Abstract

New voyages are awaiting the shipping industry due to Arctic climate change. This sector can transform shipping the way the Middle East was by the Suez Canal in the 19th century. There will be a race among nations for oil, fish and shipping routes, due to global warming.

- Advantages:-

1) Route is shorter than the constricted passages through Suez, Panama and Malacca.

2) New business / trade opportunities.

3) Saving of time, fuel and money.

- Development of Arctic:-

1) Russian nuclear powered ice breakers are already assisting different cargo vessels.

2) According to the U.S. Geological Survey, Arctic holds an estimated 25% of the world's remaining oil and gas.

- How India will be benefitted:

1) Opportunities for Indian companies to invest.

2) Opportunity for ONGC to work with Russians on their oil and gas reserves.

Keywords

NSR-Northern Sea route

NEP-North east passage

MOH-Marine Operations Headquarters

Himadri

OVL-ONGC Videsh Limited

References:

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•By Claes Lykke Ragner (pdf file)

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Symbiotic Development of Transportation and Infrastructure Growth

THE OPENING OF THE NORTH EASTERN ARCTIC PASSAGE

INTRODUCTION

The future voyages are through the Arctic ocean .It was stated by the Intergovernmental Panel on Climate Change on March 25, 2007, that the trades are awaiting the shipping industry due to Arctic climate change

The establishment of International Northern Sea Route Programme(INSROP)1993-99 was brought about by the formal opening of the Northern Sea Route (NSR) to non-Russian vessels in 1991

•The Northern Sea Route (NSR) is the Russian name for what is often known outside Russia as the Northeast Passage (NEP).

•Russian definition, by which the NSR is strictly confined by the Novaya Zemlya islands in the west and the Bering Strait in the east.

ADVANATGES OF THE ROUTE

Why make commercial studies of the Northern Sea Route?

The first and most obvious answer to this question is the great savings in distance – and thus potentially also in time and expenses – that the route can offer for shipping between Northwest Europe and Northeast Asia/Northwest America. For some destinations, distance savings can be as high as 50% compared to the shipping lanes presently used. Some examples are shown in table below:

	From Hamburg to:			
Shipping routes via:	Vancouver	Yokohama	Hong Kong	Singapore
NSR	6635	6920	8370	9730
Suez Canal	15377	11073	9360	8377
Cape of Good Hope	18846	14542	13109	11846
Panama Canal	8741	12420	12920	15208

•Distance savings would be even greater for traffic between ports in Northern Europe (e.g. Norway and the Russian Kola Peninsula) and in the Northern Pacific area (e.g. Alaska).

•Northern Sea Route (NSR) may be a very convenient export corridor for Russian natural resources.

- •Enormous reserves of various metals, oil, gas, timber and coal are located close to the shores of the Russian Arctic Ocean.

•The transport of non-ferrous metals, timber and coal has been important in the past. oil and possibly gas seems likely to become cargoes for the not-so-distant future.

•Opening of the Northern Sea Route (NSR) to non-Russian vessels was made formal in the year 1991.

•Northern Sea Route (NSR)- According to official Russian definition, it stretches from the Novaya Zemlya islands in the west to the Bering Strait in the east.

- •This route is far less vulnerable to bottlenecks, piracy and terrorism.
- •EASTERN NSR- areas between Dikson and the Bering Strait.
- •WESTERN NSR- part of NSR from Dikson westwards (including Dudinka and the Yenisey River).

The main physical constraints to NSR shipping are :

Shallow sea

The shallowness of the straits through the New Siberian Islands seriously limits the draft and size of ships that can use the whole NSR on a regular basis. The draft restrictions in Sannikov Strait is 12.5 m and in only 6.7 m in the Dmitriy Laptev Strait. By choosing a route north of the New Siberian Islands, this problem can be avoided, but ice-conditions are often prohibitively severe. In reality, vessels that are constructed to operate on the whole NSR on a regular basis will have to observe the 12.5 m draft restriction.

Ice conditions

Difficult ice-conditions often prohibit the use of the shortest route between two points, and lead to the need of expensive ice-breaker assistance. It also causes increased fuel expenses, damage to vessels, detours and reduced speeds. The ice-conditions vary greatly between the different parts of the NSR, and between seasons and year

Climate change

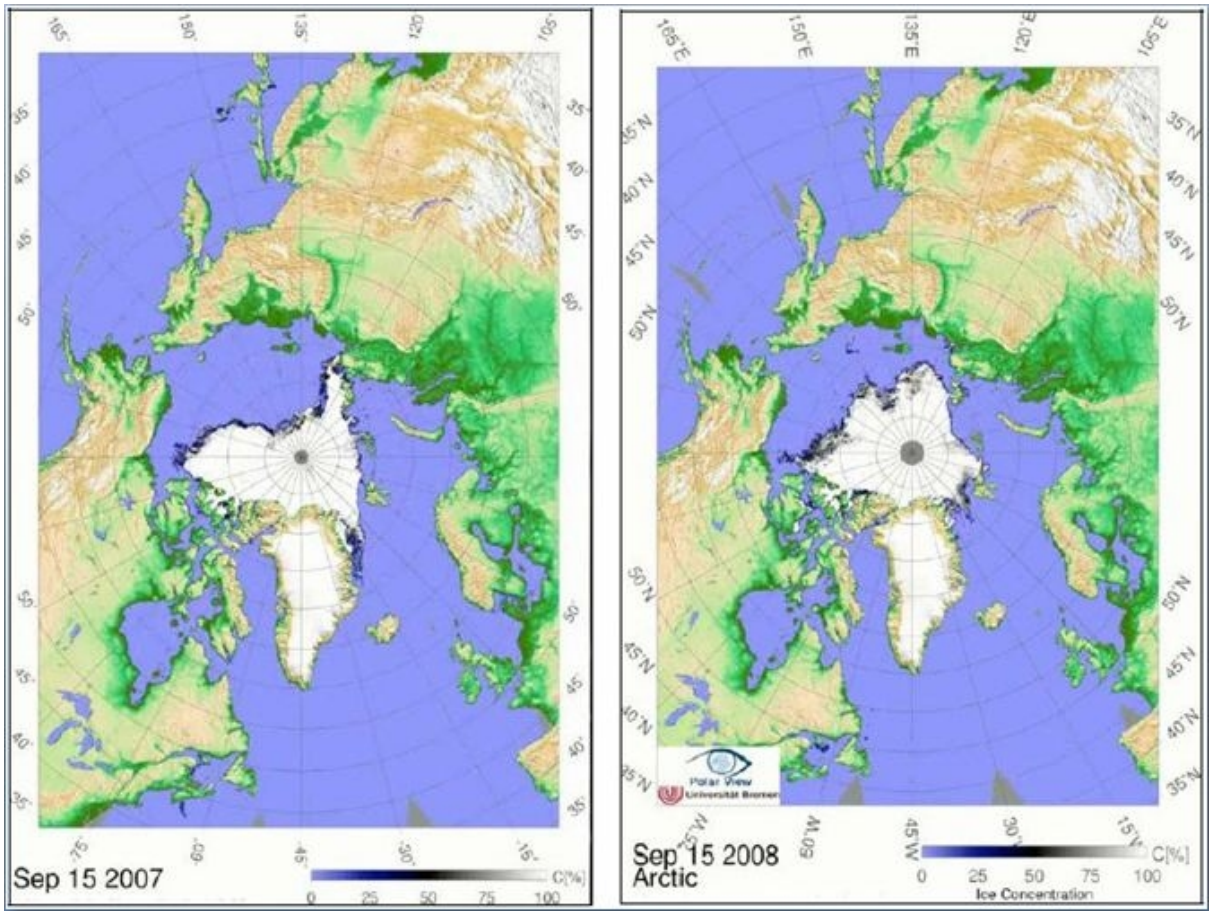
- A growing number of reliable research reports indicate that the polar ice cap is shrinking at an unprecedented rate, and some research reports indicate that the pace is dramatic.

- Already observations confirm that air temperature has increased at double the rate of the global average over the last 100 years, with the total ice extent decreasing at a rate of 3-5% per decade.

- It is assumed that global warming will have a strong impact on the oil and gas exploration and production, and ship transportation along the NSR.

- In 2008, the Arctic ocean experienced for the first time ever an ice free and navigable NSR along the Siberian coast. This occurred during a summer melt season after a winter in which the maximum ice extent was greater than had been observed in the previous five years. It suggests that in future ice free passage during the summer months along the Siberian coast is highly likely.

Overview of conditions



•Arctic sea ice extent averaged over January 2011 was 13.55 million square kilometers (5.23 million square miles). This was the lowest January ice extent recorded since satellite records began in 1979. It was 50,000 square kilometers (19,300 square miles) below the record low of 13.60 million square kilometers (5.25 million square miles), set in 2006, and 1.27 million square kilometers (490,000 square miles) below the 1979 to 2000 average.

•January 2011 had the lowest ice extent for the month since the beginning of satellite records. The linear rate of decline for the month was –3.3% per decade.

•If these trends continue, the entire Arctic Ocean will become ice-free during summer before the end of this century.

Jurisdiction and Legislation

•NSR activities are centrally organised through the Ministry of Transport's Service of Marine(SMT)

• SMT is also responsible for organizing the shipment of deliveries to the northern settlements.

•Russian legislation stipulate federal ownership of the main components of the NSR infrastructure like –icebreaking

-emergency

-salvage and hydrographical fleets

- port facilities

- navigational and hydrographical support for navigation safety
-hydro meteorological service
-radio communication facilities

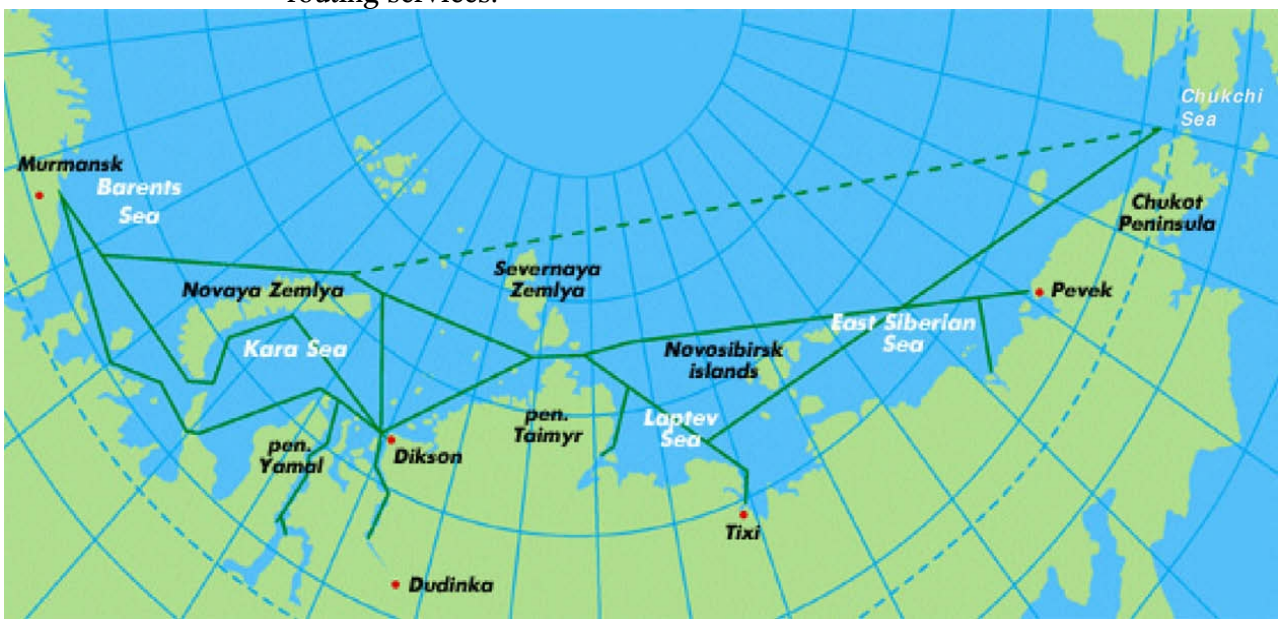
The maintenance of NSR infrastructure is in principle to be financed by the users and NSR fees are in reality mandatory for all vessels entering the NSR.

- The fee depends on
  - -the season, on which part of the NSR is being navigated
  - - the vessel's size
  - -vessel's ice-class
  - - nationality of its charterer.
  - -type of cargo carried

NSR fees do not depend on the number of days of ice-breaker escort.

The fee covers

- icebreaking assistance
- ice-forecasting
- routing services.



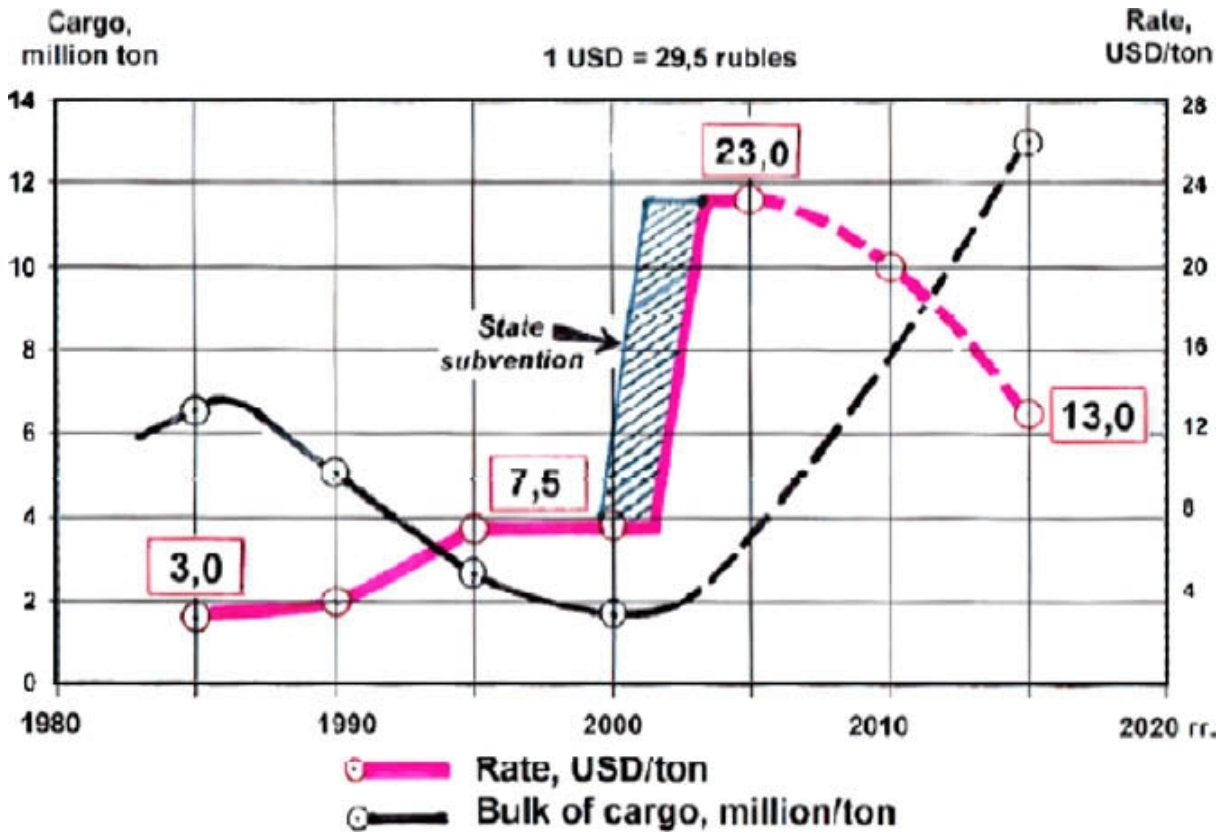
The NSR has been divided into three different tariff regions (Mulherin, 1994):

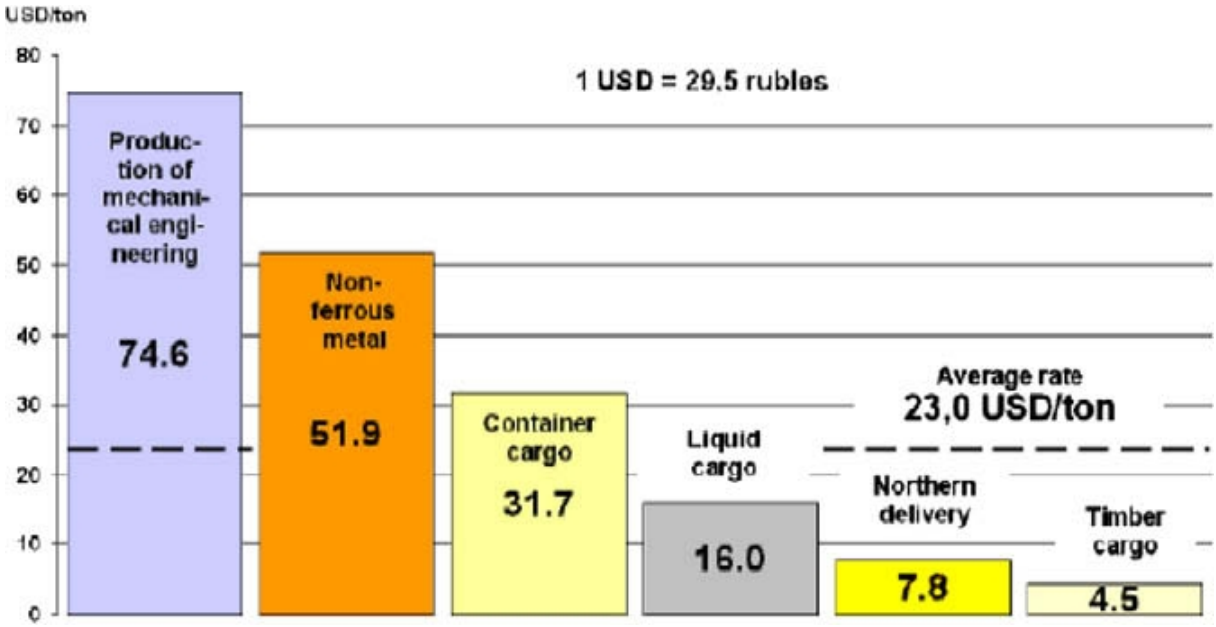
Region A, from Novaya Zemlya to Severnaya Zemlya (60–90_E).
Region B, from Severnaya Zemlya to the Bering Strait (90-169W).
Region C, which includes all areas north of the 78N parallel.

The tariff for Region A is set at 70% of Region C, and for B it is 80% of Region C. The tariff for Region C is assessed for any full transit voyage or one that traverses two or more of these regions.

In the early 1990s, when the cargo volume along the NSR was around 4 million tons per year, the average ice-breaking fees were 2–4 USD per ton of cargo. In the late 1990s, when the cargo volume declined to 2.5–2.8 million tons per year, the operation became unprofitable and the rate was increased to 7.5 USD per ton of cargo.

The changes over the period from 1985 to 2003 are shown in the following figures and the rates for different cargo types in 2003.





•The overall supervision of NSR affairs is entrusted to the Northern Sea Route Administration (NSRA) which is an integrated part of the Russian Ministry of Transport.

•Practical operational supervision of NSR traffic is carried out by the eastern and western

•Marine Operations Headquarters (MOHs), which are based in Pevek and Dikson respectively.

- The MOHs are subordinate to the NSRA, but are run by the Murmansk Shipping Company (Dikson) and the Far-Eastern Shipping Company (Pevek).
- The eastern MOH is only operating during the traditional navigational season, while the western MOH operates throughout the year.
- All vessels sailing on the NSR must strictly follow the orders of the MOHs.

The MOHs are responsible for

- pilotage
- navigational support
- organisation of convoys
- ice-breaker assistance
- designating optimum routes (taking into consideration ice conditions and available icebreaker support.)

- By accepting a vessel for escorting, the MOH in practice also grants the vessel automatic access to any Russian internal and territorial waters that the MOH-determined route leads through. The formal command chain for escorting is as follows:

NSRA --MOH --icebreaker ice pilot (on board the vessel) -vessel

- The Russian regulations set out that all vessels wishing to enter the NSR (including all areas within Russian 200 n.m. exclusive economic zone) should notify this to the NSRA in beforehand, and also submit an application for ice-breaker escort. The application must contain information on guaranteed payment of NSR fees, and documentation of adequate insurance to cover environmental pollution damage. The vessel must also meet special ice class requirements.
- Russia maintains that the NSR straits are internal Russian waters. This, along with the present regulations demanding permission to enter even the exclusive economic zone part of the NSR and the mandatory ice-breaker escort in the central NSR straits, in effect makes it impossible for vessels to ply any NSR route without the permission of Russian authorities, or without paying NSR fees.

Development of area

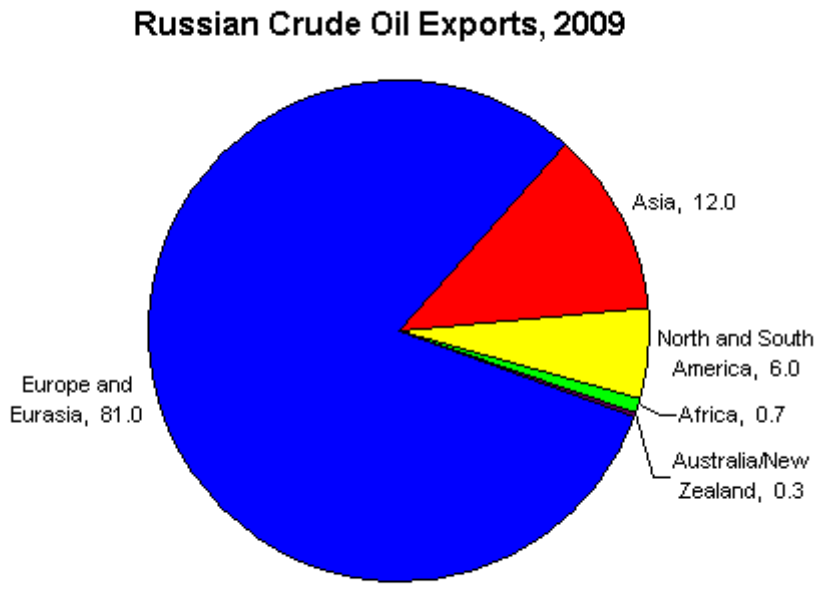
Natural resources

Russia is one of the world's richest countries in raw materials, many of which are significant inputs for an industrial economy. Russia accounts for around 20 percent of the world's production of oil and natural gas and possesses large reserves of both fuels. This abundance has made Russia virtually self-sufficient in energy and a large-scale exporter of fuels. Oil and gas were primary hard-currency earners for the Soviet Union, and they remain so for the Russian Federation.

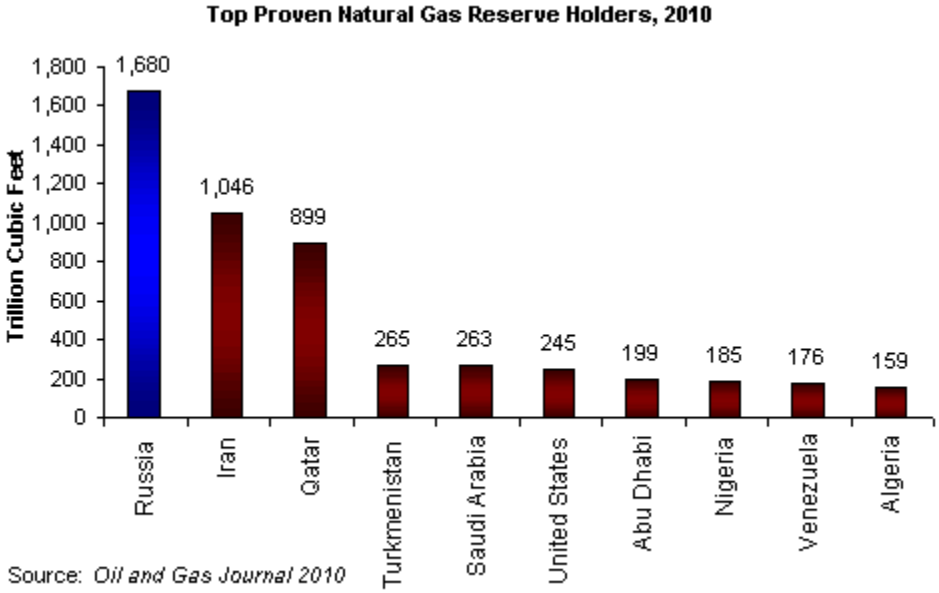
According to the U.S. Geological Survey, Arctic holds an estimated 25% of the world's remaining oil and gas.

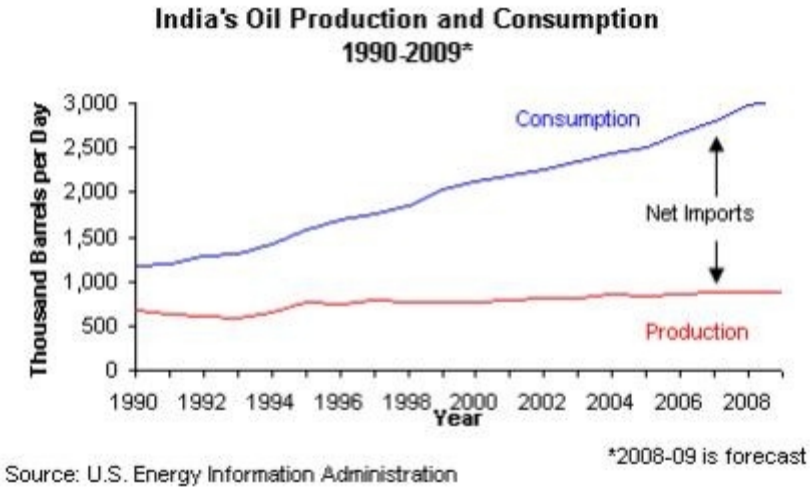
Russia is ranked first in the world by gas reserves (32% of world's reserves, 30% of world production), the second in oil production (10% share of world production), the third - in coal reserves (22 coal basins, 115 fields, including those in European Russia - about 15.6% in Siberia - 66.8% in the Far East - 12.9%, in the Urals - 4.3%).

In Russia there are five major oil and gas provinces located in European part of the country and in Western Siberia in 10 regions and 11 provinces and republics: West Siberian, Volga-Urals, Timan-Pechora, the North Caucasus and the Caspian Sea area.



Source: Global Trade Atlas, FACTS, and EIA.





<u>RUSSIAN COMPANIES OPERATING IN NSR:</u>

-Murmansk Shipping Company (MSCO)

-Far Eastern Shipping Company (FESCO) based in Vladivostok

-Primorsk Shipping Company (PRISCO) based in Nakhodka,

-The Northern Shipping Company (NSC) based in Arkhangelsk

-The Arctic Shipping Company (ASC) based in Tiksi

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Russian mining company Norilsk Nicke.

The Russian icebreaking container vessel Monchegorsk, built in 2008, has returned to the port of Dudinka from a successful commercial test voyage from Murmansk to Shanghai via the Northern Sea Route. The vessel is owned by the Russian mining company Norilsk Nickel, stating that this is the shortest route for shipping the company's products to the consumers in the Far East. The Monchegorsk is the first vessel owned by the company to sail through the eastern part of the Northern Sea Route without ice-breaker assistance.

The Russian icebreaking container vessel Monchegorsk. Phot

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The Monchegorsk is designed by Aker Arctic in Finland and is of ”Double Acting Ship” type, moving stern first in difficult ice conditions. The machinery is diesel-electric and she is propelled by an Azipod unit. Norilsk Nickel owns five vessels of this type and a sixth vessel will be introduced in 2011. This series was developed to replace the Finnish-built Arctic cargo vessel type SA-15 from the 1980s.

Successful voyages through NSR

There isn't public known statistics on Northern Passage non-Russian vessels voyages.

1)Auxuliary cruiser of nazy German Navy Komet (built 1937, dwt 7500) in summer of 1940.

2) Uikku – tanker, dwt 16038, built 1977, flag Finland, in 1997 sailed Northern Passage from west to Ob estuary and returned to Europe

3) Beluga Family – general cargo freighter, dwt 12744, built 2007, flag Antigua, owner German Beluga, in 2009 sailed Amsterdam - Murmansk - Noviy port (Yamburg) and back.

4) Beluga Fraternity – general cargo freighter, dwt 13257, built 2008, flag Antigua, owner German Beluga, in 2009 tranzited Northern Passage east-west, starting from Vladivostok.

5) Beluga Foresight – general cargo freighter, dwt 12669, built 2008, flag Antigua, owner German Beluga, in 2009 tranzited Northern Passage east-west, starting from Vladivostok.

6) SCF Baltica – tanker, dwt 117050, built 2005, flag Liberia, owner Sovcomflot Russia, in 2010 tranzited Northern Passage west-east.

Indian benefits

1)**OVL(ONGC VIDESH LIMITED) INVESTMENT IN RUSSIA**:

- Sakhalin-1 is a large oil and gas field in Far East offshore in Russia, spread over an area of approx 1,146 sq km. OVL(ONGC VIDESH LIMITED) acquired stake in the field in July, 2001 and holds 20% PI in the field.

- OVL's maximum net cash sink for investment in this project was approved at USD 1,556 million (excluding carry finance).

•During 2009-10, OVL's share of production from the project was 1.532 MMT of oil and 0.390 BCM of gas as compared to 1.853 MMT of oil and 0.372 BCM of gas during 2008-09.

•The Production licenses were granted to the Company during 2005 to 2008 and are valid till 2028 to 2031. As on 1st April 2010, OVL's share of reserves in the project was 112.871 MMT

•During the year 2009-10, Imperial Energy (acquired by OVL) drilled 12 exploration and appraisal wells which have led to four new discoveries.

2**) OPPORTUNITIES FOR INDIAN COMPANIES TO INVEST**:

GREAT EASTERN shipping company are already operating OFF-SHORE VESSEL(AHTS) in NORTH SEA adjoining ARCTIC OCEAN. These companies are not operating in NSR presently. But they have the potential to exploit the usage of the passage.

3**) Indian research base(HIMADRI)**

•The base named "Himadri" would be equipped with state of the art facilities and will conducting round the year scientific research in contemporary fields of Arctic science with special emphasis on climate change. Situated at 78055' N, 11056'E, Ny-Alesund,NORWAY is only 1200 kms from the North Pole and offers the ideal land-based entrance to the Arctic .

•Current areas of research in Ny-Alesund include marine science, aurora physics, biology, glaciology, geology, environmental science, geodetic studies, rocket probe studies, atmospheric physics, terrestrial studies, climate change monitoring.

•'Himadri' will be managed by the National Centre for Antarctic and Ocean Research (NCAOR), an autonomous institute under the Ministry of Earth Sciences.

Conclusion

The review of potential NSR cargo flows concluded that the level of traditional NSR cargoes non-ferrous metals and ores, timber, coal and deliveries to Arctic settlements – is likely to remain stable at around 1.5-2.0 million tons annually. Only one significant new source of cargo for the future can be expected, namely hydrocarbons with realistic potentials of up to approximately 20 million tons by 2015. Gas condensate and crude oil are the most realistic cargoes, with LNG a possibility beyond 2015.
Moreover, the opening of the northern sea route will cause increasing globalism and economic integration of different countries of the world.
Imagine the fortunes of the investor who buys up a few choice port locations on the Siberian coastline today.

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