

# One Belt One Road Initiative and the Arctic



Arthur Gushchin (Fudan Development Institute/Akvaplan-Niva)

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# Arctic economy

- Oil and gas;
- Shipping (bulk, destination traffic, alternative fuel);
- Communications (fiber and satellite);
- Infrastructure (ports, cargo bases, roads, etc.)
- Shipbuilding (design, engines, efficient hull);
- Military expenditure;
- Ecological index and assessments (future good business)

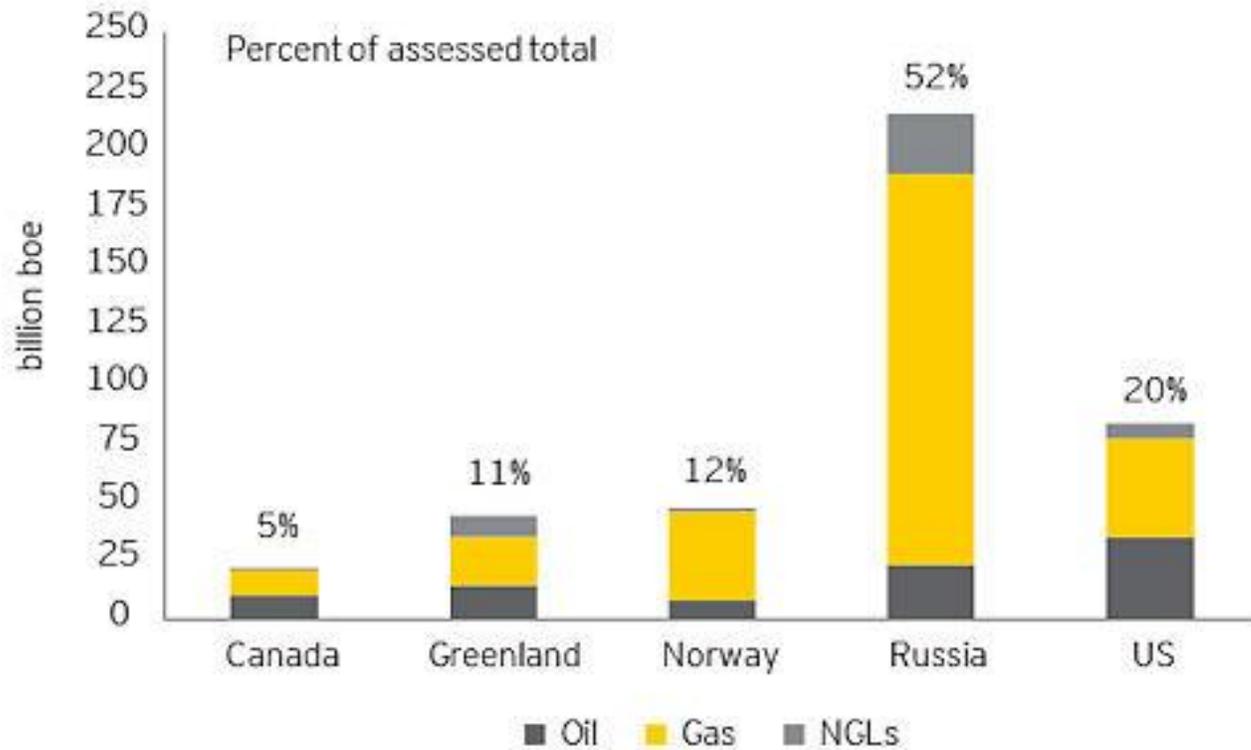


> 5 trl dollars

# Oil and gas

## Potential Arctic oil and gas resources

(total assessed resources = 412 billion boe)



Source: EY calculations from US DOE and US GS data

- Russia and the U.S. will have the major share in all Arctic resources extraction.
- Norway – the leader in cost reduction.
- Iceland/Greenland – slow process with no final estimations
- Canada - doubt (too much ice now)



**Red** – oil  
**Yellow** – gas  
**Black** - coal

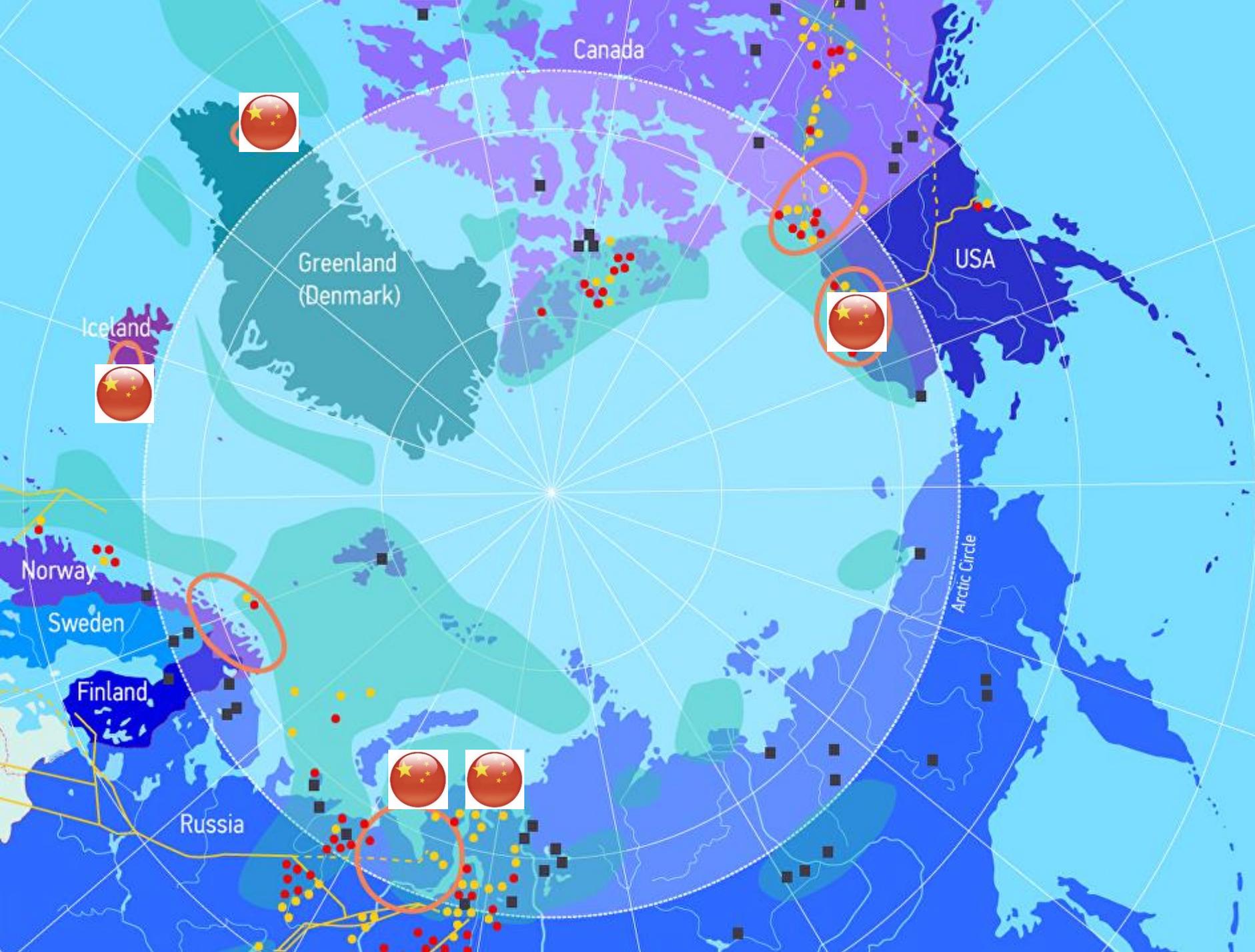
# Estimated and Proven Oil and Natural Gas Reserves in the Arctic and Russia

bbo – billion barrels of oil    tcm – trillion cubic meters

Area	Source	Total Oil	Total Natural Gas	Years of Fuel Consumption (50% Recovery)					
				World Oil	U.S. Oil	World Gas	U.S. Gas	World Gas Hydrate	U.S. Gas Hydrate
Arctic region	U.S. Geological Survey	90 bbo (estimated)	47 tcm	1.4	6.0	8.0	36.0	–	–
Beaufort Sea	Canada's Northwest Territories government	–	99 tcm (estimated)	–	–	–	–	17.0	76.0
Russian Federation (all territories)	U.S. Energy Information Agency	60 bbo (proven)	47.5 tcm (proven)	1.0	4.0	8.0	36.0	–	–
Russian Arctic Ocean territories	Russian government	3 bbo (proven); 67.7 bbo (estimated)	7.7 tcm (proven); 88.3 tcm (estimated)	1.1	5.0	16.0	73.5	–	–
Arctic territory claimed by Russia	Russian government	586 bbo	–	9.0	40.0	–	–	–	–

Sources: U.S. Geological Survey, U.S. Energy Information Agency, Government of the Northwest Territories of Canada, and the Russian Federation.

## Chinese investments (Arctic oil and gas)



## Who is who in China's Arctic pool (energy)

CNPC – China National Petroleum Corporation



SRF – Silk Road Fund



Sinopec



China Exim – China Export/Import Bank



Bank of China



CIC – China Investment Capital Corporation



CNOOC – China National Offshore Oil Corporation



Chinese Arctic  
investments –  
state investments

## Who is who in China's Arctic pool (energy)

CNPC – China National Petroleum Corporation    **Investments = resources**

SRF – Silk Road Fund    **Investments = revenue**

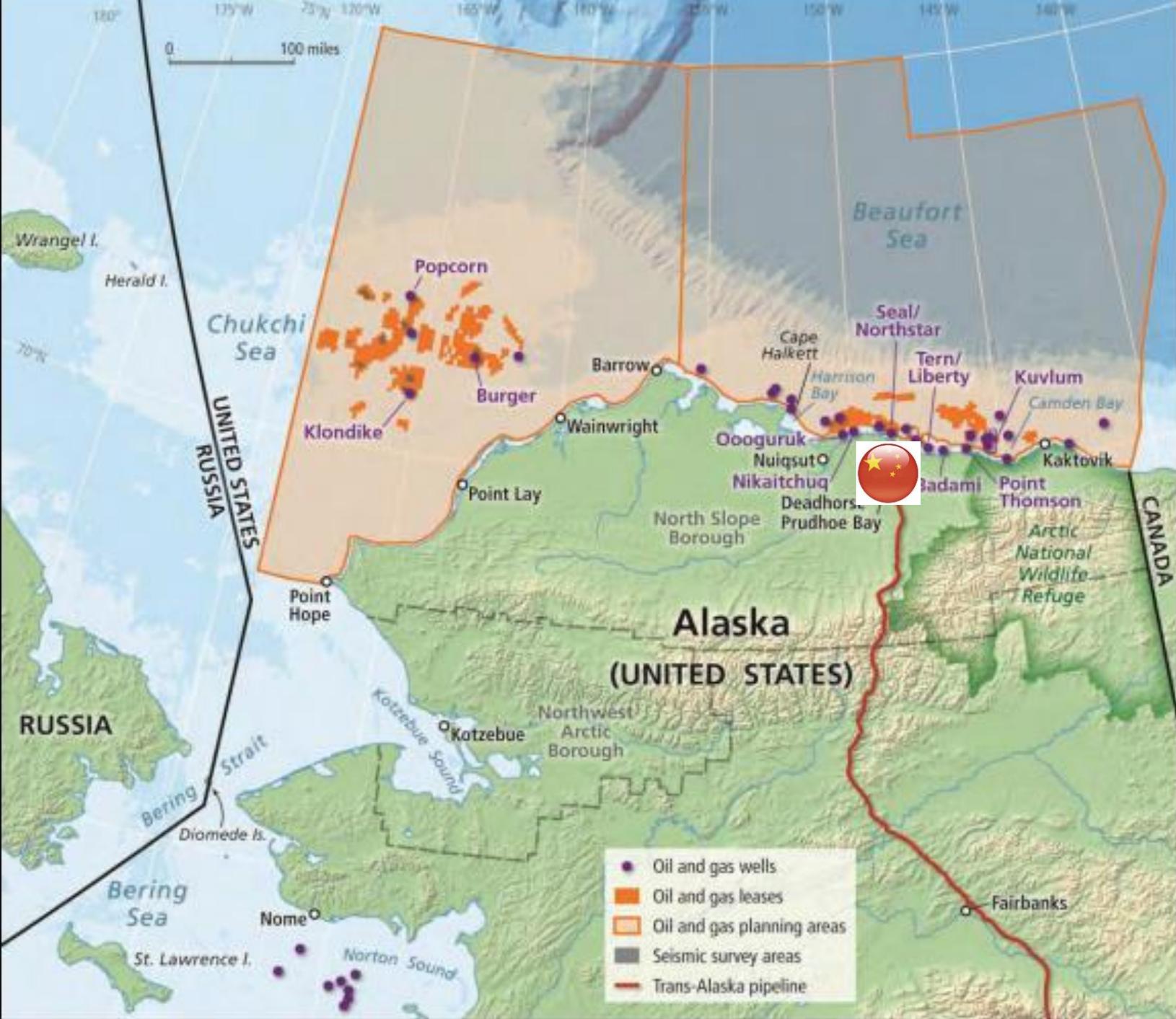
Sinopec    **Investments = resources**

China Exim – China Export/Import Bank    **Loans = revenue**

Bank of China    **Loans = revenue**

CIC – China Investment Capital Corporation    **Loans = revenue**

CNOOC – China National Offshore Oil Corporation    **Investments = resources**



The U.S. Arctic  
oil and gas

# US Arctic LNG and OBOR



- Alaska Gasline Development Corporation
- China Petrochemical Corporation (Sinopec)
- CIC Capital Corporation (CIC Capital)
- Bank of China

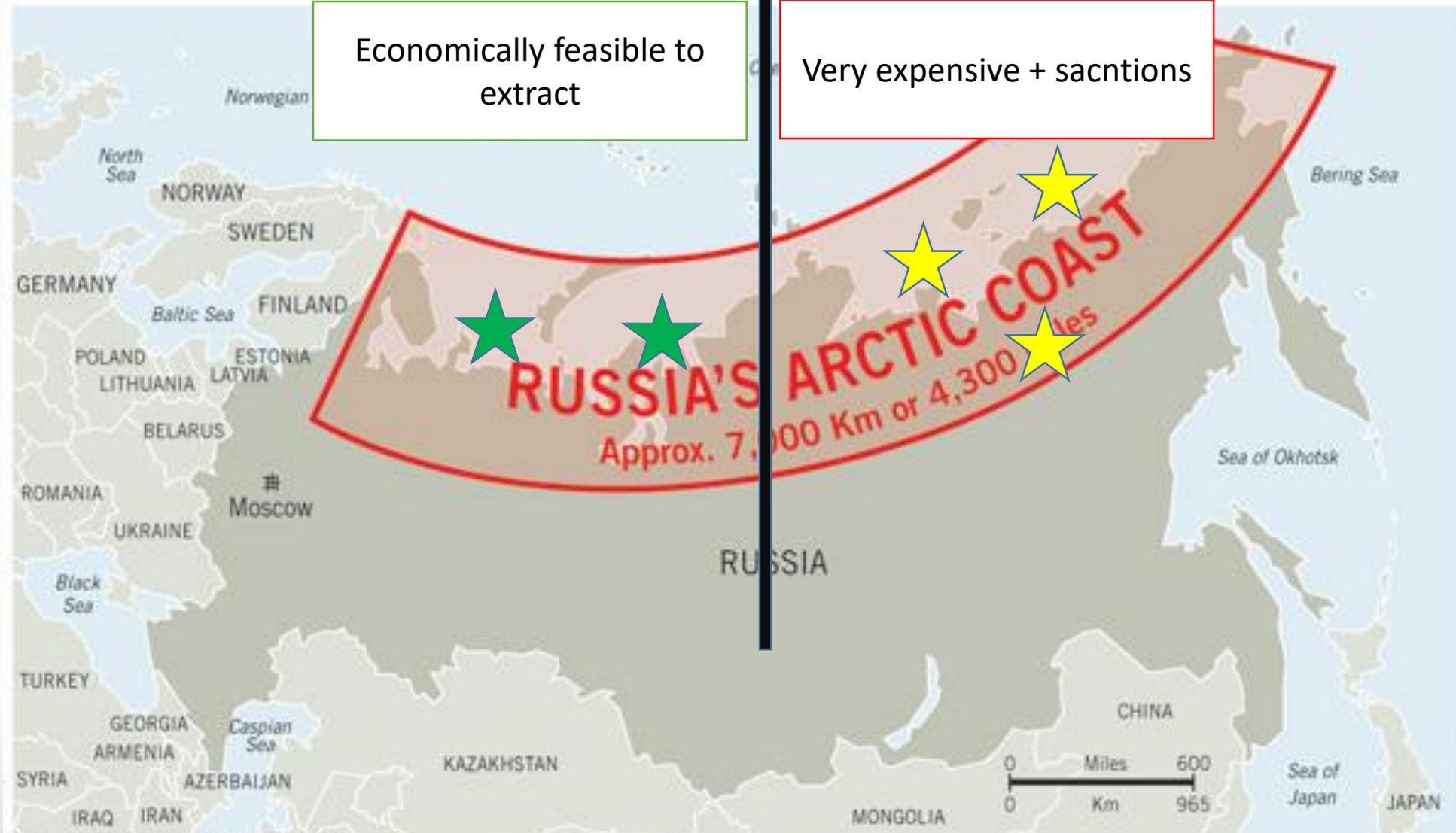
40 billion \$, 20 mln t LNG per year, 3 trains.  
Start – 2023.

China will be the main importer of Prudhoe Bay LNG. Closer distance to China than from LNG-terminals in Mexican Gulf. No problem of Panama queues (45 K \$ loss per day).

# Russian Arctic resources

RUSSIA'S ARCTIC COASTLINE

FIG. 1



Economically feasible to extract

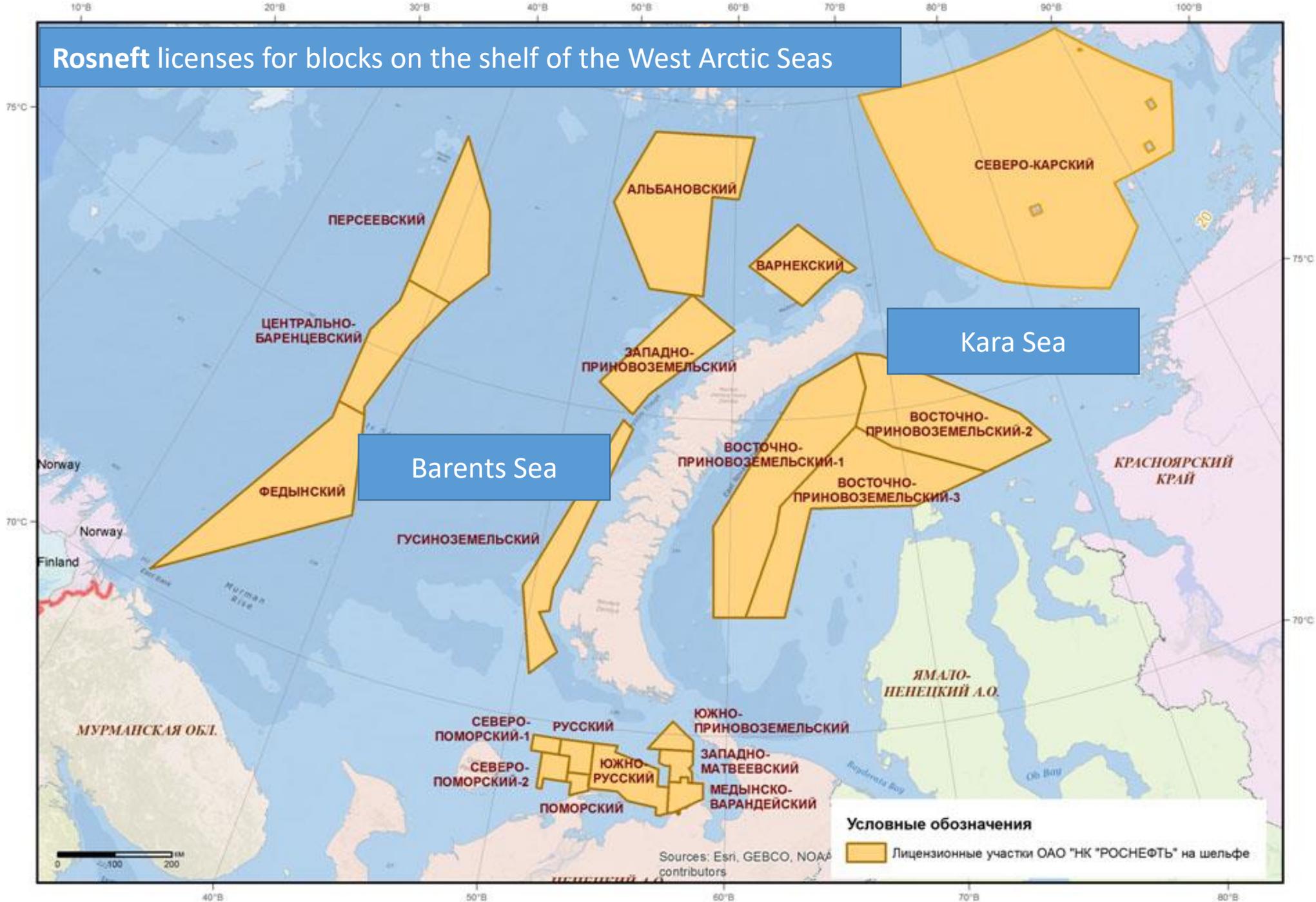
Very expensive + sanctions

RUSSIA'S ARCTIC COAST  
Approx. 7,000 Km or 4,300 Miles

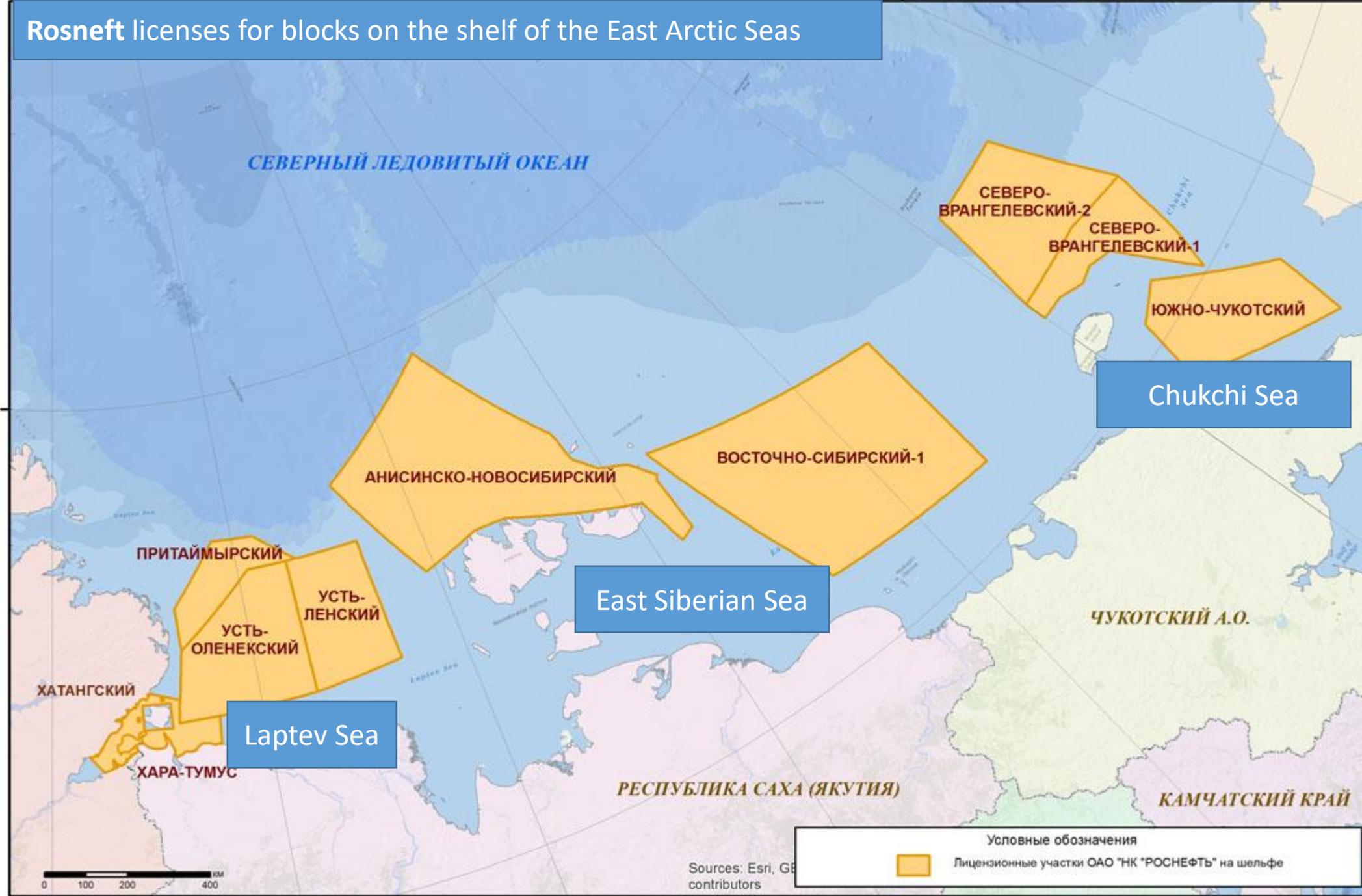
# Russian Arctic actors

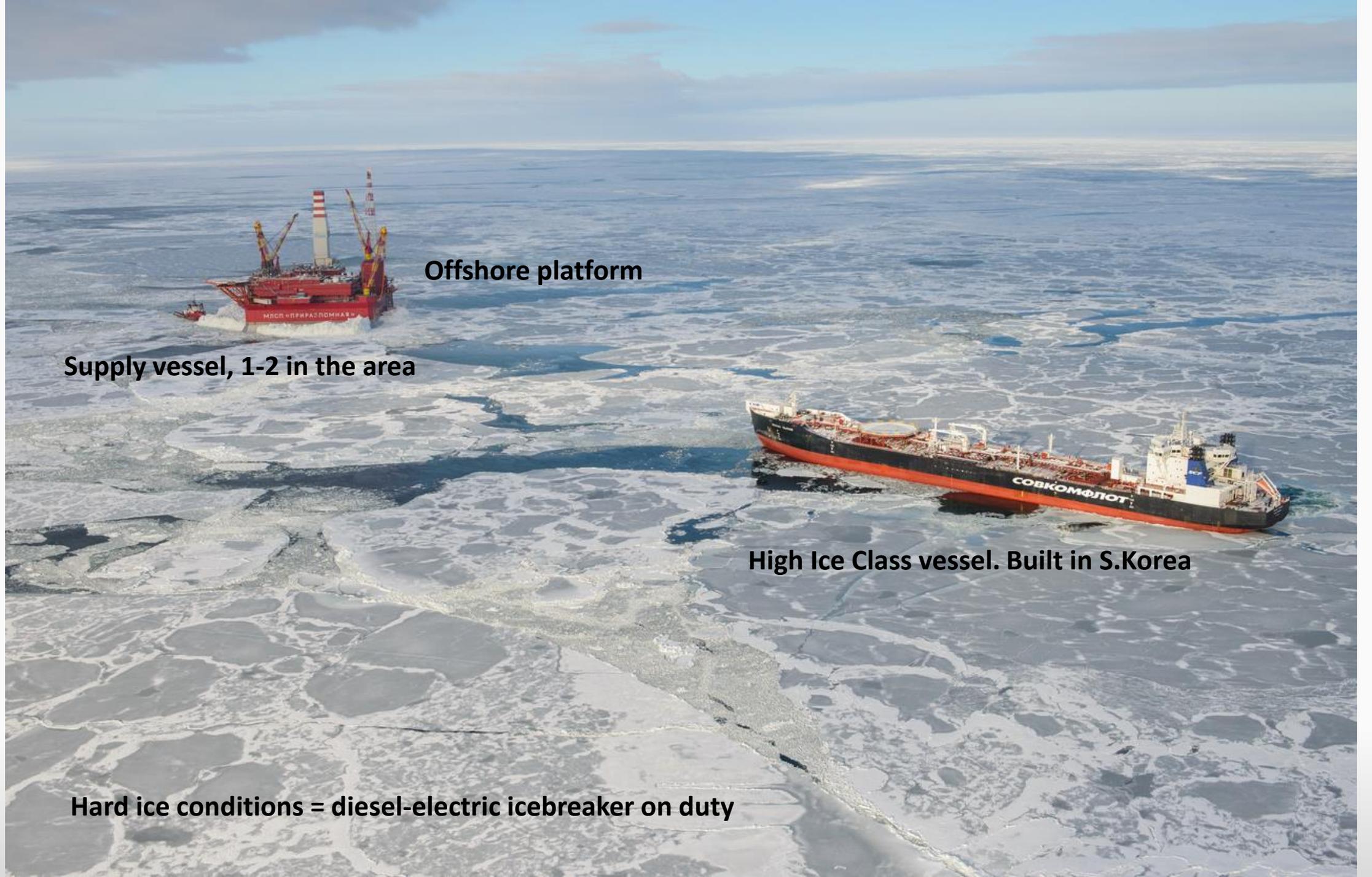
- “Rosneft” owns 28 licenses in the Arctic. Company has 19 blocks in the Barents, Pechora and Kara Seas, 9 – in Laptev, East Siberian and Chukchi Seas. “Gazprom” possesses 27 licenses on the Russian Arctic shelf: 20 – in Kara Sea and 7 – in the Barents Sea.
- “Gazprom” – Prirazlomnaya platform
- “Novatek” – Yamal gas project

# Rosneft licenses for blocks on the shelf of the West Arctic Seas



# Rosneft licenses for blocks on the shelf of the East Arctic Seas



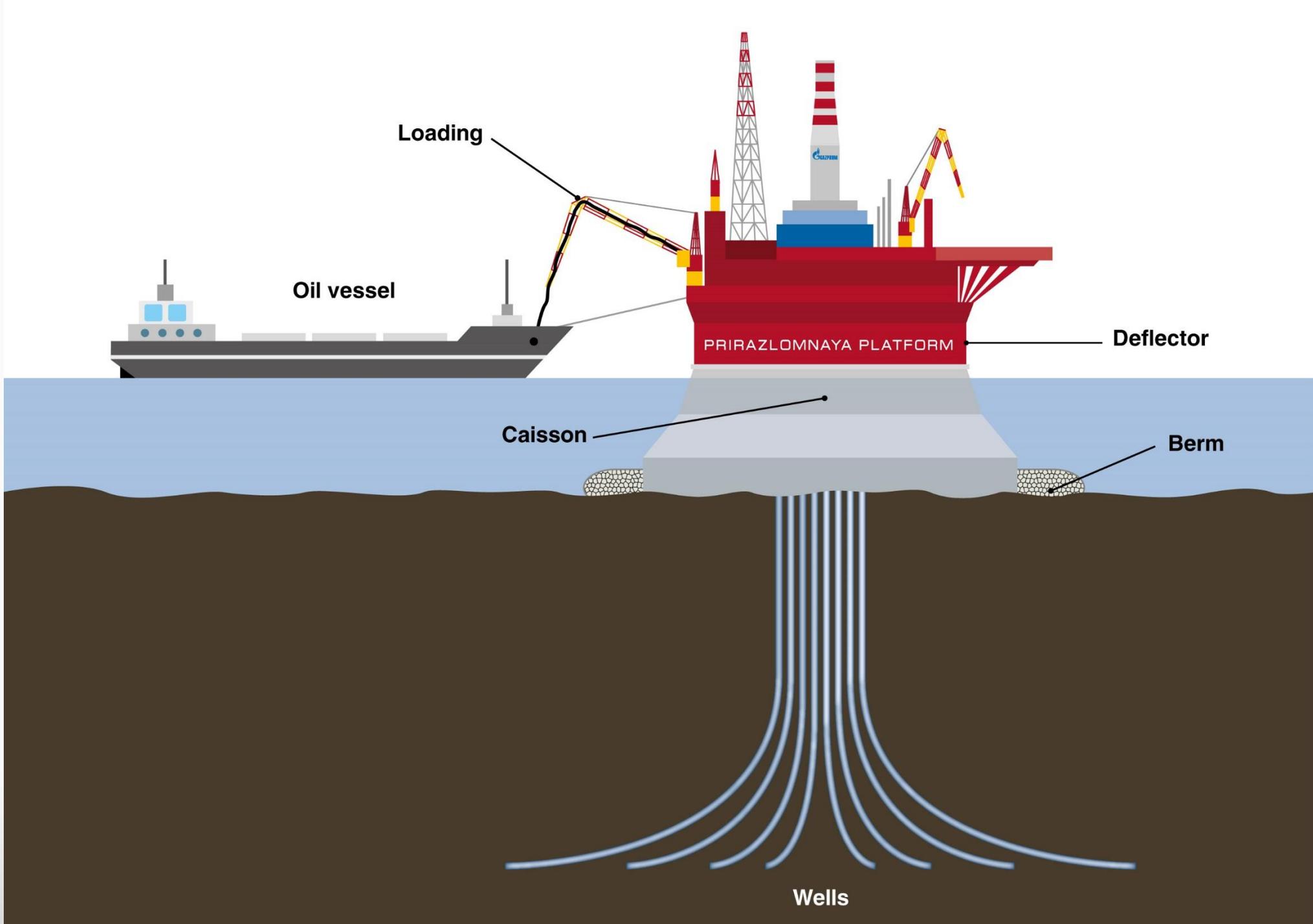


**Offshore platform**

**Supply vessel, 1-2 in the area**

**High Ice Class vessel. Built in S.Korea**

**Hard ice conditions = diesel-electric icebreaker on duty**



**The Prirazlomnoye oil field contains over 70 million tons of oil, with an annual production level of some 5.5 million tons.**



**Another platform type (owned by LUKOIL, Varandey),  
less reliable in ice-crash tests, WWF on alert**



LUKOIL's Varandey fixed offshore ice-resistant offloading terminal is listed in the Guinness Book of Records as the world's northernmost oil terminal. The distance to the shore is about 21 km.

The terminal, which has a capacity of 12 million tons per year, exports a total of 3,14 million tons.

# Arctic oil and OBOR

CEFC China Energy – a new-comer to the Arctic.

Have already purchased 14,16% of «Rosneft» and under consultations with Independent Oil and Gas Company (Russia) to buy 50% in Payaha oil deposit (volumes – 160 million tons, reserves – 500 million tons). Price – 3 billion \$. Overall deposit costs – 20 billion \$, by 2025 – 18-20 million tons of oil per year for export.

# Nuances in Sino-Russian Arctic offshore model

- Russian Arctic can be given a green light only after 2020 and oil price level at around 90\$ per barrel.
- The budget plans for a deficit of 3.2 percent GDP for 2017, reducing the figure to 2.2 percent and 1.2 percent in the subsequent years (2018-2019)
- Long payback time
- Representatives of Ministry of Finance and regional authorities numerously stated about financial complexity of providing investments to several projects simultaneously (in particular, Murmansk, Arkhangelsk and “Belkomur” development).

# Nuances in Sino-Russian Arctic offshore model

- Not enough 3D exploration activity.
- Unexplored mineral potential in the Russian Arctic – 91%, onshore – 53%.
- Under current speed of exploration activity Russian existing resource bases will dry up in 28 years.
- Russia can fully cover its needs in 2D seismic works whereas 3D is available only on 20-30% because national companies and state desperately need construction of its own scientific fleet.
- Moscow secured only 1,3 billion rubles (~20 million dollars) for the period 2017-2018 to support seismic cluster in shipbuilding for offshore purposes.

# The current Sino-Russian offshore cooperation

## Yamal LNG:

- 20% owned by CNPC and 9.9% by Silk Road Fund;
- 15-year loans from Export-Import Bank of China (10.6 billion \$) and China Development Bank (1.5 billion \$);
- Interest rates: EURIBOR 6M + 3.3% margin during construction and + 3.55% after; SHIBOR 6M + 3.30% and 3.55%

THREE PROJECTS ROLLED INTO  
ONE LIQUEFIED NATURAL GAS (LNG) MEGA PROJECT



	Production	Chinese stake	Chinese loans	Chinese import	Chinese services
Yamal LNG (16.5 mln t)	2017	29.9% by CNPC and SRF	China Development Bank (part of SRF)	3 mln tons per year	CNOOC (36 LNG modules); Mitsui O.S.K. Lines (MOL) and COSCO Shipping -4 LNG carriers (174K m3, 2018-2019).
Arctic LNG-2 (18 mln t)	2023	25% under discussions, estimated investments – 2 billion \$. Strategic agreement with NOVATEK in place.	China Development Bank, China Exim Bank (10-15 years loans, up to 1 billion \$)	Up to 6 mln tons per year	CNOOC (modules), Shanghai and GZ shipyards
Arctic LNG-3 (~18-20 mln t)	~2027	Yamal local authorities has started feasibility studies on September 2017	No talks	Have not defined	No talks

Overall Yamal and Gydan resource base – 78 million tons LNG by 2030, overall Russian LNG – 119 million tons.

# Transportation of Arctic LNG and OBOR

Gas in Chinese energy balance – 210 billion m<sup>3</sup>.

There is a plan to raise the volumes 3 times by 2030-2035.

Current national production of 140 billion m<sup>3</sup> – not enough, import – is a key.

# Question to solve...

Chinese engagement in Russian Arctic LNG projects will expand seriously once better dividend's taxes rate to be implemented. Currently, CNPC and SRF pays 10% of dividend tax while Total – 5%.

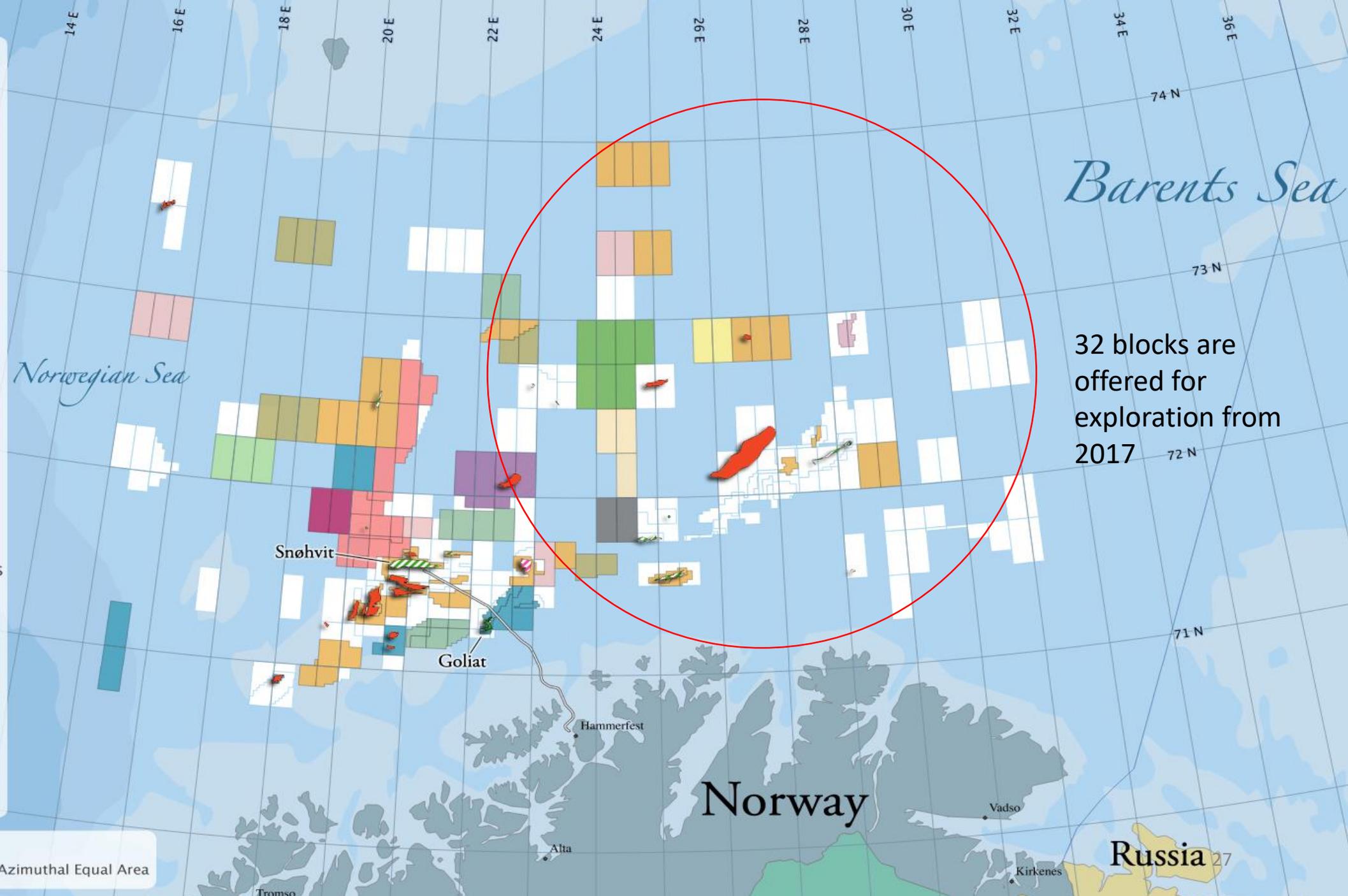
Beijing aims to persuade Moscow to have at least 25% in new energy projects in order to pay 5% under current bilateral agreement or incline to redraft on the pattern of a French one.

# Norway

- Norwegian Arctic future lies in the south part of the Barents Sea – extraction of vast oil and gas resources to substitute Russia as a main European petroleum supplier.
- Plan to drill 9 wells up to 2030 that can be profitable at the oil price of 45\$!

On the next slide you'll see the map of discovered sites in the south Barents Sea that are under feasibility studies.

- Pipelines
  - Maritime Boundary
  - ★ National Capital
  - Provincial Capital
  - ★ Regional Capital
  - Populated Location
- Active Production Licenses
- BG NORGE
  - BP NORGE
  - CONOCOPHILLIPS SKANDINAVIA
  - DANA PETROLEUM NORWAY
  - DET NORSKE
  - DONG E&P NORGE
  - EDISON INTERNATIONAL
  - ENI NORGE
  - ENTERPRISE NORGE
  - GDF SUEZ E&P NORGE
  - IDEMITSU
  - LOTOS EXPLORATION
  - LUNDIN NORWAY
  - NORECO ASA
  - OMV NORGE AS
  - REPSOL EXPLORATION NORGE AS
  - STATOIL PETROLEUM AS
  - TOTAL E&P NORGE
  - WINTERSHALL NORGE AS
- Inactive Production Licenses
- 
- Discovered Fields
- GAS
  - GAS/CONDENSATE
  - OIL
  - OIL/GAS

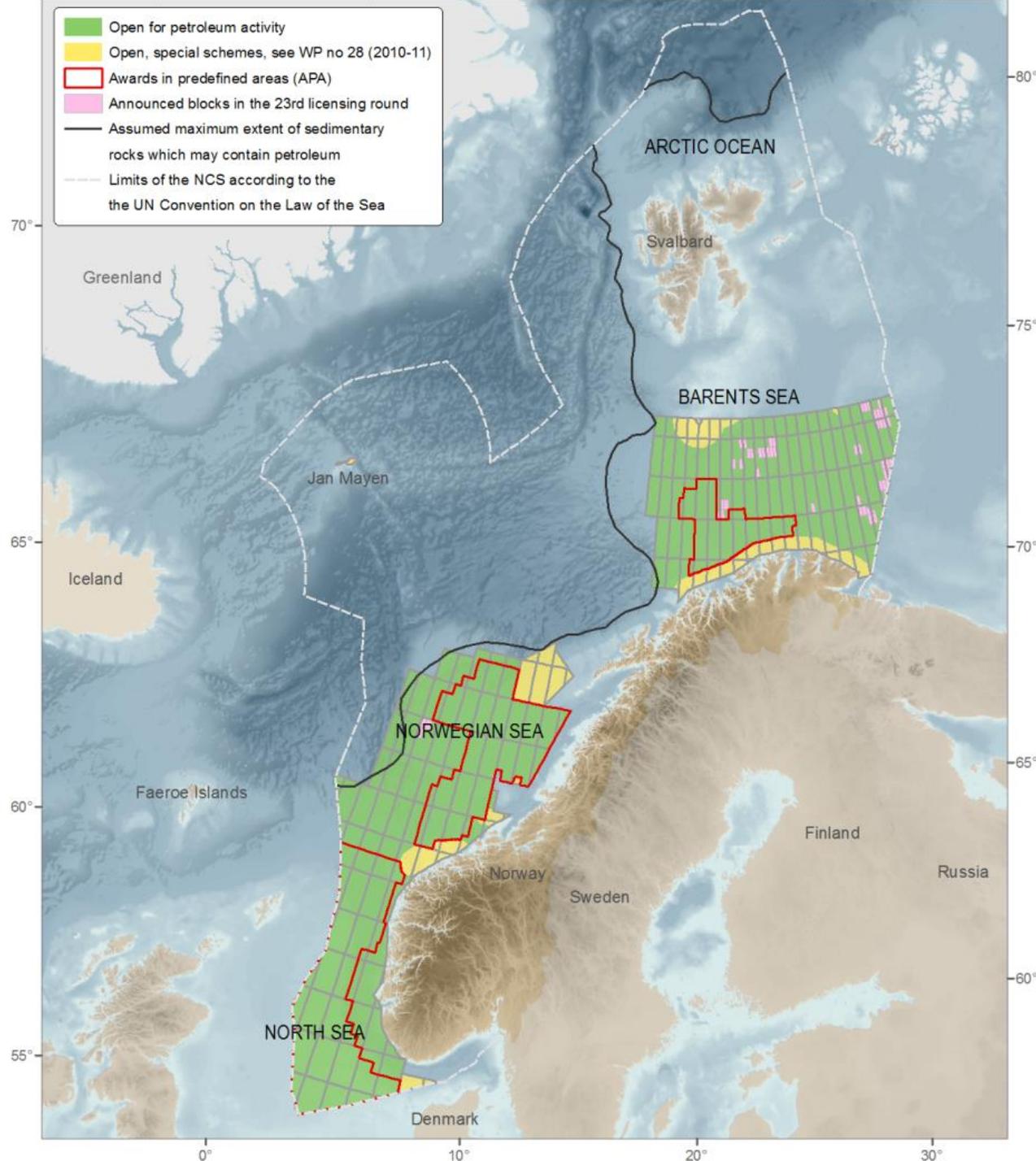


*Barents Sea*

32 blocks are offered for exploration from 2017

In order to realize national priority in oil/gas industry, Norway has adopted a new **National Transport Plan**

- Two major issues:
- Upgrade the current logistics infrastructure (road, railway, airport, sea) of Norway;
  - Combine transport corridors of Norway, Finland and Sweden.



Green color – opened for petroleum activity.

Pink color – preparation for licensing.

The main obstacle – profitability question – tankers or pipeline.

# Shipping

# Main contradiction

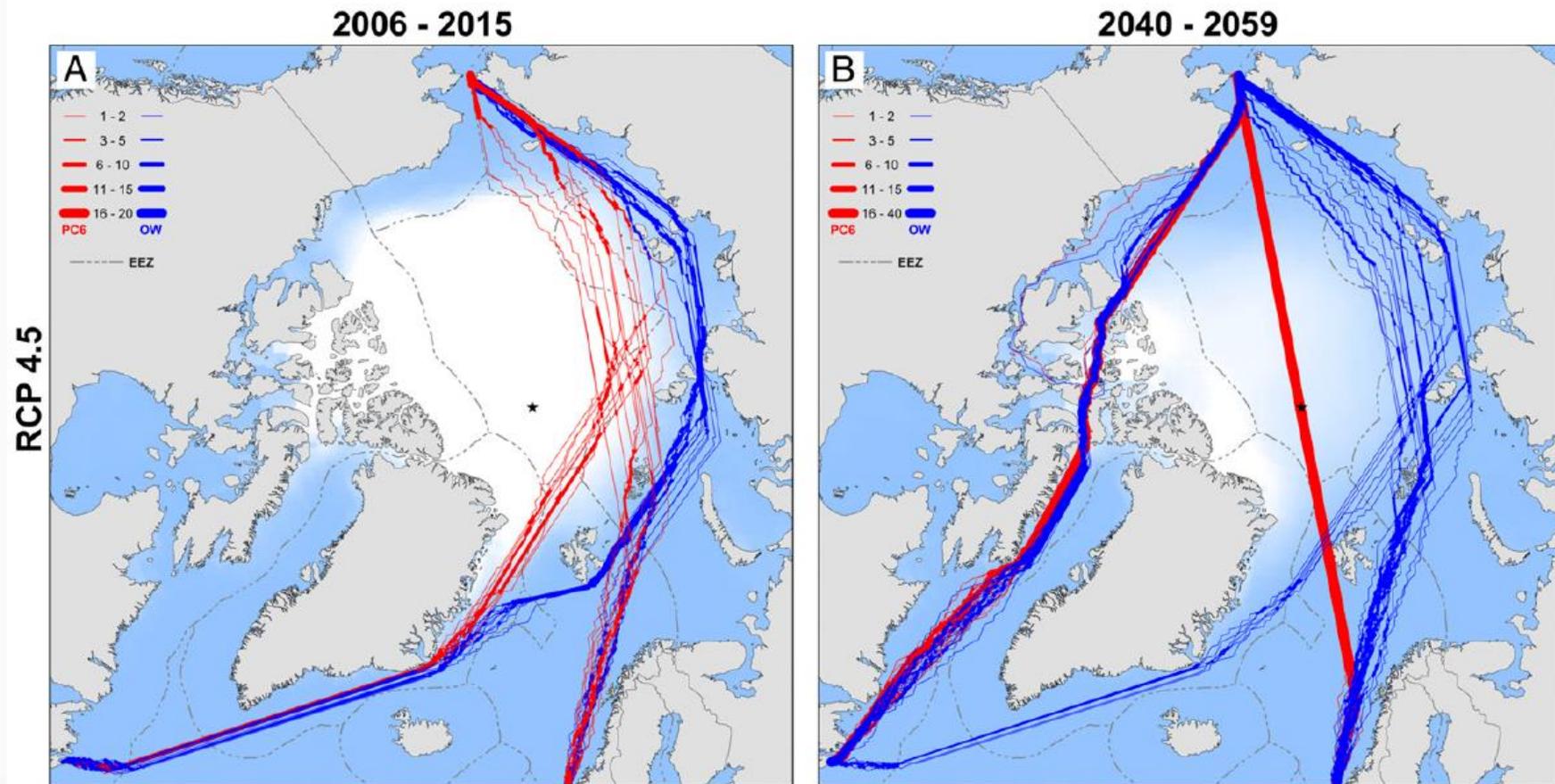
Despite the political ambitions to create a so-called “Ice Silk Road” with Russia and Nordic countries, Chinese relevant governmental policy-makers provides any roadmap or single practical solutions how to use the NSR in a stable and competitive mode.

This is the result of two contradictory expert communities views that are absorbed by the Development Research Center of the State Council of China – the leading governmental think-tank responsible for report generation for Ministries and Politburo of the PRC.

Beijing and Shanghai compete for China’s Arctic agenda.



# Sea ice reduction



## China's New Shipping Frontier

How the new Northern Sea route compares to the traditional Suez Canal route

### NORTHERN SEA ROUTE

Travel time

**35 days**

Dangers

**Icebergs**

Travel window

**July to November**

Container-carrying vessels

**One this year**

### SUEZ CANAL ROUTE

Travel time

**48 days**

Dangers

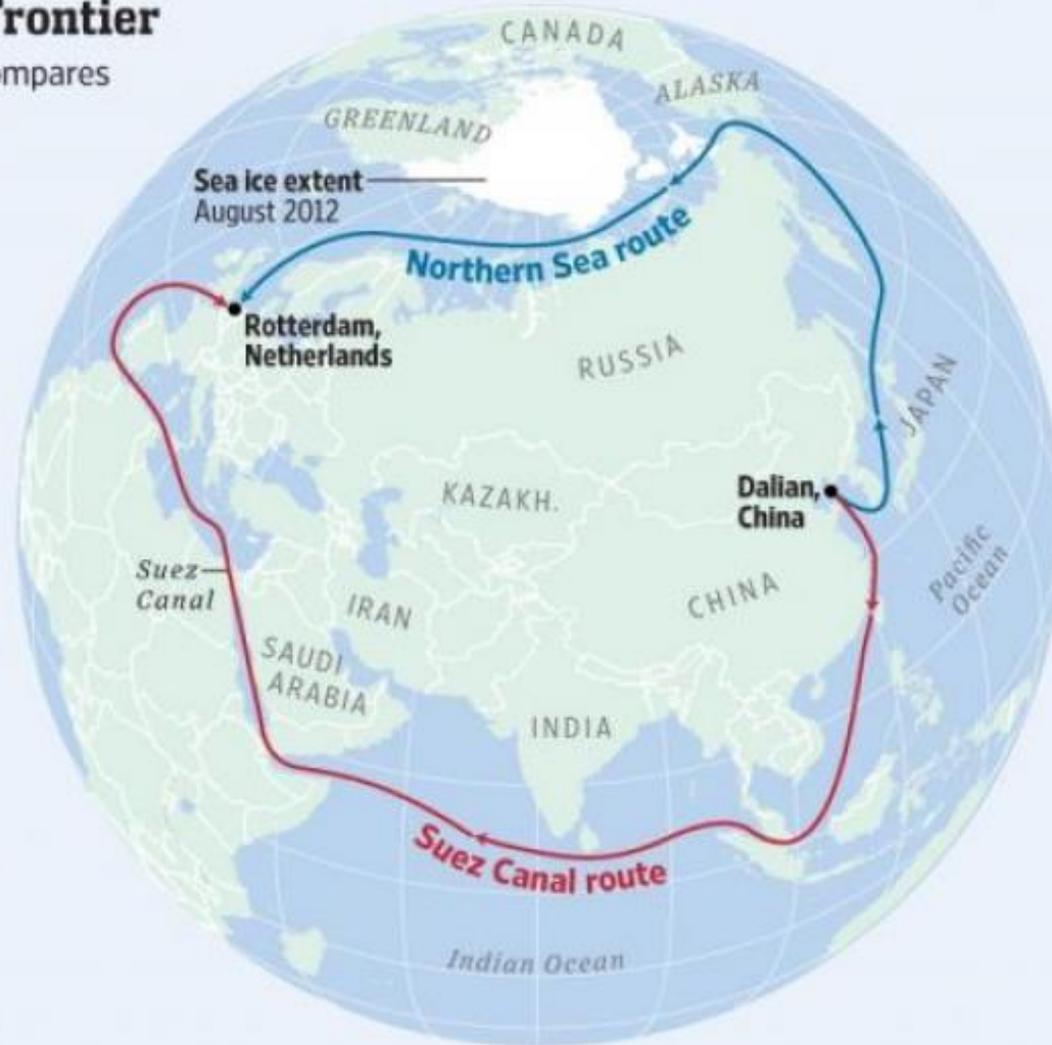
**Access to Suez Canal under question with upheaval in Egypt**

Travel window

**Year-round**

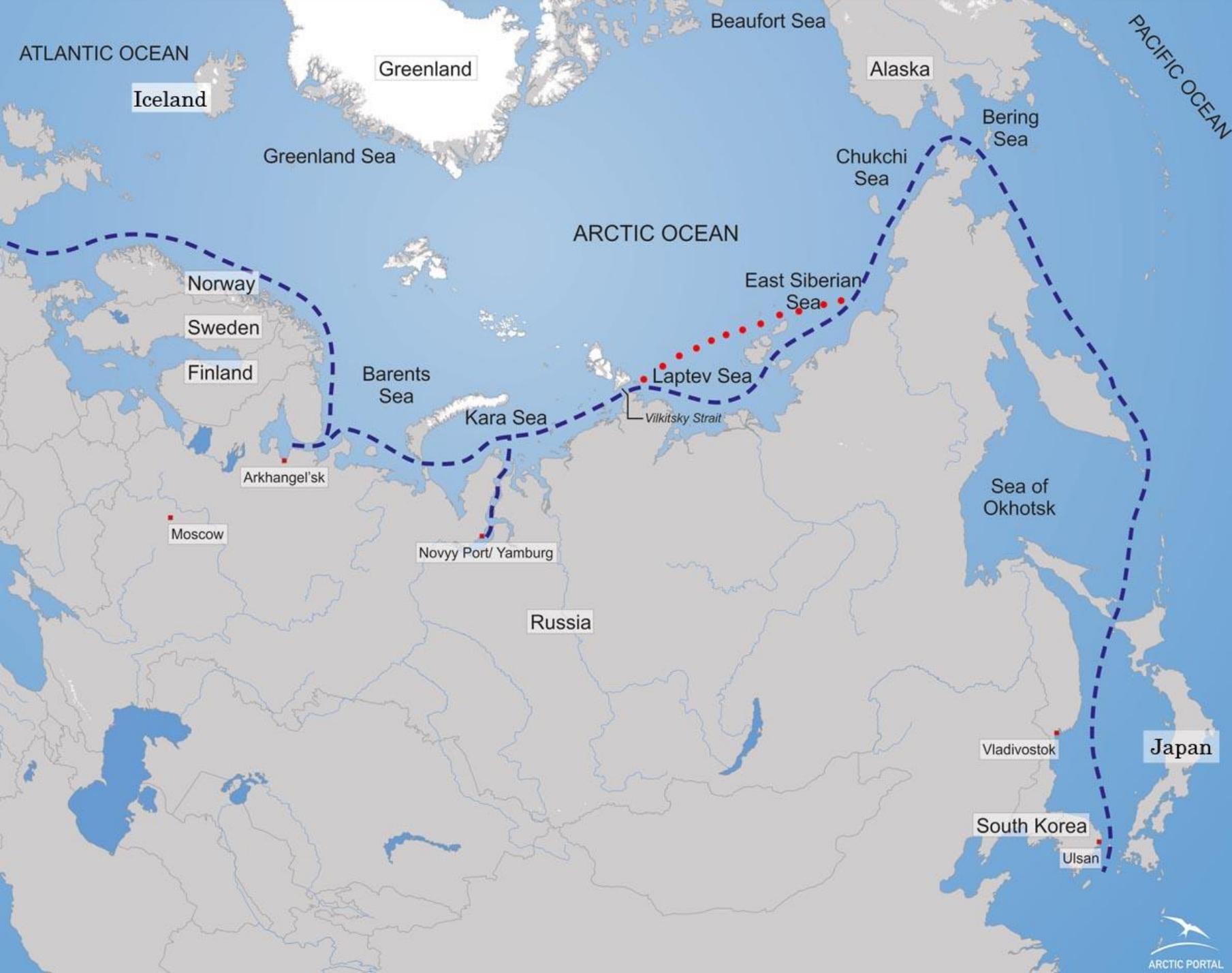
Container-carrying vessels

**17,000 last year**



Sources: Northern Sea Route Information Office; National Snow and Ice Data Center; Cosco; Lloyd's List

The Wall Street Journal



COSCO test-routes on the NSR during summer months.

NSR navigability without icebreakers assistance – 4 months per year. Winter time – only in caravans with nuclear icebreakers

## Yong Sheng multipurpose vessel



# Operational fleet

Nuclear-powered icebreakers with two nuclear reactors with a capacity of 75,000 horsepower



- ⚓ Rossiya
- 📅 1985
- 🚢 Arktika
- 🏠 10521-1



- ⚓ Sovetskiy Soyuz
- 📅 1989
- 🚢 Arktika
- 🏠 10521-2

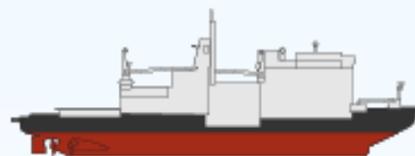


- ⚓ Yamal
- 📅 1992
- 🚢 Arktika
- 🏠 10521-3

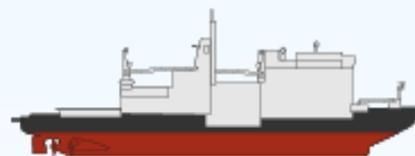


- ⚓ 50 Let Pobedy
- 📅 2007
- 🚢 Arktika
- 🏠 10521-4

Nuclear-powered icebreakers with one reactor with a capacity of 40,000 horsepower



- ⚓ Taymyr
- 📅 1989
- 🚢 Taymyr
- 🏠 10580-1



- ⚓ Vaygach
- 📅 1990
- 🚢 Taymyr
- 🏠 10582-2

Nuclear-powered icebreaking LASH carrier and container ship



- ⚓ Sevmorput
- 📅 1988
- 🏠 10081

Floating technical facilities



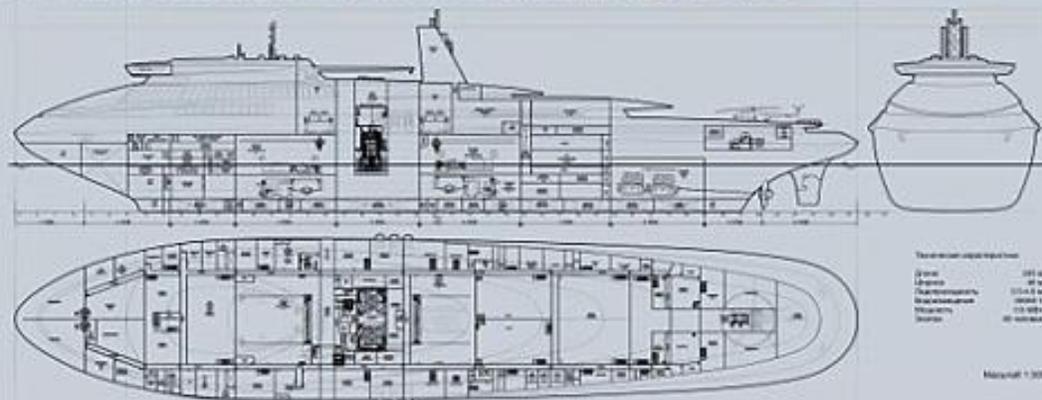
- ⚓ Imandra, Lota











Техническое описание

Длина	200 м
Ширина	30 м
Высота мачты	50 м
Максимальная скорость	18 узлов
Мощность	10 000 л.с.
Экипаж	40 человек

Масштаб 1:300



# Questions on the agenda

1. Waiting for commercial functions of the NSR administration (logistics, convoy, broker services);
2. Joint insurance operator on the NSR (on the sidelines of bilateral negotiations, Arctic business forum, Arctic Economic Council or through direct negotiations between shippers);
3. All year-round navigation under new icebreakers' type;
4. Calculated navigation pattern in advance: cargo bases, destination ports, additional volumes in terminals, quays and warehouses;
5. "Green" navigation: LNG bunkering on the NSR, IMO 2020, ecological drawback;
6. Navigational and weather coordination: real-time monitoring, data purchases.

# Nuances in Sino-Russian Arctic offshore model

- Lack of supportive infrastructure



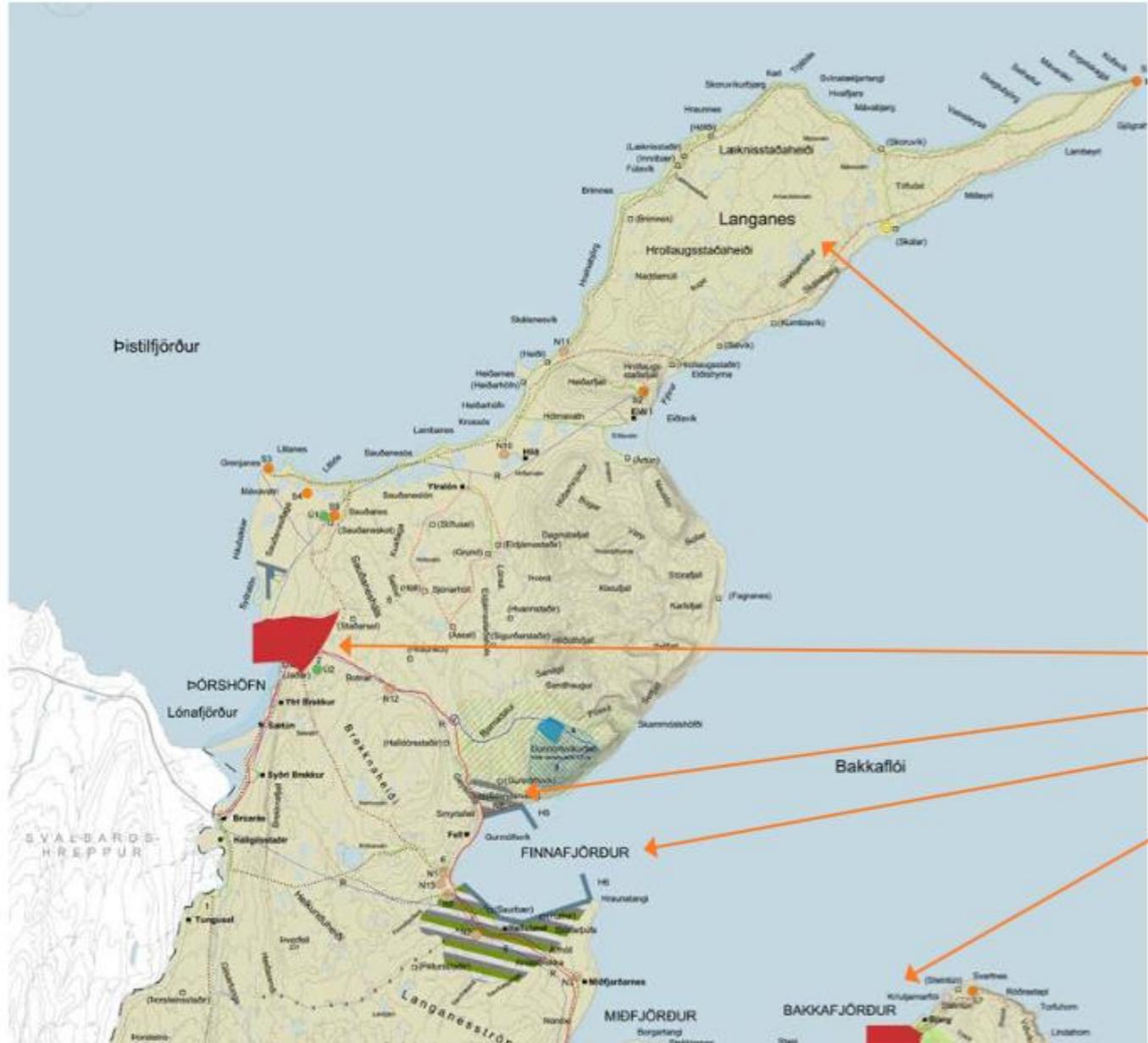
# Development of Adak port

# Four transit routes!



100 million dollars

# Huge transport hub (red) Finna fjordur (Iceland)



- Langanes peninsula - 40 km. long
- Thorshöfn village - 500 inhabitants
- Gunnolfsvik industrial site - 167 ha
- Finna fjordur - Project site
- Bakkafjörður village - 200 inhabitants

# Barents Road Transport Corridors

EU TEN-T (proposal):

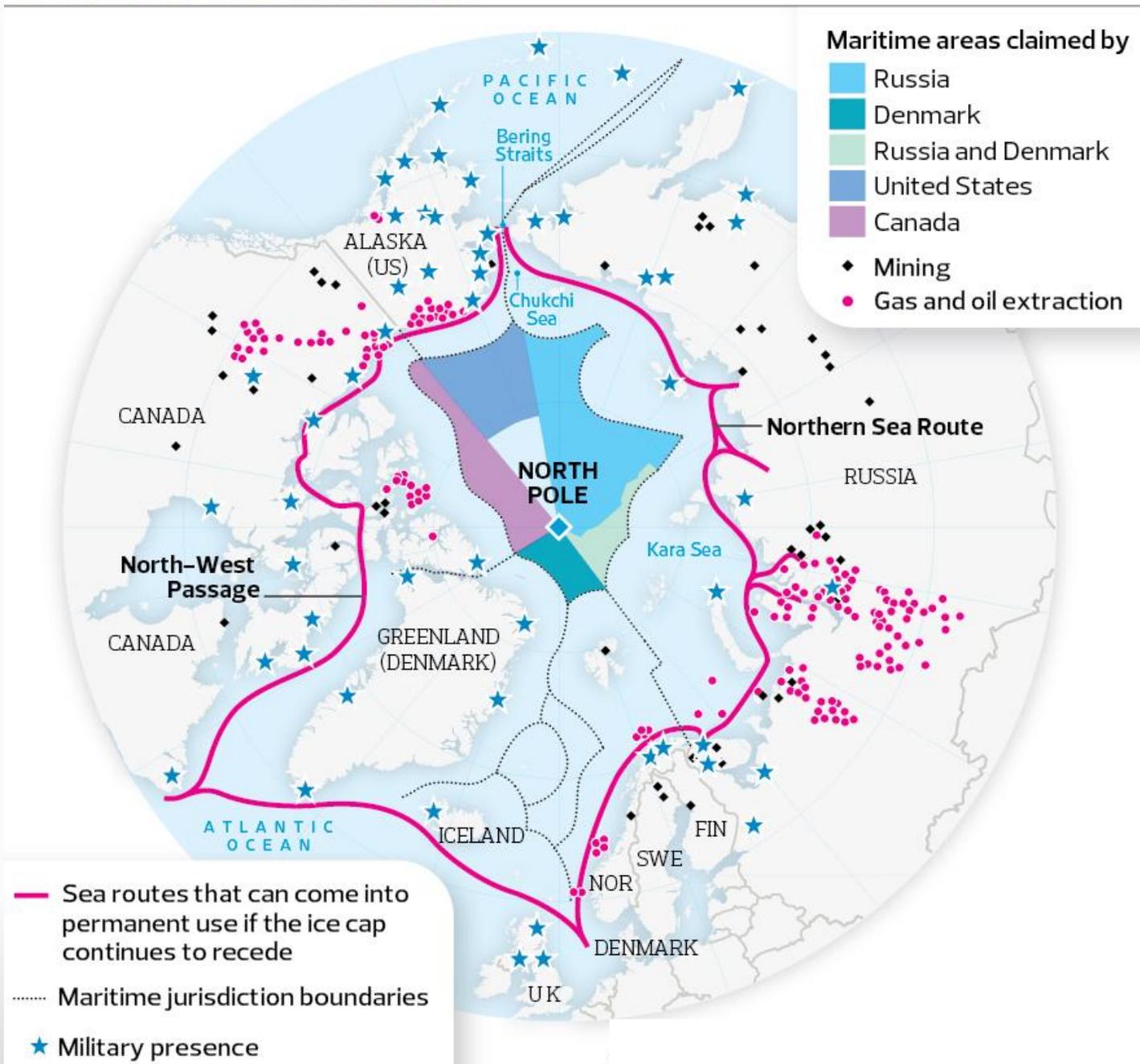
-  – Core road network (Russian main road corridors)
-  – Comprehensive road network (Russian federal roads renovated to form inter-regional corridors by 2030)
-  – New Russian inter-regional roads by 2030
-  – Other large roads
-  – Main Searoutes



# Related topics

1. Drone technologies on the NSR (Denmark-China cooperation model);
2. Components for Russian Arctic shipbuilding industry;
3. Joint research data base, including Beidou system expansion;
4. Digitalization of trade;
5. Alternative marine fuel production under cooperation with Finland and Denmark;
6. Efficient ship design.

# OPENING UP THE FAR NORTH



**Thank you for attention!**