

A vertical photograph on the left side of the slide shows a vast, snowy landscape, likely a mountain range or tundra. The snow is uneven, with some higher peaks and lower valleys. The sky is bright and filled with soft, white clouds, suggesting a clear or slightly overcast day. The overall tone is cool and serene.

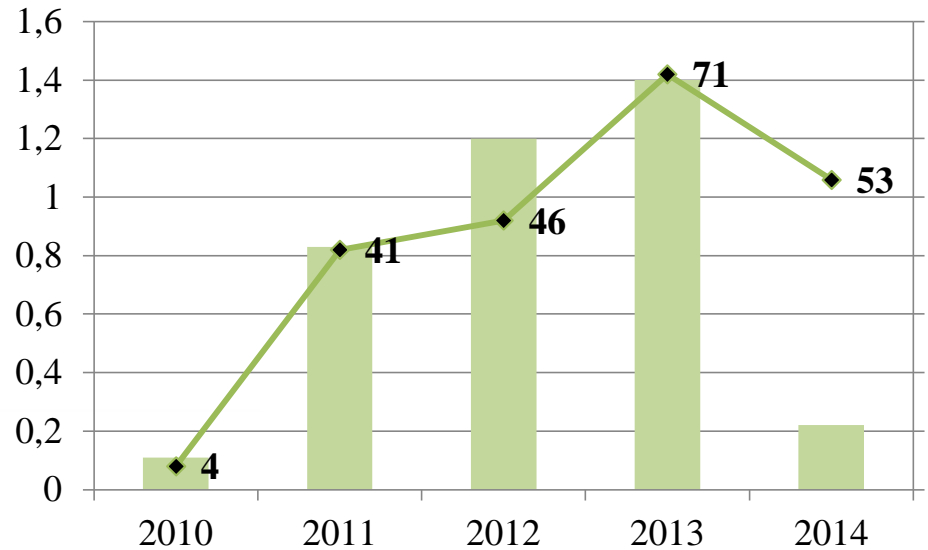
# The Potential of the NSR to reduce CO<sub>2</sub> emissions

Ilya A. Stepanov

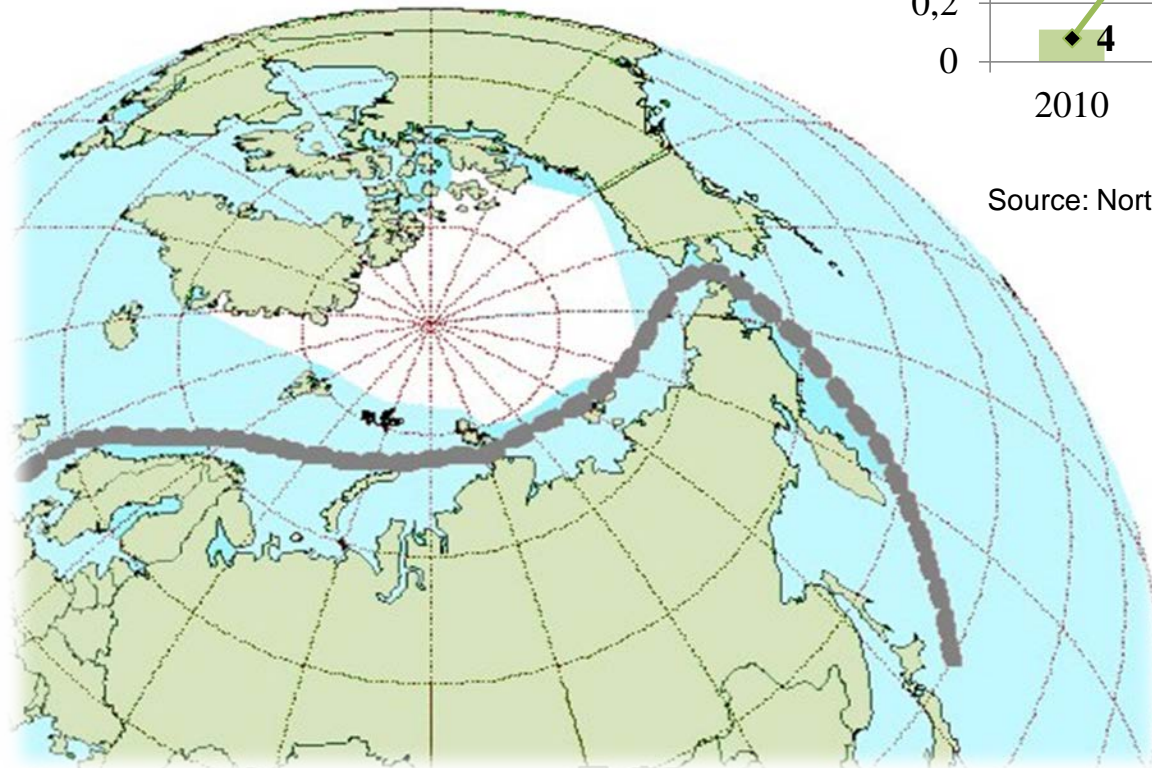
Center for Comprehensive European and  
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University Higher School of Economics,  
Moscow

# The Northern Sea Route (NSR)

■ cargo transported, million t  
◆ number of vessels

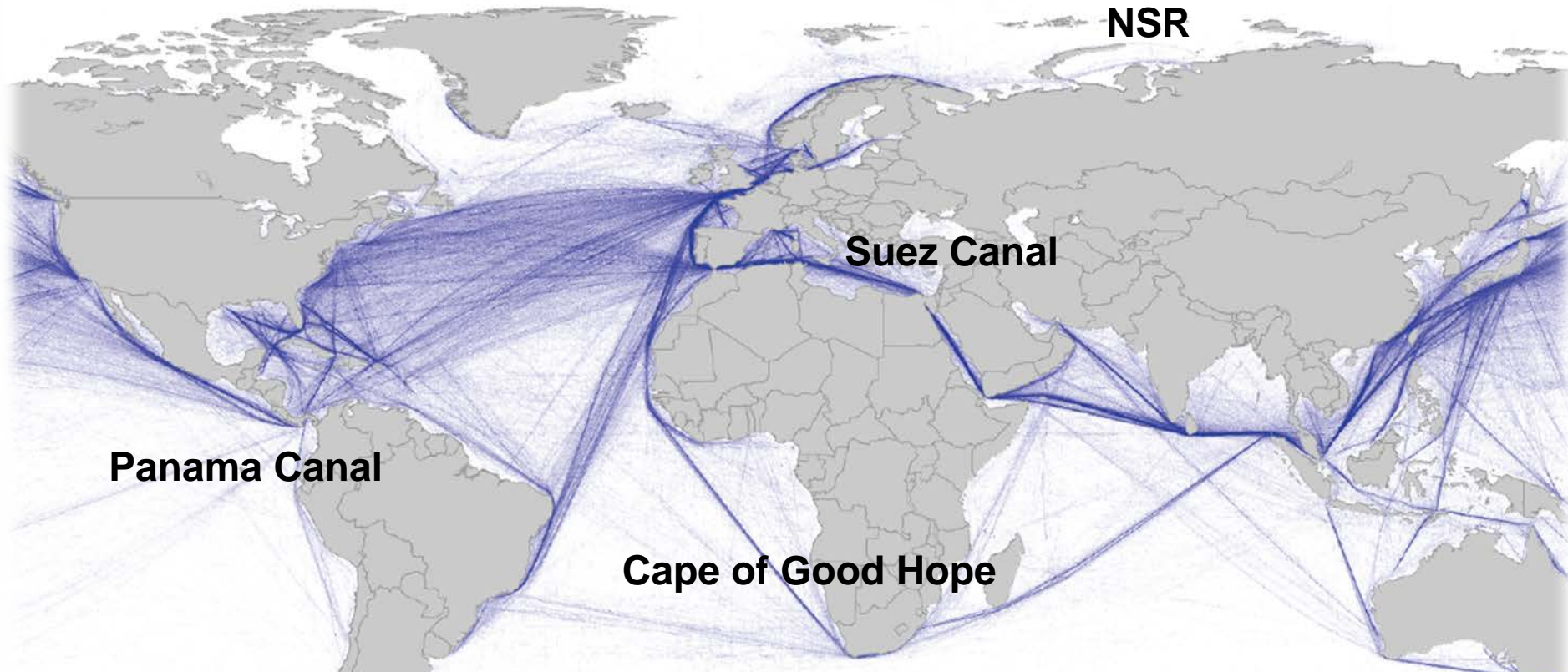


Source: Northern Sea Route Information Office



maritime area between  
the Cape Zhelaniya  
(at the Novaya Zemlya  
archipelago) meridian and  
the Bering Strait

# The main advantage

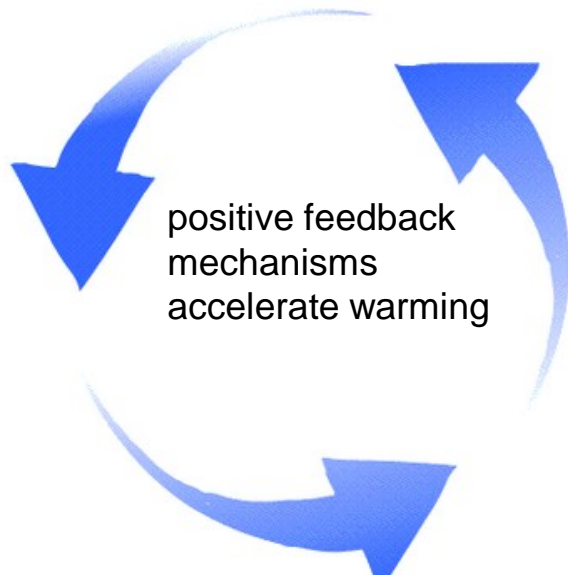


Route	Destination – from Hamburg to:		
	Yokohama	Hong Kong	Singapore
<b>NSR</b>	<b>6 920</b>	<b>8 370</b>	<b>9 730</b>
Suez Canal	11 073	9 360	8 377
Cape of Good Hope	14 542	13 109	11 846
Panama Canal	12 420	12 920	15 208

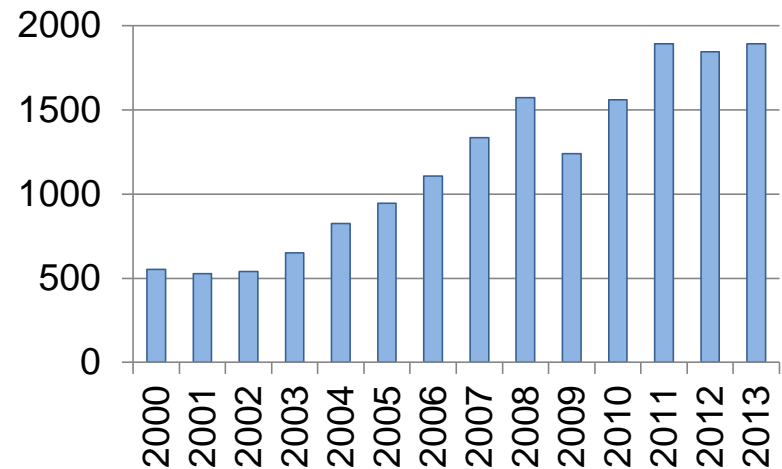
Source: Ragner C.L. Northern Sea Route Cargo Flows and Infrastructure – Present State and Future Potential. Fridtjof Nansen Institute, FNI Report 13, 2000.

# Factors contributing to the NSR development

- Development of Russia-Asia and Europe-Asia trade
- Climate change in the Arctic



Asia Pacific – Europe trade turnover, bn US\$



Source: International Monetary Fund (IMF), Direction of Trade Statistics

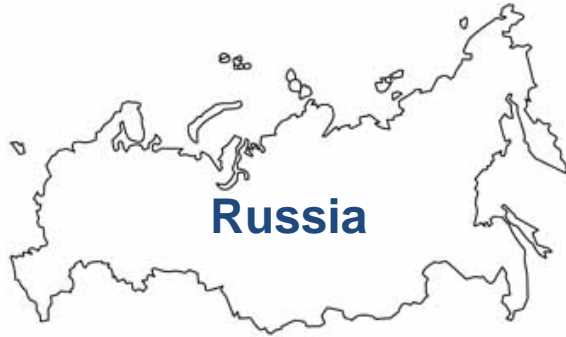
- State and perspectives of routes alternative to the NSR

# Factors impeding the NSR development

- Natural factors (harsh weather conditions)
- High transit fees
- Bureaucratization and administrative problems
- Lack of infrastructure (ports, icebreakers)



# The NSR as a strategic project



- Development of Arctic resources
- Growth of the northern regions
- Integrating Russian Arctic territories into the global economy
- Export opportunities
- Transit opportunities



- New geopolitical position
- Development of the Arctic resources
- Export opportunities



- Access to energy resources



- Participation in Arctic oil & gas projects
- Access to hydrocarbon resources
- Export/Import diversification



- Access to energy resources
- Trade diversification

- Gains from transportation services

# The NSR development as a commercial project

Is navigation through the NSR economically viable? Is the NSR competitive compared to other maritime routes?

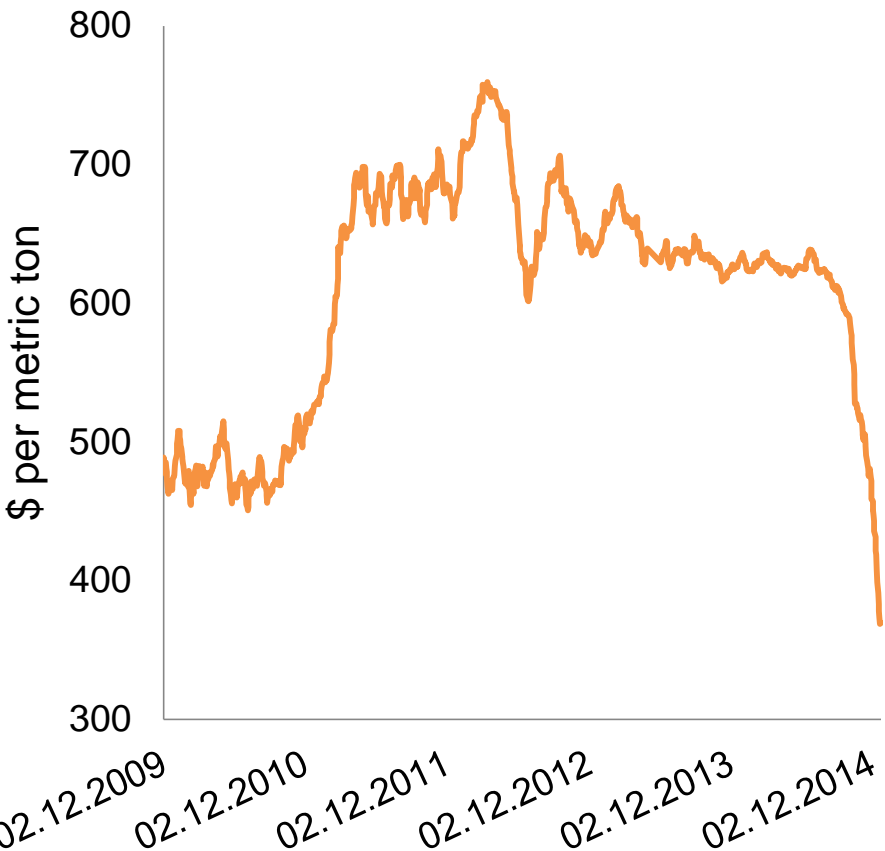
Shipping cost components:

- capital costs
- **fuel costs**
- tariff fee
- crew wages
- ice pilot fee
- insurance
- port fees
- maintenance costs



# Fuel costs

BIX 380 CST index dynamics (2009-2014)



Source: <http://www.bunkerindex.com/>

## Major share in total transportation costs

Route	London - Yokohama	Equal speeds (same number of days at sea)	Days at sea (same speeds)
Via NSR	7 200	18 days	32 days
		15 knots	9 knots
Via Suez Canal	11 400	32 days	32 days
		15 knots	15 knots

Source: Schoyen H., Svein Brethen S. *The Northern Sea Route versus the Suez Canal: cases from bulk shipping* // *Journal of Transport Geography*, Vol. 19, 2011.



# Emissions reduction

CO<sub>2</sub> emissions reduction effect due to reduced distance and slow steaming

Greenhouse gases regulation in maritime transport?

New competitive advantage of the NSR

But no global environmental benefit

Potential reduction varies from 6 to 56% of CO<sub>2</sub> emissions in comparison to the Suez Canal route

New agreement on climate change (since 2020)

New incentive for shipping companies to switch on shorter routes

Increase in Euro-Asian trade will offset the CO<sub>2</sub> reduction



# Outcomes

- In the long run the development of the NSR will be triggered by uncommercial factors
- Bulk shipping will dominate
- The larger the share of the segment along the NSR in total distance, the more economically viable it is
- CO<sub>2</sub> reduction will likely bring commercial benefits rather than the environmental ones



# Thank you for your attention!

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