Logistics Challenges and Opportunities in the High North: the Implications of the Commercial Opening of the Northern Sea Route

The Tschudi Group (TSC) with roots back to 1983 (www.tschudishipping.com) is an offshore, shipping and logistics group with particular focus on the east west trades of cargoes and projects involving the Baltic, Russia and the CIS countries including the Northern Regions of Russia and Norway.

CONVENTIONAL SHIPPING
- Ice class multipurpose container vessels
- Snow freezing and refrigeration carriers
- Project cargoes
- Commodity shipping

OFFSHORE
- Anchor handling tug supply vessels
- Ocean going tugs

TSCHUDI LOGISTICS
- East - West logistics between western Europe, Russia and the Central Asian Republic
- Container lines
- Door - door transportation
- Project cargoes
- Rail and road forwarding

The Arctic: Large potential for energy resources and minerals and metals
The Tschudi Shipping rationale for focusing on logistics in the High North is:

Resource development in the Arctic is accelerating due to high demand and commodity prices.

This development is supported by climate change and technological developments related to resource extraction and operations in harsh conditions.

Transport solutions are key to its realisation!
April 2010

C&I workshop in Kirkenes – Bulk shipping via NSR

Cargos owner
Ship agents
Traders
Insurance companies
Law firms
Classification societies
Public authorities
Research institutes

www.chfnb.no

Northern Sea Route
An alternative shipping route with savings too large to be ignored!

2016: 4 passages – 111,000 mt
2011: 24 passages – 626,600 mt
2012: 40 passages – 1,260,000 mt
2013: 30 passages – 976,000 mt
2010 more than last year – by 0.06

Savings a result of lower fuel costs and savings on bunker costs. Bunkers are cheaper and sailors others need.

Environmental and Cost Savings from Kirkenes to Shanghai

A Panamax Bulk carrier (about 75,000 dwt) burns about 30 tons of heavy fuel oil per day sailing.

Saving one way is 21 days, for correct comparison we must include the repositioning, hence 42 days or 1,260 tons.

- NOx savings: 128 t
- SOx savings: 69 t
- CO2 savings: 3,000 t
- Cost savings: 820,000 USD (at bunker price USD 560 per mt)

LNG from Melkaya to Yokohama - 147,000 cbm
Full round voyage - Spot market rate - USD 15,000/mt

1. Time charter per day USD 100,000 * 21.4 = 2,140,000
2. Bunkers burn off 0.1% per day * 21.4 = 2,220,000
3. Spot round voyage cost USD 150,000
4. NSR tariff USD 5 * 70,000 mt + USD 2.5 * 113,000 mt

Savings (Full Round Voyage) USD 6,854,000

Pevlek

Pevlek is the middle point between Shanghai and Rotterdam.
12.5 days to each destination.
The importance of return cargoes

From the Atlantic to the Pacific
15,000 $ per day

From Pacific to the Atlantic
1,000 $ per day

Trans-Atlantic route - Transpacific route costs 7,000 $ per day for a panamax.

Basically the same distance, but by joining forces commercially significant freight savings can be achieved both ways. Siberian bulk exports to benefit if ports are open.

A future challenge to the Suez and Panama Canals?
Probably not due to existing trade patterns and the complexity of container trades but it is a large opportunity for trade in the North.

What are the short term uncertainties? What dynamics influence the use of the NSR?

- Main factor - the freight market level for different shipping segments
- Type of cargo - price differences in Asian and western markets, e.g., LNG - time-availability of markets and cargoes
- Time required for passage - ice conditions and waiting time
- Draft limitations determine the size of the vessels and routes
- Availability of ice class tonnage in different segments and sizes - repositioning cost of vessels
- Cost elements: Berth prices - slow steaming - Insurance - NSR Transit fee - Suez canal tolls
- Piracy threat - cost of insurance and protection - risk of non-delivery of cargo

With all these advantages - what can stop the NSR from developing in the long term?

- The International Maritime Organisation (IMO) Polar Code and political and environmental restrictions stop the development of the NSR in its infancy if too restrictive and costly regulations are imposed. Such measures should only be introduced after thorough evaluation of all aspects and consequences of the new regulations (not always the case when it comes to environmental issues)
- If too costly or inflexible transit fees, levies or other regulations are imposed by the Russian authorities the NSR might easily prove uncompetitive. Today the Russian authorities are working hard to improve the conditions for using the NSR. e.g., the 2013 law on the NSR provides flexibility related to the level of ice class depending on ice conditions, seasonal and geographical criteria.

New shipping opportunities - new environmental challenges can become a major obstacle if not addressed properly

What are the “real” issues which need to be addressed?

The Arctic development is suffering from “myths” and misunderstandings based on lack of knowledge, emotions and sometimes, political intent. The “real” environmental risks from activity in the Arctic must be identified, understood, defined and then addressed in a holistic, balanced and integrated way through the IMO Polar Code and other measures taking into account seasonal and geographical variations.

Key environmental risks which should be evaluated:

- Use of heavy fuel oil vs. use of other, less harmful alternatives
- Black carbon vs. other emissions reductions
- Diesel fuel
- Shipping measures and speed reductions
- Particularly sensitive areas and ports of refuge
- Emergency response
- Discharge of garbage and pollutants

Thoughts on Emergency Preparedness and Cooperation – Another Type of Joint Necessary Infrastructure

- The best safety measure against accidents is the Russian mandatory Ice Breaker Escort and regulatory requirements.
- The Arctic Council agreement on developing a joint framework for SAR is important as these countries are the ones with an interest in developing the resources of the region while keeping potential negative effects at a minimum i.e. sustainable development.
- The increased economic activity in the region will likely improve the general preparedness to respond to potential accidents due to higher availability of vessels, equipment and people provided necessary coordination is facilitated.
**NSR – THE OBJECTIVE**

The objective is that the NSR will be considered a safe and predictable commercial alternative to the Suez Canal, the Cape route and the Panama Canal during the 3-5 months NSR season.

**In the medium term – we believe regional destination shipping serving the developments in Siberia and Alaska will be the most relevant activity using the NSR**

- Transport of oil, gas, minerals and equipment by:
  - Specialised shuttle multipurpose vessels
  - Shuttle tankers
  - Shuttle LNG carriers
  - Shuttle barges
  - Purpose built offshore vessels
  - Seasonal liner services

**Examples:**

- The Varandey offshore terminal in the Pechora Sea serving the ConocoPhillips/Norsk JV, Nynasemearsbygda, with 3 Scowermot operated 70 000 dwt double acting ice breaking crude oil tankers shuttling to the storage vessel Bulokamerka in Murmansk.

  - Price: USD 130 million per vessel
  - Year around service

**Present: The Norilsk Nickel logistical operation involving 5 ice breaking 18 5000 dwt multi-purpose container vessels**

**Future: ARCTIC CONTAINER SHIP - ICE CLASS ARC B**

**Further examples of destination logistics chains:**

- Ship to ship transshipment of Russian oil products in Norway offers trading opportunities to Asia via NSR

**Russia and Norway jointly control an all-year ice free wedge into the Arctic – a natural platform for serving the Barents and Arctic operations elsewhere**
High North logistics is a chain which requires cross border regional solutions to joint regional challenges!

Infrastructure development for bulk transhipment for Russia, Finland and Sweden in Northern Norway?
An example: The Tschudi Bulk Terminal in the town port Kirkenes facilitates receiving up to 100,000 t in 190,000 bulk with a plan to increase this to 170,000 metric.

Silca storage capacity at 330,000 t offers the possibility of storage and re-shipment of bulk minerals from Russia and Northern Scandinavia both in direction the Atlantic and the Pacific.

Kirkenes Industrial Logistics Area - KILA
1,933,000 m² area and 600 m deep water quays.

The general plan for KILA was approved by the Sorvaranger Municipality April 2012.

KILA First Step
KILA can be developed step wise for many users.
Transhipment of modules for Yamal LNG?

If a pipe coating plant is placed at KILA 300.000m² out of 1.000.000m² may be needed.

What determines the Success of an Arctic Transhipment Port?
Main Criteria: USD per cargo unit delivered at discharge port!

- Cost of transhipment is significant relative to the cost of longer transportation. Importance of cost reduction due to increased volumes vs. additional cost of transhipment. Efficiency of the port and ancillary services e.g., customs etc.

- Importance of establishing regular distribution systems both incoming and outgoing will be crucial. Cooperation between nations and ports – network of Arctic related ports.

- Difference between serving NSR transit cargo flows vs. destination services to Arctic resource projects. Where distance to the project is crucial and possibly the capacity of resource processing. First Mover Advantage users, cargoes and infrastructure.
**Need for transhipment points - History repeats itself!**

In 1594 the first Dutch Barents expedition was ordered to explore whether the Kolguyev Island could be used as a transhipment point for cargoes from China «as it would be most efficient for the ships coming from China to unload immediately in order to return as the passage was navigable for at most two months».

---

**Russian Rivers offer destination logistical solutions for Siberia**

- Ob river
- Yenisey
- Lena

---

**In 2006 Beluga Shipping, Germany, carried two project cargoes, modules for GE powerplants, from Korea to the Ob river estuary via the NSR**

---

**The Norwegian Jonas Lied and the Kara Sea Route 1912 - 19**

---

**The Future: The Arctic, an area of industrial opportunities which requires integrated infrastructure and logistical solutions on both sides**

---

**The Barents Sea – predominantly a natural gas region**

Associated or “stranded” gas could be used for long term industrial value creation eg. DRI production, both in Finland, Russia and Norway and possibly exported as LNG via railway to Finland and the Baltic Region. Resource industries, offshore and on land, joining forces?
Example: Direct Reduced Iron, DRI: production and import of LNG for industrial processing via rail.
Rail and port infrastructure would work as a catalyst for industrial development in the Barents and Arctic regions.

A rolling or floating LNG pipeline into Russia, Finland and the Baltics?
An LNG, rail or river, supply chain could serve remote industrial industries with cheap, environmentally friendly energy in a flexible way, thereby creating the conditions for value adding, local industrial processing.

An illustration: One container vessel could be sufficient to meet the daily energy demands of the Siberian iron ore mining and processing operation.

An alternative destination of Yamal LNG gas? Not only for Asia and Europe but also for Siberia and Northern Scandinavia?
Flexible logistic model:
- Voyages around the Arctic to Atlantic
- USA West Coast through Panama Canal
- Port and vessel requirements
- In 2019, INEOS Cape Gas delivered 1st LNG cargoes to China
- Time to Asian markets was reduced by 80%
- Not suitable for handling vessels with up to 15 meters draft

The new High North and the opening of the NSR: Suggested opportunities for Japan and Hokkaido?
- Construction of specialized class vessels for Arctic operations
- Production of modules and structures among offshore regions and mining projects
- Using the NSR to connect various shipping ports and enabling the development of Arctic infrastructure
- Shipping resource imports and exports to the Arctic
- Reopening of the NSR
- Arctic socio-economic development

Industry/Cargo owners e.g. Nippon Steel?
- New supply lines, LNG
- New demand for industrial infrastructure
- Additional market potential for projects – where gas is cheap
- A chance to lower imports for Japan

Conclusions
- NSR will open up resource development in the High North. In general, and Siberia in particular. In the future, the ice-free ports of the Barents Region and the northern Pacific could accelerate development in Siberia and the entire Arctic as transport hubs on an all-year basis.
- A transport advantage turns into a transport advantage by the use of the NSR.
- The Barents region but also the entire Arctic region – ‘where gas meets one’ – future platforms for industrial development with natural gas as an industrial input factor e.g. Direct Reduced Iron (DRI) production. This opens for joint projects between industrial developments and new employment and development opportunities for the people of the North.
- The Russian Arctic ports will need to be supplemented by specialized ports outside Russia on the Atlantic as well as the Pacific in order to accommodate additional capacity for increased logistical requirements. Ports such as Tomsk and Khehnes could possibly play such supportive roles.
NSR Information Office

Provides practical information about NSR and Siberia for potential users. Based in Murmansk.

www.arctic-io.com

Another example of conquering the Arctic: Northern passage 2010 – Berge Ousland and his team around the North Pole in 3 months - www.ousland.no/blog

Thank you for your attention