned Publications

[Presentations and publications fully or partially utilising results from this project:](#)

Arild Noe 2014: The Northern Sea Route: Status and Challenges, Presentation at scientific conference, 22.01.2014, Tromsø, Workshop on maritime shipping in Arctic waters.

Berger, Stian 2014: Database related to Arctic shipping. Presentation at Seminar on Russia for Shipping projects. Tromsø, 21 October 2014.

Mikkelsen, E and JA Røyset 2014: A new tool for actual Arctic shipping data. Presentation at Cooperation 66 Degrees North, Arctic maritime and security forum, 8-9 May 2014, Tromsø.

Mikkelsen, E 2014: Arctic shipping projects. Presentation at Seminar on Russia for Shipping projects. Tromsø, 21 October 2014.

Arild Moe 2014: Arctic shipping – Market outlook and developments on the Northern Sea Route, Presentation at scientific conference, 28.10.2014, Bremerhaven, AWI-IASS Arctic Workshop,

Moe, Arild 2014: The Northern Sea Route; Smooth Sailing Ahead?, Strategic Analysis, 38(6), 837-55.

Moe, Arild 2014: Utviklingen av den nordlige sjørute: Ambisjoner og komplikasjoner. Presentation at Seminar on Russia for Shipping projects. Tromsø, 21 October 2014.

Normann AK and E Mikkelsen 2014: Impact of insurance on developing the Northern Sea Route. Presentation at Cooperation 66 Degrees North, Arctic maritime and security forum, 8-9 May 2014, Tromsø.

Normann AK and E Mikkelsen 2014: Importance of insurance for developing the Northern Sea Route. Presentation at 10th Annual Arctic Shipping Forum, 8-10 April 2014, Helsinki.

Rautio, Rune 2014: Kildetilgang ved kartlegging av russisk gruveindustri og strategier med potensial for utvikling av Den nordlige sjørute. Presentation at Seminar on Russia for Shipping projects. Tromsø, 21 October 2014.

Rautio, Rune and Alexei Bambulyak 2015: Drivers for increased use of the Northern Sea Route - Russian mining industry status and prospects. Akvaplan Niva report 6545 / 6872. Updated version September 2015.

Moe, Arild: Arctic shipping – Market outlook and developments on the Northern Sea Route, Alfred Wegener Institut, Bremen, 28.10.2014

Mikkelsen, Eirik 2015: Drivers for Arctic shipping. Presentation for EUs Joint Research Centre and the Norwegian Research Council. Tromsø, 22 January 2015.

Arild Moe 2015: The Russian nuclear Icebreaker fleet :What we know and don't know., Presentation, 26.06.2015, Polhøgda, Korean-Norwegian expert roundtable

Arild Moe. 2015: Trans-Arctic shipping: Drivers and obstacles, Presentation at scientific conference, 12.11.2015, Madrid, The Arctic:

Opportunities and challenges deriving from climate change. Fundación Ramón Areces.

Moe, Arild and Lawson Brigham: Icebreakers – a key to development of shipping in the Russian Arctic. Arctic Frontiers conference, January 2016 (oral presentation).

Arild Moe 2016: Icebreakers: A key to development of shipping in the Russian Arctic, Scientific conference, 28.01.2016, Tromsø, Arctic Frontiers - Panel on technology needs for shipping in the north

Mikkelsen, Eirik, Rune Rautio and Stian Berger: The Russian mining industry's role for use and development of the Northern Sea Route. Arctic Frontiers conference, January 2016 (poster).

Arild Moe and Lawson Brigham: "Development of icebreaking on the Northern Sea Route" (article in preparation)

Arild Moe: "Voyage through the North: Domestic and International Challenges to Arctic Shipping". Forthcoming in Kathrin Keil and Sebastian Knecht (eds.): *Governing Arctic Change: Global Perspectives*. Palgrave Macmillan, 2016

Arild Moe and Rune Rautio: Russian overall transport policies and possible implications for shipping along the Northern Sea Route (research paper in preparation)

Anne Katrine Normann and Eirik Mikkelsen: The insurance branch as an actor in developing the use of the Northern Sea Route (article in preparation).

Anne Katrine Normann and Eirik Mikkelsen: Oil and gas in Russia and Arctic shipping (research paper in preparation).

Eirik Mikkelsen, Rune Rautio and Stian Berger: The Russian mining industry and use and development of the Northern Sea Route (article in preparation).

Communicated Results

Mikkelsen, E 2014: "Store mengder is skaper trøbbel i Nordøstpassasjen" (Large amounts of ice create trouble in the Northeast passage), *Aftenposten*, 24 August 2014.

Arild Moe: '[Nordleg sjørute ingen ny Suezkanal](#)' ('- The Northern Sea Route Is No New Suez Canal'), *BarentsWatch*, 16.12.2014. In Norwegian

Arild Moe 2014: Resources Exploitation and Eco-sustainability of the Arctic Region , Festival della Diplomazia, Developments in trans-Arctic shipping: Drivers and limitations, User group presentation, 31.10.2014, Roma,

Arild Moe 2014: in *Rusenergi*, Риски судоходства по Севморпути увеличиваются - Норвегия, 30.01.2014

Arild Moe 2015: in *Taz.de*, Verkehrsregeln im Eiswasser, 19.05.2015.

Arild Moe 2015: Outlook for the Northern Sea Route, Presentation, 04.06.2015, Polhøgda, Meeting for French senators,

Arild Moe 2015: The Northern Sea Route: Dynamic or doomed?, User group presentation, 22.09.2015, Sjøkrigsskolen, Bergen, International Order at Sea Conference,

Arild Moe 2015: in *Maritime*, Snart stenger den nordlige sjøruten for i år, 17.11.2015.

Arild Moe 2015: in *Maritime*, Her rigges Tor Viking for nordøstpassasjen, 18.11.2015.

Arild Moe 2015: in *Maritime*, – I slike områder er man veldig alene, 26.11.2015.

Arild Moe 2016: in *Eye on the Arctic*, Arctic shipping: The myths, the realities & the challenges ahead, 28.01.2016.

Interdisciplinary Cooperation

The project has been performed by an interdisciplinary team, with researchers from political science, economics, economic geography, business, ICT/programming. This has been very valuable in the project, bringing together a total set of data from different sources and of different type, perspectives and theories that each individual researcher could not had alone, and which helps us understand the multitude of factors that affect future Arctic shipping.

Budget in accordance to results

The funding from the Fram centre has been essential to realize this project.

Could results from the project be subject for any commercial utilization

No

If Yes

No

Conclusions

Identifying quantitative patterns between world mineral prices, Russian exports and dry bulk shipping in the Northern Sea Route with the available statistics is challenging. So far we have not been able to unravel this with reasonable certainty. The more qualitative analysis of the mineral sector however gives relevant data for considering mineral sector and Northern Sea Route developments for the coming years.

Large reserves of minerals exist in the Russian Arctic, but the main deposits are being mined or developed with land-transport infrastructure nearby. The main exception is the copper and nickel mine of Norilsk Nickel on Taimyr Peninsula which ships its products out via Dudinka.

There are no new major Russian mining projects in undeveloped parts of the Russian Arctic. Plans for coal mining close to the Northern Sea Route have been abandoned due to the costs of needed infrastructure investments and unfavourable market conditions.

If the plans in the Railroad strategy for 2020 and 2030 with expansion northwards in the Urals, Siberia and the far east are carried out, it will be less likely with more minerals being shipped out through the Northern Sea Route.

The vision or image of the Northern Sea Route, both from Russia and from the outside, is as a Sea Route with large potential and importance. But whereas the outside, particularly Asian, interest is primarily connected to trans-arctic transits, the Russians' image is increasingly related to resource extraction in the Arctic. These visions and ideas have different implications for how the sea route will be or should be developed. However, both visions are exaggerated and rest on very uncertain assumptions. Transit shipping through the NSR is not as attractive for the international shipping industry as it is often presented. Development of extractive industries in the Arctic is likely to be much slower than foreseen in Russian plans, and for some of the possible mining projects it is very possible that rail will be the preferred transport method.

There are overlaps between the Russian and outside interests. The Yamal LNG project has an increasing share of investments from China. This project is set to become the major cargo producer for the sea route in a few years' time and a substantial share of icebreaking capacity will be employed there.

So, the most probable development now is that international transit will continue to grow slowly, since the fundamentals of the NSR remain interesting for segments of international shipping. But it will become a secondary activity and not a driver for development of the NSR. For internal Russian political reasons and the transport need of some extractive projects, destination shipping will grow, but not as fast as anticipated until recently. While increases in world demand and prices for minerals could make it more attractive to develop production in relative closeness to the Northern Sea Route, and thus could lead to increased ship traffic, it must surely be many years ahead as such investments and developments require much time. How strong this development will be depends very much on Russian state priorities. How much will the Russian state be willing and able to subsidise the NSR and invest in upgrading of its infrastructure, rather than other transport infrastructure, especially railroads?