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## The Arctic Geo-Economy: Mobility of Strategic Oil Resources at the End of Globalization

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**Abstract.** A distinctive feature of the cyclical dynamics of global development is the rapid transformation of the maxim of “global superiority” into softer forms of leadership on the geopolitical and economic atlas of the modern world, such as “national power” and/or “regional advantage”. This requires a concentration of resources to achieve the latter's mobility on the strategic movement trends of contemporary Russia. The importance of oil and petroleum products in the formation of the Russian Federal Budget and the National Welfare Fund cannot be overestimated. Today, oil is essentially the main source for the successful implementation of the special military operation and, at the same time, ensuring the progressive development of Russia. The article substantiates the necessity to maintain the economic turnover of oil resources development, including in the Arctic, carries out an expert assessment of three options for the development of oil production: reduction of production; reduction of oil exports against the background of increasing domestic consumption; and ensuring the mobility of export supplies to find and develop new markets.

**Keywords:** *globalization, anti-Russian sanctions, Arctic oil, maritime communications, oil export mobility*

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### Introduction

The special military operation (SMO) of the Russian Armed Forces has caused a synergetic effect of defragmentation (destruction) of the liberal economic model (LEM), which in practice embodies the ideas of the global liberal project (GLP), mainly in the countries of the “collective West”, through its indirect impact on the world economy. This means the beginning of the decline of globalization as the dominant direction of modern geopolitics and geoeconomics.

The cyclical dynamics of global development is determined indistinctly and somewhat approximately by P. Krugman<sup>1</sup>, Nobel Laureate in Economics in 2008, the founder of the theory of

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<sup>1</sup> Krugman P. Will Putin Kill the Global Economy? The New York Times. March 31, 2022. URL: <https://www.nytimes.com/2022/03/31/opinion/putin-global-economy.html> (accessed 07 July 2022).

new economic geography, whose main scientific works are well known to Russian specialists in the field of spatial economics.

From the standpoint of P. Krugman's theory, the scale of globalization is determined by the degree of development of the world communications system at various levels (local, regional, national, global), and these communications determine access to the relevant markets for goods and services. This is how the LEM is built, the target function of which is the implementation of a global liberal project that involves ensuring high-quality consumption of goods and services in the community of countries belonging to the leaders of this project, in other words, accepted into the circle of the "collective West".

The whole world participates in ensuring the consumption of the countries of the "collective West", hence the global character of tasks of value creation but not of value distribution.

The first upward globalization wave dates back to the beginning of the 20th century and is associated with the development of communications, which caused a massive expansion of world trade as a result of the synergistic effect from the introduction of railways, steamships and the telegraph into everyday life, which made communications more comfortable and affordable.

The state of the world economy at the beginning of the 20th century was called by J.-M. Keynes (1919) as "an outstanding episode of human economic progress" — "on the eve of the World War I, a citizen of London could easily order various goods in different quantities from all over the world, reasonably expecting that they would be delivered to his doorstep"<sup>2</sup>. However, the citizen had to be a member of the circle of the "collective West", at that time — the British Empire.

The decline of globalization occurred during the World War I, the post-war depression (the Great Depression in the United States, 1929–1939), which continued during the World War II and the Cold War.

The Cold War is a geopolitical construct based on the confrontation of the two sides; it is not yet a war, but a specter of war, when a chain of successive "casus belli" creates the illusion of an impending military clash.

During this period, the search for a cumulative "casus belli" is transferred and localized in the non-military (civilian) sphere; the result of the global confrontation in the era of the "cold" ("non-cold") war is the destruction of a military scale, achieved with the use of non-military tools (sanctions). At the same time, "gunpowder is kept dry", which requires significant resources and costs for the so-called arms race.

It is possible to resist such pressure only if there is an appropriate "security cushion" and a high level of economic stability of the national economy. Both of these phenomena are associated with the development of oil resources, which have become strategic since the mid-1960s.

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<sup>2</sup> Keynes J.M. *The Economic Consequences of the Peace*. New York: Harcourt, Brace and Howe, 1920. URL: <https://www.gutenberg.org/files/15776/15776-h/15776-h.htm> (accessed 07 July 2022).

The competencies acquired during the heyday of the Soviet Union (approximately 20 years, 1964–1982) in withstanding the emerging challenges and threats of the Cold War helped Russia not only survive the “perestroika” and the so-called “market reforms”, but also to face the current challenges of the “collective West”.

### ***Peculiarities of the global confrontation along the “Russia–West” line***

The second upward globalization wave is identified at the beginning of the 21st century and is also predetermined by global achievements in the field of communications. These results are related to the development of network planning, the creation of transport networks and container transport logistics, the modernization of the cargo fleet, including the tanker fleet, the development and implementation of fundamentally new projects of gas tankers, for example, the Q-max (2007–2010) and Q-flex (2007–present) series with a cargo capacity of 260 and (165–216) thousand m<sup>3</sup>, respectively, based on membrane tanks.

The global division of labor in the LEM is reduced to a narrow specialization required for the countries of the “collective West” with the dominant thesis that the diversification of the national economy will not bring the desired effect, since goods are a priori (excluding transport costs) cheaper on the global market. Such a “reasonable division of labor” creates an image of consumerist welfare from the fact that “we were accepted into the elite circle”. The LEM involves the following order: you place and trade your goods on the global market, and, with the proceeds, you buy everything you need.

The global market generates total dependence and, in this way, the market for the global consumer is transformed into a market for the producer. That is, the consumer can really buy any product only on the condition that the manufacturer agrees to sell it. This is how the total dependence of participants in global development on each other is formed; this becomes the basis for imposing sanctions, a tool that is very common in modern geopolitics.

Certainly, the temptation to join the benefits of the global market as part of this elite consumer society is great. The goal of economic and social development is based on the familiar motif (from each according to his ability, to each according to his need), which has already been seen in our history.

Actually, in the 20th century, two models of general consumption are known: the first one — on a class basis (the slogan “to each according to his needs” could be implemented in the proletariat countries), the second one — on a regional basis (as realized in the countries of the “collective West”).

That is why it is quite understandable that the course on implementation in the Western civilization, i.e. in the GLP, became the mainstream in the system of the global development of our country in the 1990s, which had predetermined the geopolitical drama of Russia that had started at the turn of the century [1].

But we should mention an important peculiarity: in the 17th–19th centuries, Russia was expanding its territories on the western and southern borders, that is, it was “friendship with the West” under the leadership of Russia. In the 20th century, Russia lost territories as a result of the collapse of the Russian Empire and the Soviet Union.

Russia’s exit, or rather, Russia’s pushing out of the unipolar LEM, indicates the onset of the decline of globalization as a phenomenon. This period is characterized not only by the cessation of a large-scale expansion of world trade, but also by the violation of the chains of interchangeability.

The main positive statement of the GLP is the satisfaction of almost any need. The anti-Russian sanctions epic confirms that not all Russian goods can be replaced in an acceptable timeframe in the required quantity, as the stock of goods is distributed unevenly across the global space. This applies primarily to energy resources.

A characteristic feature of the “Russia-West” confrontation is the development of such an element of the “Cold war” as the introduction of mutual restrictions (sanctions) on foreign policy and geo-economic activities.

The sanctions confrontation between Russia and the US has a long history — for almost 50 years (since 1974), some American restrictions have been placed against Russia.

Economic pressure on Russia is accompanied by geopolitical expansion in the form of NATO’s eastward expansion.

The five known NATO expansions to the east in the last 25 years (since 1999) and the involvement of countries that are dubious in strengthening the combat readiness of the Alliance and in strict accordance with Newton’s third law (“the force of action is equal to the force of reaction”) caused the opposite Russian movement to the west and southwest. This will bring the Russia–NATO balance back to its original position in the near future.

NATO’s eastward expansion was largely due to Russia’s vague position in the Baltics, Ukraine and Belarus, the Warsaw Pact countries and the Balkan countries of the former Yugoslavia in the late 20th and early 21st centuries, which allowed NATO to almost double (from 16 to 30) the number of participating countries during this period.

To prevent NATO from moving eastwards, an alternative geopolitical strategy should be formulated. Russia should act as the center of a new continental integration, possessing modern means of defense on land and at sea.

The current aggravation of the sanctions confrontation began in 2013 and continued in March 2014 with the return of Crimea to Russia; then, among other things (cheap loans, etc.), restrictions were imposed on the import of technologies for prospecting, exploration and production of oil and gas (upstream stage of development of oil and gas resources) of the continental shelf. This could not but affect the intensity of the development of the Russian Arctic, especially in the gas sector during the implementation of the Nord Stream 1 and 2 projects.

In July 2017, the US Congress initiated the Countering America’s Adversaries Through Sanctions Act — CAATSA — the law “On Countering America’s Adversaries Through Sanctions” was

adopted. The law is stylized as the introduction of restrictions in the energy sector and is directed mainly against the Nord Stream 2 project. The adoption of this law makes it possible to limit Russia's influence not only in the energy markets of the EU countries, but also in the system of European international relations, since *oil and natural gas have been so organically implemented in the daily life of Europeans that they have become an integral part of ensuring national security. Moreover, disruptions in the supply of energy resources can lead to social conflicts on a national scale in European countries.*

### ***The significance of oil resources for Russia's economy***

Russia is one of the leaders in oil production. In 2021, the top three of them (USA — 711.1; Russia — 536.4 and Saudi Arabia — 515.0 million tons) accounted for 41.8% of world production, about 38.1% of crude oil exports (Saudi Arabia — 323.2; Russia — 263.6 and Canada — 197.4 million tons) and 36.1% of oil product export (USA — 244.4; Russia — 140.7 and Saudi Arabia — 57.7 million tons) [2, p. 16; 27].

Such competitive positions in the world market of oil and petroleum products testify to the dominance of these energy resources in the structure of the Russian economy.

The economic turnover of oil and gas forms the oil and gas revenues of the Federal budget of Russia due to the two main types of payments: MET — the tax on the extraction of minerals, oil, natural gas and gas condensate, and the export customs duty on crude oil and goods produced from oil, as well as natural gas. Moreover, the mineral extraction tax on oil and customs duties on oil and oil products together account for more than 82% of the total structure of these payments. In general, oil and gas revenues according to the current budget rules (since 01.01.2018) and the content of the current BTM — big tax manoeuvre [3, p. 66–72] amounted to 46.4% and 39.3% of revenues in 2018 and 2019, respectively, with some reduction in the COVID-19 pandemic years to 28% and 35.8% in 2020 and 2021 (Table 1).

Table 1

*Structure of federal budget revenues of the Russian Federation*<sup>3</sup>

Indicator	2018	2019	2020	2021
Urals oil price (USD/bbl)	70.0	63.6	41.7	69.0
Revenues of the Federal Budget of the Russian Federation (trillion rubles)*	19.5	20.2	18.7	25.3
Non-oil and gas revenues (% to *)	53.6	60.7	72.0	64.2
Oil and gas revenues (% to *)	46.4	39.3	28.0	35.8
Including MET on oil and customs duties on oil and oil products (% of oil and gas revenues)	82.4	85.6	74.3	85.0

In August 2018, a new six-year (until 2024) procedure<sup>4</sup> for matching MET and export customs duty on crude oil was approved. At the end of 2018, in the structure of “oil” payments,

<sup>3</sup> Calculated according to: Ministry of Finance of the Russian Federation. Federal budget. URL: <https://www.minfin.ru/ru/statistics/fedbud/> (accessed 20 July 2022).

66.6% accounted for MET and others, 33.4% — for export customs duties on crude oil. According to the new procedure, the export duty on crude oil is reduced by 5% annually for six years so that by 2024 the value of this indicator will be 0. At the same time, MET on oil increases proportionally each year. Thus, almost the entire tax burden of the oil and gas sector will be transferred to the domestic market, which will stimulate an increase in the export of oil and oil products, intensify the work of refineries and return part of the income from duty-free trade in oil and oil products with the EES countries.

In addition, there is a globally accepted budget rule in countries with a raw-material-oriented economy, the economic content of which is to regulate oil and gas revenues and accumulate sovereign funds. In Russia, this is the National Welfare Fund (NWF) since January 1, 2018.

Since that time, the current configuration of budget rules has been introduced, according to which the cut-off price of one barrel of Urals oil in 2017 prices is set at USD 40 and indexed by 2% each year: in 2018 — 40.8, in 2019 — 41.6, in 2022 — USD 44.0. "Oil" revenues from exceeding the cut-off oil price are transferred to the NWF.

In 2018, the National Wealth Fund was replenished to 4036.0 billion rubles, and in the subsequent 2019–2021 — up to 7773.0, 13545.7 and 13565.35 billion rubles, respectively <sup>5</sup>.

Thus, thanks to the development of oil resources at the beginning of 2022, Russia has a "safety cushion" of more than 13.5 trillion rubles, which is more than 70% of the annual federal budget revenues of the Russian Federation.

The importance of oil in the socio-economic development of Russia is confirmed by the growing share of the oil sector in GDP: in the first quarter of 2022, this share was 21.7% against 17.3 and 17.1% in 2021 and 2020, respectively. In a period of general economic downturn, this means that the downward trend in the oil and gas sector is not as great as the downturn in the economy as a whole. The dynamics of capital outflow from the Russian economy during this period grew from USD 50.4 billion in 2020 to USD 71.0 billion in 2021 and USD 138.0 billion in the first six months of 2022.

Therefore, it is not surprising that with the beginning of the SMO on February 24, 2022, the next packages of sanctions followed precisely in the energy sector. The sixth and, obviously, not the last package of sanctions against Russia was introduced at the beginning of June 2022. The EU countries refused to import Russian oil by sea, leaving pipeline supplies for now.

The main importers of Russian oil in 2021 were (in mln t): Europe (138.7), China (79.6) and the US (9.9) for crude oil and Europe (75.9), the US (22.6) and China with other Asia-Pacific countries (20.4) for oil products [2, p. 27].

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<sup>4</sup> Federal'nyy zakon RF «O vnesenii izmeneniy v chast' vtoruyu Nalogovogo kodeksa Rossiyskoy Federatsii» [Federal Law of the Russian Federation "On amendments to part two of the Tax Code of the Russian Federation"]. URL: <https://base.garant.ru/72005496/> (accessed 20 July 2022).

<sup>5</sup> Ministry of Finance of the Russian Federation. Federal budget. URL: <https://www.minfin.ru/ru/statistics/fedbud/> (accessed 20 July 2022).

Thus, the field for ensuring the mobility of strategic resources of oil and oil products under Western restrictions is about 150 million tons of crude oil and about 100 million tons of oil products, supplied in two directions — Europe and the USA.

*The economic content of the concept of mobility of oil flows consists in such a change of the logistical directions of oil transportation, which would provide the planned (taking into account the implementation of the state defense order during the implementation of the SMO) indicators of currency proceeds.*

At the same time, the physical volume of exports of crude oil and oil products remains at the level agreed upon in the OPEC+ system. This corresponds to a production of 10.5–11 million barrels per day.

### ***Russian oil transportation systems***

Marine deliveries of oil and petroleum products to the United States are relatively insignificant and total 32.5 million tons, or 7.8% of all US oil imports (3.3% for crude oil and 20.0% for petroleum products). However, it should be emphasized that Russia supplies the United States with Urals heavy oil and dark oil products (all types of fuel oil, distillate oils, gas turbine and motor fuels, vacuum gas oils, tars and bitumen) obtained from heavy mixtures. It is difficult, if not impossible, to find a replacement on the world market for such, albeit small, supplies, as the closest supplier of such oil, Venezuela, is also under sanctions and supplies have been stopped.

Sea transportation of oil from Russia to Europe and the USA is carried out from the ports of Primorsk (capacity of 60 million tons per year) and Novorossiysk (capacity of 40 million tons per year), located in the waters of the Baltic (northern coast of the Gulf of Finland) and Black Seas. The average load in the port of Primorsk, which has a declining trend over the last five years, is around 91.5% (66.5% for crude oil and 25.0% for oil products). The Baltic Pipeline System-2 supplies oil to the port of Ust-Luga (capacity of 30 million tons) on the southern coast of the Gulf of Finland with an average load of over 90%.

The depths of the Novorossiysk Bay allow receiving and handling oil tankers with a draft of up to 19.0 m and a deadweight of about 250 thousand tons (VLCC — VeryLargeCrudeCarrier or Malaccamax), optimized for passage through the Strait of Malacca. The depths of the ports of Primorsk and Ust-Luga (16.5 and 17.5 m) allow handling vessels with a deadweight of 150 and 160 thousand tons, respectively (Suezmax size), these vessels are optimized for the passage of the Suez Canal, that is, they have a draft of no more than 16 m and the corresponding dimensions.

Urals oil, the main export brand of Russian oil, is transshipped in these ports, which is a mixture of heavy oils from the Volga region and Siberian Light oil produced in the fields of the West Siberian oil and gas province. The density of the mixture is about 865 kg/m<sup>3</sup> or 31.50 API with a sulfur content of 1.2–1.6%. This blend accounts for about 80% of Russian oil exports and is usually traded at a USD 3–4 discount relative to the benchmark Brent blend. However, under the sanctions, the average discount (in June–July 2022) was at the level of 28–30%, i.e., during this pe-

riod, Urals oil is traded with a discount of USD 77–80 per barrel. This price is almost twice the cut-off price in 2022, that is, it ensures the profitability of the sale of oil reserves.

Oil is also transported to Europe via the Druzhba pipeline with a total capacity of 66.5 million tons per year. In the area of Mozyr (Belarus), Druzhba is divided into two branches: three lines of the southern branch with a capacity of 16.7 million tons deliver oil to Ukraine, Hungary, Slovakia, the Czech Republic and Croatia, two lines of the northern branch with a capacity of 49.8 million tons — to Poland, Germany, Latvia and Lithuania. Over the past five years, Druzhba has carried only 48.0–49.0 million tons, or 72–73.5% of the total capacity. In March 2022, oil supplies through the northern and partially southern branches were practically stopped. Oil is supplied to East Germany (for refineries on the territory of the former GDR, which were optimized for Russian oil) and almost in full to Hungary and Croatia. On August 4, 2022, Ukraine stopped pumping oil along the southern branch to Hungary, the Czech Republic and Slovakia, since Russia was unable to fulfill the transit payment in August of this year due to EU sanctions.

According to the experience of March–July 2022, the total annual deliveries through the Druzhba oil pipeline can be at the level of about 15.0–16.0 million tons.

In the east, sea transportation of oil is carried out through the port of Kozmino (Nakhodka Bay, Sea of Japan) with an actual capacity of 36 million tons per year with an average load in 2020–2021 at the level of 34.0 million tons. Up to 80% of oil is sent to China. The recipients of oil from the port of Kozmino are (2021): Japan — 7%, USA — 6%, South Korea — 4%, Malaysia — 2%, Singapore — 1%<sup>6</sup>.

After reconstruction and modernization in 2017, the port of Kozmino has been optimized for receiving Suezmax tankers with a deadweight of up to 150 thousand tons.

Sovcomflot's ICE-1A (Arc-4) ice-class tankers are expected to be used here, as the Sea of Japan is one of the freezing non-Arctic seas. Oil is delivered to the port of Yeosu (South Korea, Korea Strait), where it is reloaded onto conventional tankers of larger capacity for further transportation to the ports of the South China Sea.

In addition, oil is delivered eastward through the Eastern Siberia-Pacific Ocean (ESPO) main oil pipeline. Since November 2019, the oil pipeline has been brought to a maximum capacity of ESPO-1 "Taishet–Skovorodino" of 80 million tons/year, ESPO-2 "Skovorodino–Kozmino Port" of 50 million tons/year. The capacity of the Russian–PRC Border "Skovorodino–Mohe" branch is 30 million tons per year.

In the east, oil is delivered directly to China through this branch (30 million tons), by the oil pipeline through Kazakhstan "Border of the Russian Federation–Kazakhstan–PRC" (10 million tons), through the port of Kozmino (about 28.0 million tons) and by rail — thus, transport communications in the east of Russia make it possible to supply China with no more than 70–72 million tons of oil.

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<sup>6</sup> Eksport nefi cherez port Koz'mino v 2021 godu uvelichilsya do rekordnykh 35,1 mln ton [Oil exports through the port of Kozmino in 2021 increased to a record 35.1 million tons]. URL: <http://nr-citynews.ru> (accessed 20 July 2022).



The obvious advantages of Russian oil are, firstly, the security of supplies. The main imported oil is supplied to China by the southern route (Southern Silk Road) through the straits located in the zones of international terrorism. Moreover, these straits (for example, Malacca and Singapore) can easily be blocked by the US Navy in the event of an escalating geopolitical confrontation. Russian oil comes from the north, and supply lines are not accessible to outside influence. The location of the oil pipeline “Eastern Siberia – the Pacific Ocean” eliminates these risks and provides a clear logistical advantage — shorter transport line, which affects the price of oil.

Secondly, the quality parameters of the oil supplied through the ESPO pipeline. This is a mixture named after this oil pipeline — “East Siberia-Pacific Ocean” — ESPO. Premium oil relative to the benchmark for the Asia-Pacific countries of the Dubai crude oil grade in terms of density (34.8 and 31 API) and sulfur content (0.53–0.62 and 2%). Therefore, it is traded at a premium of USD 3.5–4.5 per barrel.

In May 2022, offshore imports of ESPO oil to China surged to a record 1.1 million bpd from 800.000 bpd in 2021, or 37.5%. The ESPO grade thus claims to be the benchmark in the North Asian market.

However, the main ESPO blend fields, particularly, Vankorskoye (Krasnoyarsk Krai), Verkhnechonskoye (Irkutsk Oblast) and Talakanskoye (Republic of Sakha (Yakutia)), have already reached the maximum possible level of depletion [4, 5]. Therefore, an increase in production at these fields should not be expected; however, with the decline in supplies to Europe, some oil from European Russia may be directed eastward through the Transneft system.

Thus, the lack of production capacity, as well as the limitation of the capacity of the ESPO oil pipeline (to 80 million tons) and the Kozmino port (to 36 million tons) are significant obstacles to increasing oil exports to China [3, p. 64–72].

Increasing the oil export potential to China and South Korea to 100 million tons or more will inevitably face a shortage of production capacities in Western and Eastern Siberia, including the Republic of Sakha (Yakutia). In addition, the oil transportation system in the east direction requires modernization and expansion, strengthening of the ESPO through the construction of additional oil pipelines or the organization of oil transportation along the Northern Sea Route (Polar Silk Road) in the east direction.

At the same time, it should be emphasized that the southeastern and eastern provinces of China are the most developed, so the ESPO oil pipeline will increase by at least 4–5 thousand km. That is, oil is needed mainly in the coastal provinces of the East and South China Seas.

Taking into account all these circumstances, the “free balance” from trade with Europe can be a means of generating oil revenues for the Russian Federal Budget and the National Welfare Fund for the successful completion of the SMO and ensuring the progressive development of the Russian economy.

The problem is how to deliver 150 million tons of crude oil and 100 million tons of petroleum products to promising consumers in the Asia-Pacific countries, primarily China, India, and South Korea, under sanctions.

### ***Ensuring the mobility of strategic oil reserves in the Arctic***

Arctic oil is represented by three large energy projects located in the Pechora Sea and the Gulf of Ob, that is, in relatively favorable ice-covered areas of the Arctic.

There are two large oil ports in the Arctic. This is Murmansk with 17 berths with a total length of about 3 thousand meters. The port can receive vessels with a draft of up to 15.5 m and deadweight of up to 150 thousand tons. Two roadstead transshipment centers (RTC) are located in the Kola Bay: “Nord” on the basis of the storage tanker “Umba” with a capacity of 15 million tons per year and “Kola” on the basis of the storage tanker of the same name with a capacity of 12 million tons of oil per year.

Since 2004, the Arkhangelsk oil loading terminal has been operating in the delta of the Northern Dvina River, which operates year-round and is optimized for handling tankers with deadweight of up to 30 thousand tons. The capacity of the production complex is 4 million tons per year.

Oil is shipped in the Pechora Sea as part of two projects: Varandey and Pirazlomnoye, from the Varandey fixed offshore ice-resistant off-loading terminal (FOIROT) and the Pirazlomnaya offshore ice-resistant fixed platform (OIRFP), respectively.

The production base of the Varandey project (PJSC Lukoil) is the deposits of the Arctic oil-and-gas bearing regions of the Timan-Pechora OGP. Production capacity of the project and the Varandey FOIROT is 12 million tons of oil per year (240 thousand barrels per day). The export grade, “Varandey blend”, is comparable in terms of the quality characteristics of the sulfur content to the benchmark Brent blend (up to 1%), but is generally inferior to it. Since 2018, the roadstead transshipment center (RTC) “Kola” has been operating in the Kola Bay with the storage tanker of the same name with deadweight of about 300 thousand tons and a throughput capacity of 12 million tons of oil per year. The operator of the RTC “Kola” is LLC Volga.

Arctic Oil (ARCO), produced from the Pirazlomnoye oil field, first entered the world market in April 2014. This is a project of PJSC Gazprom (Gazprom Neft). Oil is produced and shipped from the Pirazlomnaya OIRFP and delivered to the Nord RTC in the Kola Bay. The basis of this RTC is the Umba storage tanker with deadweight of more than 300 thousand tons. The maximum production level at this project is 6.0 million tons per year, and the total throughput capacity of the RTC Nord is 15 million tons per year.

Export grade ARCO is the heaviest (906 kg/m<sup>3</sup>; 24 degrees API) and sulphurous (2.3%) low paraffin oil among Russian export marker grades. The main export grade with a share of about 80% in the total volume is Urals (a mixture of heavy oils from the Volga region and Siberian Light) with a density of about 865 kg/m<sup>3</sup>; 31.5 degrees API with a sulfur content of 1.2–1.6%.

On the global market, ARCO trades at a discount to Brent oil (density 825–828 kg/m<sup>3</sup>, about 39 degrees API; sulfur content — 0.4%), the discount is USD 4–5 per barrel. This grade is exported for use in sophisticated refineries in northwestern Europe and can be supplied to the United States.

In order to ensure the transportation of oil from the waters of the Pechora Sea to the RTCs “Kola” and “Nord”, a fleet of project 1660 shuttle tankers was created, consisting of five units of the reinforced ice class Arc6. All Panamax size tankers were built by order of Sovcomflot— three at the South Korean shipyard Samsung Heavy Industries for the Varandey project and two (after obtaining competencies) at Admiralty Shipyards, St. Petersburg, for the Prirazlomnoye project. The fleet of shuttle tankers in the Pechora Sea sails under the flag of Russia (Table 2).

For year-round operation of the third Arctic Gateway project, Samsung Heavy Industries shipyard (Busan, South Korea) built a fleet of six Project 42k Arc7 Arctic Shuttle Tankers of MR standard size. Later, by order of Sovcomflot, the seventh shuttle tanker, Mikhail Lazarev, was ordered (Table 2).

*Table 2*

*Arctic shuttle tanker fleet*

Name	Deadweight (t.)	Project	Shipyard	Operation, year	Operator
Vasiliy Dinkov	71250.0	Varandey	SHI*	2008	Sovcomflot
Kapitan Gotskiy	71230.0	Varandey	SHI*	2008	Sovcomflot
Timofey Guzhenko	71290.0	Varandey	SHI*	2009	Sovcomflot
Mikhail Ulyanov	69830.0	Prirazlomnoye	AS**	2010	Sovcomflot
Kirill Lavrov	70050.0	Prirazlomnoye	AS**	2010	Sovcomflot
Shturman Albanov	41455.0	Arctic Gateway	SHI*	2016	Sovcomflot
Shturman Malygin	41541.8	Arctic Gateway	SHI*	2016	Sovcomflot
Shturman Ovtsyn	41550.8	Arctic Gateway	SHI*	2016	Sovcomflot
Mikhail Lazarev	41012.0	Arctic Gateway	SHI*	2019	Sovcomflot
Shturman Skuratov	44354.0	Arctic Gateway	SHI*	2017	GNS***
Shturman Shcherbinin	44354.0	Arctic Gateway	SHI*	2017	GNS***
Shturman Koshelev	44354.0	Arctic Gateway	SHI*	2017	GNS***

\* Samsung Heavy Industries, Busan, South Korea

\*\* JSC Admiralty Shipyards, St. Petersburg, Russia

\*\*\* LLC Gazprom Neft Shipping

Since the Arctic Gateway is also a project of PJSC Gazprom (Gazprom Neft), Novy Port oil is delivered to the Nord RTC in the Kola Bay. The two grades of oil Novy Port and ARCO are treated separately.

Novy Port oil is classified as light crude (density equal to Brent with low sulfur content (about 0.1%) and is traded at a premium to Brent of USD 3.0 per barrel in the world market.

If we try to solve the problem of transporting Arctic oil by the Northern Sea Route to the East, we will get the following initial data. The southern route of the NSR (through the Vilkitskiy Strait) is ice-free for a maximum of 100 days a year. According to the state of the Arctic ice fields in 2020, when the historical minimum of the Arctic ice extent was recorded (September 16, 2020) at the level of 3.818 million km<sup>2</sup>, the southern route was ice-free for 107 days: from July 15 to October 29. During this period, the speed of shuttle tankers of the reinforced ice class Arc6–Arc7 in clear water is about 15–16 knots.

The average distance from shipping centers in the Pechora Sea (Varandey and Pirazlomnoye projects) to the Korean port of Yeosu (transshipment point for conventional tankers with deadweight of 150 tons or more) is about 4850 miles, from Cape Kamenniy (Arctic Gateway project) — 3650 miles. On clear water, a circular voyage will be only along the course at a speed of 16 knots for 26 and 19 days, 4 and 5 circles, respectively. During this period of navigation, a maximum of  $4 \times 5 \times 70 = 1400$  thousand tons can be transported from the Pechora Sea and the same amount  $5 \times 7 \times 40 = 1400$  thousand tons from the Gulf of Ob; in all, 2.8 million tons, or approximately 12–13% of oil produced in the Arctic. To ensure transportation in ice fields of varying intensity, ice-breaking support is necessary [6]. Even with the mobilization of all existing nuclear-powered ice-breakers, these forces would not be enough to ensure safe communications in the eastern Arctic: from the Vilkitskiy Strait to the Bering Strait.

There is some experience of passage along the NSR from west to east during the summer navigation period of 2019 of two shuttle tankers of Sovcomflot of Aframax size, ice class ICE–1B, average deadweight — 113.2 thousand tons, flag of Liberia, built in 2018 by South Korean shipyard Hyundai Heavy Industries. Two “green” (operating on LNG, i.e. Dual Fuel) tankers “Prospect Mendeleev” and “Lomonosovskiy Prospekt” during 02.10.—01.11.2019 and 28.09.—28.10.2019, respectively, performed a voyage from the port of Primorsk to China (most likely, to the port of Yeosu for transshipment to conventional tankers) and delivered a total of 200 thousand tons of crude oil. The length of the route is about 8500 miles, that is, the average speed on the route was quite decent — 12 knots.

This was a test passage, and in order to organize commercial transportation of oil along the NSR year-round to the east from the oil loading ports operating in the north-west of Russia, it is necessary to ensure the operation of the southern route in the “canal mode”. This will require a significant increase in the number of reinforced ice-class shuttle tankers allowed to operate in the Arctic ice fields.

At the same time, it is necessary to take into account the increasing danger of environmental pollution during oil transportation in difficult arctic conditions [7, 8].

Therefore, traditional routes remain for the transportation of Russian oil by sea to the Asia-Pacific countries: Murmansk, Arkhangelsk, Primorsk, Ust-Luga — Gibraltar — Port Said — Suez — Red Sea — Indian Ocean and further along the routes of the “Southern Silk Road”; the same from Novorossiysk through the Suez Canal. To eliminate the risk of sanctions when passing through the

Strait of Gibraltar, a route around Africa can be used. This route is 6000 miles longer than the Gibraltar–Port Said–Suez–Red Sea route. If the sanctions risks are somehow compensated for by discounting prices, in any case, understanding the importance for the Russian economy of oil exports under the conditions of the announced restrictions, in order to minimize the disruption of oil supplies by sea, it is necessary to mobilize the forces and means of the Russian Navy to ensure solution to this problem.

As a positive example of coordinating the interaction of fleets, we should cite the experience of ensuring the transition of the Akademik Cherskiy pipe-laying vessel from the Power of Siberia-3 gas project area (Sea of Japan) to complete the Nord Stream-2 project (Baltic Sea), that is from the port of Nakhodka to Kaliningrad, 09.02–03.05, 2020.

Details about this transition can be found in [9, p. 58–60]. The Akademik Cherskiy crossed the Pacific section of the passage accompanied by the Pacific Fleet's large anti-submarine ship Admiral Vinogradov, and at the exit from the Strait of Malacca, the escort was reinforced by the Baltic Fleet patrol ship Yaroslav Mudryy.

Then the group of ships continued moving towards the Gulf of Aden to meet with the auxiliary vessels of the Russian Navy: the tanker Yelnya and the tugboat Viktor Konetskiy, ensuring the safe passage of ships through the Bab-el-Mandeb Strait, the Red Sea and the Suez Canal. In this way, the Russian Navy ensured the safety of the passage through the turbulent areas of the oceans of an important civilian ship.

However, even with such escort by the Russian Navy, at the end of March, Akademik Cherskiy abruptly changed course to the Suez Canal and continued moving towards Europe around Africa.

One of the reasons for this maneuver was the unfriendly actions of the British authorities of Gibraltar: at the request of the United States in connection with sanctions, on July 4, 2019, a tanker under the Panamanian flag Grace1 (Adrian Darya 1) was detained in international waters in the Gibraltar area by British special forces. The ownership of the tanker, which delivered Iranian oil to Syria in circumvention of EU sanctions (the legality of these sanctions is highly doubtful), is attributed to the Russian company Russian Titan Shipping Line.

The highly probable unfriendly actions of Great Britain should be taken into account when tankers with Russian oil pass through both the Strait of Gibraltar and the English Channel. Therefore, the Akademik Cherskiy made the transition to the Baltic Sea through the English Channel and across the North Sea, accompanied by the ships of the Northern Fleet — the rescue tug Nikolay Chiker and the tanker Akademik Pashin, as well as the patrol ship of the Baltic Fleet Yaroslav Mudryy, without entering European ports.

Thus, correctly chosen route and optimally arranged traffic on the sea routes contribute to safe oil deliveries to the given regions and ensure the principle of commercial expediency.

### Conclusion

The main task of sea and pipeline exports of crude oil and oil products in 2022 is to fill the oil and gas revenues of the Federal Budget of the Russian Federation and the National Welfare Fund to ensure the development of the Russian economy with the unconditional fulfillment of the state defense order for the successful implementation of the goals of the SMO.

The age-old Russian question is “what to do?” with 150 million tons of crude oil and 100 million tons of petroleum products. This is almost half of Russian production — 46.6%. From the standpoint of only two considerations — filling the budget + holding SMO — we need the same oil and gas revenues that were mentioned above, including the NWF. So far, there are resources, but it is not known how long the SMO will last.

It is impossible to reduce production in general, and oil in particular. At the same time, for some, maybe a long time, we will have to accept a discount on Russian oil. It is necessary to work subtly and diplomatically in the OPEC+ system to keep oil prices that ensure profitability, taking into account the forced discount.

Oil production in Russia in 2021 amounted to 536.4 million tons, and domestic consumption — 132.1 million tons, or 25%. If we follow the logic of China in terms of focusing on the domestic market, then Russia will not be able to master the same 150 and 100 million tons of oil and oil products. In China, the population is approximately 1420 million people, in Russia — 146 million people. The difference is 10 times. Consumption in China is about 720 million tons, therefore, in Russia it should also be ten times less, or about 72 million tons. Taking into account Russian mismanagement and Chinese thrift, the optimum is somewhere in the middle — a little over 100 million tons.

In order to develop additional resources in the indicated volumes, it is necessary to build new modern refineries, develop petrochemistry, and create technologies of oil consumption, rather than of oil extraction. We need to work on this. It will take a lot of time. Therefore, it is necessary to develop new sales markets, build our own tanker fleet, an insurance system for this fleet and develop new sea communications, that is, ensure the mobility of the export of oil reserves.

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