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

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**TCHUDI SHIPPING COMPANY**

The Tschudi Group (TSC) with roots back to 1983 ([www.tschudishipping.com](http://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.

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**CONVENTIONAL SHIPPING**

- Ice class winter freeze composite vessels
- Tug boats, bulk and general cargo carriers
- Project cargoes
- Commodity shipping

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**OFFSHORE**

- Anchor handling tug supply vessels
- Ocean going tugs

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**TCHUDI LOGISTICS**

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

Including Tschudi Northern Logistics, specializing in cross border transportation and customs clearance within the High North

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**Kirkenes - Sydvaranger Gruve - Northern Iron**

In 2006, TSC acquired the closed down Sydvaranger iron ore mine in Kirkenes, Northern Norway, in order to gain access to port facilities close to Russia.

In November 2009 the first vessel was loaded for China with 75,000 of iron ore concentrates.

During 2010 all shipments went to China.

The company Northern Iron ([www.northerniron.com.au](http://www.northerniron.com.au)) is listed on the Australian stock exchange (ASX), TSC controls 26% of the shares today.
The TSC 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&H workshop in Kirkenes – Bulk shipping via NSR

Carbon owners
Ship owners
Tanker
Inland transport company
Business
Insurance
C&H
Classification society
Public authorities
Research institutes

Participants: The timber industry from Sweden, Norway, Finland, Russia, and the Far East participated in the workshop to discuss the potential for using the Northern Sea Route (NSR) for timber transport. The workshop aimed to identify and discuss the critical issues involved in bulk transportation from northern Scandinavia to the Far East via the Northern Sea Route.

NSR PROJECT 2010

For the first time ever, a bulk carrier with non-division tanks is using the Northern Sea Route as the main trade route, when transporting iron ore from the Northern part of Norway to China via Arctic and Russian waters.

Environmental and Cost Savings from Kirkenes to Shanghai

A Panamax Bulk carrier (about 75,000 dwt) burns about 20 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 1,900 tons.

NOx savings 128 ton
SOx savings 89 ton
CO2 savings 3,980 ton
Cost saving 820,000 usd (at bunker price usd 650 per mt)

Savings in USD for 21.4 days saved in time.

LNG from Melkøya to Yokohama - 147,000 cbm
Full round voyage - Spot market rate - usd 156/mmBtu

1. Timecharter per day usd 120,000 * 21.4 * 2 = usd 5,136,000
2. Bunkers burn off kg 0,1% per day * 21.4 * 2 = usd 2,300,000
3. Spot round voyage cost = usd 160,000
4. NSR rate usd 2,700,000 mt + usd 2,5 * 113,000 (about usd 632,000)

Savings (Full Round Voyage) = usd 6,954,000

(example/estimate)
Some other elements to keep in mind when you read about the NSR:

If a vessel makes one trip a year through the NSR, thereby saving 18 days:

- and
- if a vessel has a technical lifespan of 20 years

then

this vessel will have gained one extra year of trading, 18 days * 20 years = 360 days

The value of one year extra trading has varied between USD 60 000 pd and USD 5 000 pd for a Panamax dry cargo vessel.

The Importance of Return Cargoes

Pevek

Pevek is the middle point between Shanghai and Rotterdam:

12.5 days to each destination

A Future Challenge to the Suez and Panama Canals?

Probable not due to existing traffic patterns and the complexity of container trades but it is a large opportunity for trade in the North

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

From the Pacific to the Atlantic: 1 000 $ per day

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

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 eg. LNG - time prevailing of markets and cargoes
- Time required for passage - ice conditions and waiting time
  - Draft limitations: determine the size of the vessels and tracks - ongoing hydrographic surveying
  - Availability of ice class tonnage in different segments and sizes - repositioning cost of vessels
- Cost elements: Charter prices - slow steaming - Insurance - NSR transit versus Suez canal transit
- 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 environmental restrictions can 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 eg. 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 in a
joint and coordinated manner

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. implications of a ban
- Black carbon vs. other emissions reductions
- Ballast water
- Existing measures and speed reductions
- Particularly sensitive areas and places of refuge
- Emergency response
- Exchange 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 ie. sustainable development.
- The increased economic activity in the region will
  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:
  - Specialized shuttle multipurpose vessels
  - Shuttle tankers
  - Shuttle LNG carriers
  - Shuttle breakers
  - Purpose built offshore vessels
  - Seasonal liner services

Examples: The Varandey offshore terminal in the Pechora Sea serving the
ConocoPhillips/Lukoil JV, Nayenarmen/Vogaz, with 3 Sovcomflot operated
70 000 dwt double acting ice breaking crude oil tankers shuffling to the storage
vessel Oilokamensk in Murmansk.

Price: 120 million per vessel
Year around service

Further examples of cross border logistics chains:
- Ship to ship transshipment of Russian oil products in
  Norway offers trading opportunities to Asia via NSR

Sovcomflot Szarmaz: 162 000 dwt, with Vadsø/Tromsø, transshipping Norwegian gas condensate
close to North Cape in Norway before using the NSR via Komsomolsk to Thialand

The basic point to stress now is the increasing importance of Russian oil producers in surface transport.
Future: ARCTIC CONTAINER SHIP - ICE CLASS ARC 8
Present: the Norlits Nickel logistical operation involving 5 ice breaking 14,000 dwt multi-purpose container vessels

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 ice free port Kirkenes facilitates vessels up to 100,000 dwt with a plan to increase this to 170,000 dwt.

Silo storage capacity of 370,000 m³ offers the possibility of storage and transshipment of bulk minerals from Russia and northern Scandinavia both in direction the Atlantic and the Pacific.

Kirkenes Industrial Logistics Area - KiLA
1,000,000 m² area and 600 m deep water quay.

Transhipment of modules for Yamal LNG?

Potential use:
- Marine transportation and logistics including offshore base activities.
- Service providers for the oil and offshore industry.
- Combined waste incinerator and power plant.
- Industrial use.
Russian Rivers offer destinational logistical solutions for Siberia

Example: In 2009 Seiluga Shipping, Germany, carried two project cargoes, modules for GE powerplants, from Korea to the Ob river estuary via the NSR.

The Future: The Arctic, an area of industrial opportunities which requires integrated infrastructure and logistical solutions both on sides.
The Barents Sea – predominantly a natural gas region

New resource estimates for the Barents Sea North East indicate large undiscovered oil and gas resources. These deposits are likely to extend into Russian territorial waters.

These resources are predicted to be mainly gas (80%). As oil production is preferred due to the uncertainty related to gas prices, gas could become an unwanted by-product.

This "stranded gas" could be used for long term industrial value creation, e.g. DRU production, both in Finland, Russia and Norway and possibly exported as LNG via pipelines to Finland.

A rolling or floating LNG pipeline into Russia, Finland and the Baltic Sea?

An LNG supply chain could serve remote, energy-intensive industries with cheap, environmentally friendly energy in a flexible way through creating the conditions for value adding local industrial processing.

The new High North and the opening of the NSR: Suggested opportunities for Japan?

- Shipbuilding Industry
    - Construction of specialized ice-class vessels for arctic operations
    - Production of innovative and efficient oil platforms for offshore oil and gas exploration

- Shipping Companies
    - The NSR offers a new and shorter transport route between Europe, Asia and the Arctic region
    - Shipping resource in and out of the Arctic

- Industry/Cargo owners
    - A new source of industrial raw materials
    - Lower energy consumption
    - Potential for industrial involvement in projects—where gas meets oil
    - Shorter transport routes for goods/exports between the Arctic and the Far East

An alternative destination of Yamal LNG gas? Not only for Asia and Europe but also for Siberia and Northern Scandinavia?

Possible logistic model:
- New oil cargo capacity from Yamal to Arctic markets
- New transport routes: LNG via Northern Sea Route (NSR) to Arctic Pacific markets
- Less exposure to political and economic risks
- New opportunities for oil and gas in the Arctic

Vision

Today

Future
Conclusions

- NSR will open for resource development in the high North in general and Siberia in particular. A transport disadvantage can be turned into a transport advantage by the use of the NSR.

- The Barren region but also the entire Arctic are regions "Where gas meets ore" – future platforms for industrial development involving natural gas as an industrial input factor e.g. Direct Reduced Iron (DRI) production. This opens for joint cross border industrial developments and new employment and development opportunities for the people of the North.

- In the future the ice free parts of the Barren Region could serve resource development in Siberia and the entire Arctic as transhipment hubs and open up for joint infrastructure investments for joint use.

- Murmansk and Archangelsk as the largest Arctic ports will need to be supplemented by smaller specialised ports on the Kola peninsula and in Northern Norway, ports such as Kirkenes, in order to provide additional capacity for the increased logistical requirements.

Positive Consequences of the Opening of the NSR not only for the World but also for the People of the Region.

NSR will open the High North in general and Siberia in particular. A transport disadvantage can be turned into a transport advantage for local export produce given that the ports are open to foreign trade. If volumes develop there is a possibility of regular liner services for imports and exports during the ice free season.

There will be challenges but over time this should lead to:

- Employment opportunities
- Availability of Financing and Investments for local projects
- Increased Knowledge, Research and Education,
- Logistical Chains, Infrastructure and Industrial Developments
- Efficient commercial use of Resources and Capacities
- Environmental Regulations and Protection – SAR

The ARCTIS Database

The main aim is to make scientific impacts searchable and more understandable for the shipping and logistics industry so that research results can be included in business development and government decision-making.

The ARCTIS Database provides practical information about NSR and Siberia for potential users. Based in Murmansk.
Another example of conquering the Arctic: Northern passage 2010 – Borge Ousland and his team around the North Pole in 3 months - www.ousland.no/blog