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## Economic Conjunction of Arctic Natural Gas in the New Geopolitical Conditions

**Sergey Yu. Kozmenko**<sup>1✉</sup>, Dr. Sci. (Econ.), Professor, Chief Researcher

**Arina S. Kozmenko**<sup>2</sup>, Cand. Sci. (Econ.), Researcher

<sup>1,2</sup> Luzin Institute for Economic Studies, Federal Research Centre “Kola Science Centre of the Russian Academy of Sciences”, ul. Fersmana, 24a, Apatity, Russia

<sup>1</sup> fregat306@mail.ru ✉, ORCID: <https://orcid.org/0000-0002-3728-8357>

<sup>2</sup> kozmenko\_arriva@mail.ru, ORCID: <https://orcid.org/0000-0002-3623-308X>

**Abstract.** The special military operation (SMO) organically fits into the logic of the century-long confrontation between Russia and Britain, and later — the USA, known since the late 18th century as the “Great Game”. One of the goals of the SMO on a national scale is not only to restore Russia’s dominance in the Black Sea and the Sea of Azov, but also to counteract the achievement of such a goal by NATO countries. Russia uses various sources of funding the SMO, including oil and gas revenues of the Federal budget. Natural gas, unlike oil, is not under sanctions. There is nothing to compensate for the loss of revenues from the reduction of gas exports to Europe: practically all Russian pipelines (except for the Power of Siberia-1 with a capacity of only 38 billion m<sup>3</sup>) are oriented to the West; liquefied natural gas from the Yamal LNG and Sakhalin-2 projects is contracted for many years ahead. The EU countries have nothing to compensate for the lost volumes, except coal, but only Russian coal. Europe needs gas, Russia needs currency for the SMO, so it is necessary to find a solution to the problem.

**Keywords:** *Great Game, anti-Russian sanctions, Arctic natural gas, major gas projects, oil and gas revenues, gas export mobility*

### Introduction

The geopolitical organization of the world space is based on the insurmountable contradiction between maritime (lords of the sea) and continental (lords of the land) civilizations [1]. The confrontation between them runs along the line of contact “ocean vs continent”, around which countries and regions are localized, gravitating towards one of the civilizations, depending on the emerging situation on the geopolitical atlas of the modern world. Both civilizations, when implementing a global liberal project, strive for world dominance both in geopolitics, economics and other areas of global and regional development. This ultimately leads major maritime and continental powers to confrontation to achieve world domination in full or in part (for example, on the principle of dominance on the sea or in the air), which is implemented accordingly on the basis of “Sea power” [2; 3] (Theory of Sea Power) and the “concept of absolute dominance of the sea” [4] — “power at sea decides the fate of history” and “who owns the sea, owns everything” — sea powers and the concept of “Heartland” — “who owns the core land (that is, Central Eurasia), owns the world island (mainland Eurasia), and who owns the world island, owns everything” [5].

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From the standpoint of a systems approach as a basic methodology of spatial research, it should be emphasized that maritime and continental civilizations constitute a single whole, trying to weaken each other, but not to destroy completely: disappearance of one of the components from the geopolitical atlas of the modern world will lead to a worldwide collapse, a catastrophe on a global scale, as a result of which the phenomenon of “ocean vs continent” will disappear.

The confrontation “ocean vs continent”, known as the epic “Great Game”, began to take shape in a geopolitical structure at the turn of the 18th–19th centuries, when elements of maritime civilization began to emerge in the Russian Empire of that time. The “Great Game” began in the Mediterranean Sea in the struggle for possession of the island of Malta in September 1800 between the Anglo-Saxons (British Empire) and Russia. The Game continues. Today the Anglo-Saxons (USA, NATO) continue to oppose Russia.

The practice of interaction on the fields of the “Great Game” is characterized by a maxim that has been known for more than a hundred years [6, pp. 41–118]: “Only friendship with the Anglo-Saxons can be worse than enmity with them”.

However, since the times of Peter the Great, “friendship with the West” has been a key element of Russian foreign policy. As a result, the country turned from a leader into an imitator of the Western worldview with an expressed desire to be included in the orbit of the “collective West”. The country rushed to the West, ignoring the laws and rules of the “Great Game” — this became the basis of the geopolitical drama of Russia in the modern times of the late 20th–early 21st centuries [7].

In the gas sector, it was manifested in the construction of redundant pipeline communications, which led to the excess of the pipeline gas supply over demand, which over the past ten years (2011–2022) has practically “frozen” with a downward trend at the level of 580–550 billion m<sup>3</sup> [8, p. 29–36]. The maximum value of European imports in these years (not counting Turkey) was 270 billion m<sup>3</sup> (of which 132 billion m<sup>3</sup> were Russian) of pipeline gas and about 70 million tons of LNG, including 12.6 Russian. In such conditions, Nord Stream 2 was clearly unnecessary.

This has led to a significant convergence of gas prices in Europe with gas quotations at Henry Hub in the USA and has already started to negatively affect the competitiveness of American corporations compared to European ones.

This is the essence of the conflict between the United States, Europe and Russia in the gas sector — just business and nothing personal. “The US has decided that over the past twenty–thirty years we have been cooperating too well with Germany. Or rather, it cooperates too well with us. A powerful alliance has emerged, based on our energy resources and German technologies. It began to threaten the monopoly position of many American corporations”<sup>1</sup>.

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<sup>1</sup> Interview with the Minister of Foreign Affairs of the Russian Federation S.V. Lavrov for the informational and educational lesson “Talking about the important”, dedicated to the topic “Russia and the world”, Moscow, February 12, 2023. URL: [https://www.mid.ru/ru/foreign\\_policy/news/1853575/](https://www.mid.ru/ru/foreign_policy/news/1853575/) (accessed 14 February 2023).

As a result of the development of strategic nuclear forces, having passed through the stages of the Korean (1950–1953) and Vietnamese (1965–1974) wars, overcoming the Cuban missile crisis (1962), where the parties demonstrated an approximate equality of forces and means of destroying each other, a long-awaited pause came in the “Great Game”, which lasted until the beginning of the SMO. During this peacetime period, both sides practically lost the skill of interaction and coordination in front-line military operations.

By the mid-1970s, oil and gas were finally established as the basis of USSR exports. During this period, the economic situation of these energy resources on world markets grew so much that oil and gas revenues became part of the state budget of the USSR.

The formation of the structure of oil and gas exports began with the commissioning (1964) of the Druzhba oil pipeline with a total capacity of 66.5 million tons of crude oil per year. The basic, mainly social, even humanitarian goal of this project was to supply crude oil to the western Soviet Union republics — Lithuania, Latvia (via the latter — Estonia), Belarus and Ukraine (via the latter — Moldova). Druzhba came to other Eastern European countries — members of the Warsaw Pact: Poland, East Germany (GDR), Czechoslovakia, Hungary, and Yugoslavia (Croatia and Slovenia).

It should be emphasized that never in the entire history of economic cooperation along the “Russia–Europe” line, even during the Cold War era, energy and other resources, for example, uranium, titanium and aluminum, fertilizers and grain, were considered by our country as a geopolitical tool, as a means of pressure on the EU in one sphere or another.

Until recently, Europe was the main trading partner of both the Soviet Union and modern Russia; trade with EU countries was the main source of replenishing gold and foreign exchange reserves. At the same time, the currency was spent not only on goods on the domestic consumer market, but also, most importantly, on the acquisition of complex technologies that would allow the development of advanced areas of domestic energy and industry, including the military-industrial complex.

During the period of maximum rise of economic conjuncture of the national economy (approximately 1964–1982), over the course of 20 years, our country acquired and developed competencies in basic sectors of the economy (many of them were lost, for example, in the field of shipbuilding). This made it possible to save the economy and the country from final ruin during the period of perestroika and market reforms.

But, most importantly, in the 1990s, it was possible to create and maintain sea-based strategic nuclear forces (SNF) and subsequently update these forces at the level of modern standards, which allows taking a worthy position in the new geopolitical conditions and meeting the current challenge. This is Sevmash Production Association.

### ***Economic turnover of Arctic natural gas in Europe under new geopolitical conditions***

Oil and gas revenues (OGR) are still of significant importance in the formation of the revenue part of the Federal Budget (FB), the maximum OGR over the last five years was 42% in 2022, of which about 85% are oil and about 15 % — gas revenues, including mineral extraction tax and export customs duties.

The author's articles are devoted to fluctuations in the economic conjunction of oil in new geopolitical conditions at the end of globalization in the energy markets of Europe and the Asia-Pacific region [9, pp. 38–54], [10, pp. 136–141].

The basis of the gas transportation system (GTS) of Ukraine is the Soyuz gas pipeline, built on the basis of the Orenburg gas condensate field in 1975–1979 by the Soviet Union and other CMEA countries (Council for Mutual Economic Assistance). The length of the 26 billion m<sup>3</sup> capacity Soyuz pipeline along the Orenburg – western border of the USSR route is 2750 km, including 300, 882 and 1568 km through the territory of Kazakhstan, Russia and Ukraine, respectively. The Soyuz's entry point into the territory of Ukraine is the Sokhranovka gas measuring station (GMS) on the territory of the LPR. Therefore, pumping through this GMS was stopped by the Ukrainian side in May 2022.

The exit points of the Soyuz, as well as the entire GTS of Ukraine, towards Western Europe are the Beregovo GMS (Hungary), the Tekovo GMS (Romania) and the Uzhgorod GMS (Slovakia). From Slovakia, gas flows to the Czech Republic, and from there — to Western European countries: Germany, France, Switzerland (via the OPAL gas pipeline), Austria, Slovenia and Italy (via the TAG gas pipeline).

This configuration of the Union was politically motivated, as the pipeline was built as part of the first major gas-for-pipes deal between the Soviet Union and West Germany. Despite the fact that the northern route (Belarus — Poland — East Germany) was significantly shorter (later, the Yamal–Europe gas pipeline was laid this way), the current southern route was chosen at the insistence of Germany.

The commissioning of the Soyuz in 1980 was confirmation of Russia's real breakthrough to the West, which acquired not only a significant economic, but also a geopolitical context.

In addition, over the past forty-odd years, natural gas, along with oil and petroleum products, has become so organically integrated into the population and consumption structure of the “collective West” that, as the events of 2022–2023 show, disruptions in the logistical supply chains can and have led to social collisions on a national scale.

In the early 1980s, the GTS of Ukraine was intensively expanded due to the Ukrainian branches of the gas pipelines “Urengoy — Pomary — Uzhgorod” (1983) and “Progress” — “Yamburg — Western border of the USSR” (1988), with a length of 1160 km each and a capacity of 28.0 and 26.0 billion m<sup>3</sup> per year, respectively. The remaining export gas pipelines, including entrances to the territory of Ukraine through the GMS of Belarus, are less powerful and are capable of transporting gas in a volume of about 60 billion m<sup>3</sup>. Thus, the throughput capacity of the Ukrainian gas

transportation system on the border with Russia is 288 billion m<sup>3</sup> per year (through 12 GMSs), on the border with the EU — 142.5 billion m<sup>3</sup> (11 GMSs). The historical maximum of gas transportation to Europe was reached in 1998 — 141.0 billion m<sup>3</sup>.

The real capacity of the Ukrainian GTS today is not clear. The system requires a thorough overhaul.

Constant gas wars with Ukraine have led to the fact that 45.6% of the total capacity of the Ukrainian GTS under the current contract (2020–2024) to pump gas on a take-or-pay basis in 2020 (65 billion m<sup>3</sup>) and only 28% (40 billion m<sup>3</sup>) in 2021–2024 were in demand.

The logic is as follows: in 2021 and until May 2022, gas was pumped through Ukraine through the Sudzha GMS (Progress pipeline) and the Sokhranovka GMS (Soyuz pipeline) with a capacity of about 26 and 14 billion m<sup>3</sup> (not all lines of the Soyuz are in use), which in total amounts to the same 40 billion m<sup>3</sup> or 109.6 million m<sup>3</sup> daily. The exit points of both gas pipelines from the territory of Ukraine are the same (Uzhgorod, Beregovo and Tekovo GMSs). In May 2022, during the SMO, the Sokhranovka GMS (located on the territory of the LPR) was out of the control of the Ukrainian side. Only the Sudzha GMS remained (this entry point of Progress into the territory is located in the Sumskaya region), the capacity of which is no more than 72 million m<sup>3</sup> daily versus 109.6 million m<sup>3</sup> under the contract.

In the first half of February 2023, the pumping volume was recorded at 31–36 million m<sup>3</sup>, which corresponds to an annual load of 11.3–13.1 billion m<sup>3</sup> of natural gas<sup>2</sup>. This pipeline ensures gas transportation along two branches: GMS Sudzha — GMS Kishinev through Kremenchug, Nikolaev and Odessa, ensuring gas supplies to Moldova and GMS Sudzha — GIS Uzhgorod, GMS Beregovo and GMS Tekovo — transportation of gas to Slovakia, Hungary and Romania, respectively.

From October 1, 2021, PJSC Gazprom began supplying natural gas to Hungary bypassing Ukraine via the Balkan Stream gas pipeline (a continuation of the European branch of the Turkish Stream), while the virtual reverse natural gas flow from Hungary to Ukraine is naturally closed, as well as Beregovo GMS on the Ukrainian–Hungarian border<sup>3</sup>.

Ukrainian gas transit to Romania for further pumping to southern European countries was also stopped with the commissioning of the Turkish Stream in January 2020; gas transit through Romania actually stopped. Countries in southern Europe, including Romania and Moldova, consider the “Turkish route” to be more cost-effective and free of geopolitical risks.

Thus, Russia supports the transportation of gas via the Sudzha — Uzhgorod — Slovakia gas pipeline, most likely in order to fulfill its obligations to preserve the Ukrainian route. This is how Russia sells spot gas supplies to Europe with a deadline for tomorrow.

<sup>2</sup> Postavki cherez Ukrainu vyrosli na 15% [Deliveries through Ukraine increased by 15%]. RIA NOVOSTI, 15.02.23. URL: <https://www.ria.ru> (accessed 17 February 2023).

<sup>3</sup> «Gazprom» nachal postavki gaza v Vengriyu v obkhod Ukrainy, i ona tut zhe prekratila tranzit [Gazprom began supplying gas to Hungary, bypassing Ukraine, and it immediately stopped transit]. BFM.RU, 01.10.21. URL: <https://www.bfm.ru/news/482656> (accessed 18 February 2023).

The logic of such a Russian–Ukrainian agreement is as follows. For pumping 40 billion m<sup>3</sup> of gas on a take-or-pay basis through the Sudzha gas pipeline with a length of 1160 km, Ukraine receives a transit fee based on the average European rate of USD 2.8 per 1 thousand m<sup>3</sup> per 100 km. In any case, regardless of the volume of actual pumping, Russia has to pay for these 40 billion m<sup>3</sup> or USD 1.3 billion. This will allow Ukraine to maintain the GTS — this is USD 1 billion plus USD 300 million in profit.

The break-even point is reached at an annual pumping volume of 30 billion m<sup>3</sup>. If after 2024 the volume of pumping decreases, then the Ukrainian gas transportation system will apparently fall into disrepair.

It should be emphasized that even such seemingly small volumes are significant for both Gazprom and the Russian federal budget. In 2022, PJSC Gazprom pumped an average of 41–42 million m<sup>3</sup> of gas per day through the Sudzha gas pipeline<sup>4</sup>, or about 15.1 billion m<sup>3</sup> per year.

The rest of the European gas transport communications are currently not operational. These are, first of all, both lines of the Nord Stream 1 gas pipeline and one line of the Nord Stream 2 gas pipeline, blown up on September 26, 2022. The second line of the Nord Stream 2 gas pipeline cannot be used for geopolitical reasons. For the same reasons, on March 30, 2022, the Polish side stopped pumping Russian gas through the Yamal–Europe gas pipeline, passing from Russia to Germany in transit through the territory of Belarus and Poland.

The design capacity of each string of the Nord Stream 1 and 2 projects is 27.5 billion m<sup>3</sup>, and the Yamal–Europe gas pipeline — about 33 billion m<sup>3</sup>.

In fact, at present, the only gas pipeline is Turkish Stream, which consists of Turkish and European branches, with a capacity of 15.75 billion m<sup>3</sup> each. Natural gas supplies to southern and south-eastern European countries in 2022 amounted to about 15.0 billion m<sup>3</sup>.

Attempts to attack the Turkish Stream gas pipeline were made in October 2022 and are planned now, in February 2023, against the backdrop of the earthquake in Turkey, and are part of the modern version of the “Great Game”.

This, according to the American magazine *National Interest*, “guarantees transatlantic energy solidarity, breaking the big gas ring that emerged after the construction of Nord Stream 2 and Turkish Stream, which will finally deprive Russia of its position as a gas monopoly in the European part of the continent”<sup>5</sup>.

In 2021, exports from Russia to Turkey amounted to 26.7 billion m<sup>3</sup>, including 15.98 billion m<sup>3</sup> via Blue Stream (under the contract until 2026 at an oil-linked price of USD 800 per 1 thousand m<sup>3</sup>) and 10.72 billion m<sup>3</sup> at spot prices of USD 1400 per 1 thousand m<sup>3</sup>. Total gas consumption in Turkey in 2022 amounted to about 61 billion m<sup>3</sup>, and there is an upward trend.

<sup>4</sup> «Gazprom» uvelichil na 9,5% prokachku gaza cherez Ukrainu [Gazprom increased gas pumping through Ukraine by 9.5%]. *Kommersant*, 18.02.23. URL: <https://www.kommersant.ru> (accessed 18 February 2023).

<sup>5</sup> SShA probuyut vyvesti «Turetskiy potok» iz stroya, prikryvayas' zemletryaseniem [The United States is trying to disable the Turkish Stream under the guise of an earthquake]. *REGNUM*, 14.02.23. URL: <https://www.regnum.ru/news/3780223.html>

At the maximum, gas exports from Russia to Turkey in 2023 could increase to 30 billion m<sup>3</sup>; Ukrainian transit would amount to at least 35–40 billion m<sup>3</sup>, and supplies along the European branch of the Turkish Stream will be 10–15 billion m<sup>3</sup>. The total is about 80 billion m<sup>3</sup>. In 2022, gas exports from Russia to the EU countries amounted to 68 billion m<sup>3</sup> (due to the work of Nord Stream 1 and the Yamal–Europe gas pipeline in the first half of the year), in 2023 the situation is more complicated: out of 80 billion m<sup>3</sup> (this is Russia's maximum capability in current conditions) and excluding Turkey's 30 billion m<sup>3</sup>, 50 billion m<sup>3</sup> remains for the EU. In a stable 2021, Russia exported 132 billion m<sup>3</sup> of gas to Europe. That is, the shortfall in gas import volumes in 2022 for the EU amounted to 64, and in 2023 — to about 82 billion m<sup>3</sup> [8, p. 37]. A logical question is whether Europe will be able to somehow compensate for such shortfalls in pipeline gas imports, and whether Russia will be able to compensate for the falling revenues of the federal budget from such a decrease in exports?

In total, Russian pipeline exports in 2023 are projected at 125 billion m<sup>3</sup>: 80 billion (Europe and Turkey) and 30 billion (CIS countries, including Kazakhstan and Belarus), plus 15 billion (maximum, China via the Power of Siberia 1). This is 76 billion m<sup>3</sup> or almost 38% less than in the relatively stable 2021 (201 billion m<sup>3</sup>).

In 2021, the gas component of OGR amounted to 1703.2 billion rubles, including mineral extraction tax — 577.8 and export customs duty — 1125.4 billion rubles. In 2023, out of 125 billion m<sup>3</sup> of projected exports, spot gas will amount to only 50 billion m<sup>3</sup> (Ukrainian transit and Turkish gas from Turkish Stream), the rest is contract gas. That is, to maintain balance, the price of gas on the spot (these 50 billion m<sup>3</sup>) should increase by 2.5 times as compared to 2021.

Let us emphasize that such an imbalance has arisen due to the shutdown of the Nord Stream 1 and Yamal Europe gas pipelines, with 55+33=88 billion m<sup>3</sup> of transport capacity taken out of economic turnover. It should be especially noted that these gas pipelines supply gas to two EU countries — Germany and Poland. At the same time, in 2022 (relative to 2021), the total consumption of natural gas in 27 EU countries and the UK decreased from 590 to 545 billion m<sup>3</sup>, while domestic production increased slightly from 212 to 227 billion m<sup>3</sup>. Pipeline gas consumption decreased by almost 84 billion m<sup>3</sup>, but LNG consumption in terms of free gas increased by almost 61 billion m<sup>3</sup>.

An increase in LNG supplies to EU countries (Russia alone increased LNG exports to the EU in 2022 by 15%, from 17.4 to 20.0 billion m<sup>3</sup> compared to 2021) is unlikely to affect Poland and Germany significantly. Poland has only one regasification terminal in Świnoujście with a capacity of 5 billion m<sup>3</sup> per year, while Germany has no such terminals at all. This means that the deficit of pipeline gas imports in 2023 will mainly manifest itself in these countries in the winter of 2023–2024. Gas consumption in Germany is about 91 billion m<sup>3</sup> per year, and in Poland — 21.5 billion m<sup>3</sup>. If divided proportionally, Germany will have a deficit of 66 billion m<sup>3</sup>, and Poland — 16 billion m<sup>3</sup>, i.e. approximately 73% of the consumption level.

An increase in gas supplies to Europe is also possible through LNG. But Russia's capabilities are very limited. Yamal-LNG is the only LNG plant operating in the Arctic and European part of Russia.

To support the Yamal LNG project, the Arctic gas fleet consisting of 15 ships was built at the Daewoo Shipbuilding & Marine Engineering Company (DSME), Seoul, South Korea (Table 1).

Table 1

*Arctic fleet of gas tankers*

Name	Operation, year	Operator	Flag
Christophe de Margerie	January 2017	Sovcomflot (Russia)	Cyprus
Eduard Toll	December 2017	Teekay (Canada)*	Bahamas
Rudolf Samoylovich	December 2017	Teekay (Canada)	Bahamas
Nikolay Evgenov	June 2019	Teekay (Canada)	Bahamas
Vladimir Voronin	August 2019	Teekay (Canada)	Bahamas
Georgiy Ushakov	October 2019	Teekay (Canada)	Bahamas
Yakov Gakkel	November 2019	Teekay (Canada)	Bahamas
Boris Vilkitskiy	November 2017	Dynagas Ltd (Greece)**	Cyprus
Fedor Litke	November 2017	Dynagas Ltd (Greece)	Cyprus
Georgiy Brusilov	November 2018	Dynagas Ltd (Greece)	Cyprus
Nikolay Zubov	December 2018	Dynagas Ltd (Greece)	Cyprus
Boris Davydov	January 2019	Dynagas Ltd (Greece)	Cyprus
Vladimir Rusanov	March 2018	MOL (Japan)***	Hong Kong
Vladimir Vize	October 2018	MOL (Japan)	Hong Kong
Nikolay Urvantsev	July 2019	MOL (Japan)	Hong Kong

\* Teekay with its Chinese subsidiary China LNG Shipping (Holdings) Limited (China LNG)

\*\*Dynagas Ltd with leading Chinese shipping companies Sinotrans and China LNG Shipping

\*\*\* MOL (Mitsui O.S.K. Lines Ltd) with the participation of China Shipping Development

The Arctic gas fleet includes reinforced ice-class Arc 7 Yamalmax gas tankers; these vessels are optimized for passage through the approach channel to the port of Sabetta on the Yamal Peninsula. The channel is 295 meters wide and 15.1 meters deep. The project was developed by the Finnish company Aker Arctic at the request of Sovcomflot. Design cargo capacity is 172.600 m<sup>3</sup> of LNG. The average cost of one gas tanker is about USD 340 million, and the entire tender is USD 5.5 billion.

A design feature of these gas carriers is the ability to navigate "stern first" in difficult ice conditions (with ice thickness up to 1.5 m) at a speed of about 5.5 knots, and traditionally ("bow first") in open water at a speed of 19.5 knots.

Yamalmax is a double acting ship, which is achieved by three Azipod thrusters with a power of 15 MW each. Such thrusters are categorized as strategic imports subject to sanctions restrictions. The main issue during the construction of Arc 7 tankers is the installation and supply of the Azipod thrusters, which have no analogues in Russia yet. This has already manifested itself at the beginning of the construction of the next series of Yamalmax vessels at the Zvezda Shipbuilding Complex (SBC) for the Arctic LNG-2 project.

The Yamal LNG project involves the Russian company Novatek (50.1%), the French Total and the China National Petroleum Corporation (CNPC) — 20% each, as well as the Chinese Silk Road Fund Co Ltd. — 9.9%. The total capacity of three large-tonnage and one medium-tonnage ("Arctic Cascade") lines is about 18.6 million tons.



It is important to note the significant fluctuations in the economic situation of pipeline gas relative to LNG, depending on the transport range of supply. All other things being equal, pipeline delivery is preferable (more cost-effective) to sea supply at a distance of up to 2500 km, and sea supply — at a longer distance, over 4500 km. The price advantage of LNG is especially evident when supplying Arctic natural gas to Europe [11, pp. 554–560].

The Yamal-LNG project was almost entirely contracted for terms ranging from 25 to 40 years back in 2014, including more than 50% of total capacity by project participants Novatek Gas & Power (2.86 million tons), Total Gas & Power (4 million tons) and CNPC (3.0 million tons). In addition, the Russian Gazprom Marketing & Trading Singapore (GM&T) signed a contract for the supply of up to 2.9 million tons of LNG per year for resale to the Indian GAIL, and the Gas Natural Fenosa Company (Spain) signed a contract for 2.5 million tons. Engie (France) has long-term contracts for Arctic gas for 1 million tons, British Shell — 0.9 million tons, and the largest energy trader Gunvor (Cyprus) — 0.5 million tons. The remaining LNG is traded on the spot market, in particular, TTF (Netherlands).

The Yamal LNG project is focused mainly on the West and has provided LNG supplies to Europe at the level of 12.5 and 14.4 million tons in 2021 and 2022, respectively.

Pricing with project participants and other traders is flexible and takes into account regional peculiarities of pricing natural gas, including LNG: for Europe, the Groningen principle of determining gas prices is used based on the oil basket (fuel oil and gas oil), the contract with CNPC is linked to the “Japan crude cocktail”.

In 2022, all Russian LNG projects operated at almost full capacity: Yamal LNG — 18.6; Sakhalin-2 — 11.6; Cryogas-Vysotsk — 0.7 and Portovaya LNGC (operating since September 2022) — 1.5 million tons; in total, taking into account losses of about 32.5 million tons, which in terms of free gas is about 46 billion m<sup>3</sup>, this is 16% more than in 2021.

Russian LNG exports in 2022 were distributed as follows. Deliveries to Europe increased from 17.4 in 2021 to 20.0 billion m<sup>3</sup> in 2022 due to the launch of the Portovaya LNGC project in September 2022.

In the same years, Russian LNG exports to the Indo-Pacific region increased from 22.2 to 26.0 billion m<sup>3</sup> due to a significant, 6.3-fold increase in Russian LNG imports to India from 0.6 to 3.8 billion m<sup>3</sup>.

In general, in 2022, oil and gas revenues of the Federal budget of the Russian Federation increased due to the growth of oil and gas prices by 2500.0 billion rubles and reached a level of 11556.5 billion rubles versus 9056.5 billion in 2021.

### ***Russia's oil and gas revenues within the current planning horizons (up to 2025)***

Under the conditions of the SMO, the strategic task of the national economy is the formation of the revenue side of the federal budget. The main financial instrument for solving this problem is oil and gas revenues (OGR), which consist of three main types of payments: mineral

extraction tax (MET), tax on additional income from hydrocarbon production (EPT) and export customs duty (ECD).

Regarding the combination of MET and ECD on crude oil, a tax maneuver has been in effect since August 2018, with the aim of gradually reducing of ECD to 0 by 2024 and a proportional increase of MET to this decrease.

ECD is adjusted annually by introducing a corresponding coefficient into the formula for ECD calculating, the value of which for the period from 2019 to 2024 is defined as <sup>6</sup> 0.833 from January 1, 2019 to December 31, 2019, 0.667 from January 1, 2020 to December 31, 2020, 0.5 from January 1, 2021 to December 31, 2021, 0.333 from January 1, 2022 to December 31, 2022, 0.167 from January 1, 2023 to December 31, 2023, 0 from January 1, 2024.

The specific value of ECD for crude oil and petroleum products is calculated by the Ministry of economic development on a monthly basis and is posted on the Ministry's website no later than 4 days before the start of the next month. Monthly information from the Ministry of economic development also contains current values of ad valorem customs duties on natural gas and LNG.

For example, in February 2023, crude oil 2 709 was subject to ECD rate of USD 12.8 per 1000 kg in accordance with the Information of the Ministry of economic development dated January 17, 2023, and in March 2023, the ECD rate was USD 14.2 per 1000 kg in accordance with the Information of the Ministry of economic development dated February 15, 2023. The ECD rate for natural gas is ad valorem and amounts to 30% <sup>7</sup> of the customs value of exported gas. ECD for LNG is equal to 0.

The value of MET on crude oil is determined by multiplying the base rate of 919 rubles per ton by a coefficient determined on the average price of a barrel of Urals oil (USD) and the current USD exchange rate. The value of this coefficient is published in information letters of the Federal Tax Service. For example, in May 2022, the MET rate for crude oil was about 12800 rubles.

The procedure for calculating MET for natural gas is the same. The base rate from January 2023 is 35 rubles per 1000 m<sup>3</sup>. This rate is multiplied by an adjustment factor, the value of which is published in information letters of the Federal Tax Service. The average value of MET and ECD in the stable year 2021 was 823 and 5600 rubles per 1000 m<sup>3</sup>.

To increase the level of OGR, the mineral extraction tax for PJSC Gazprom is increased by 50 billion rubles monthly in 2023–2025, totaling 1800 billion rubles of additional OGR. The relevant law was adopted in November 2022. In addition, the introduction of a tax rate of 35 rubles per 1000 m<sup>3</sup> from January 1, 2023 (not from July 1, 2023, as previously planned) will bring an additional 200 billion rubles.

The ratio of the OGR components in 2021 is presented in table 2.

<sup>6</sup> Decree of the Government of the Russian Federation dated December 14, 2018. No. 1523. URL: <https://www.consultant.ru/> (accessed 21 February 2023).

<sup>7</sup> Decree of the Government of the Russian Federation dated November 27, 2021. No. 2068. URL: <https://www.consultant.ru> (accessed 21 February 2023).

Table 2

*Federal budget revenue structure, 2021, billion rubles*<sup>8</sup>

Indicator	Value	% to*	% to**	% to***	% to****
FB revenues 2021*	25286.4	100.0	no	no	no
Oil and gas revenues** – total	9056.5	35.8	100.0	no	no
Oil revenues***	7394.9	29.3	81.7	100.0	no
– MET – mineral extraction tax	6295.7	24.9	69.5	85.1	no
– ECD – export customs duty, oil and petroleum products	1099.2	4.3	12.1	14.9	no
Gas revenues****	1940.6	7.7	21.4	no	100.0
– MET – mineral extraction tax, gas and condensate	815.2	3.2	9.0	no	42.0
– ECD – export customs duty	1125.4	4.5	12.4	no	58.0
Additional income from hydrocarbon production tax (EPT)	1008.7	4.0	11.1	no	no
Refund of excise tax on crude oil sent for processing	–1287.7	0.0	–14.2	no	no
Non-oil and gas revenues – total	16229.9	64.2	no	no	no

It should be emphasized that, within the framework of the budget rule in force in 2021, 58% of gas revenues were generated by ECD, essentially, exports. In general, the weight of budget payments from pipeline gas exports in 2021 exceeded the same figure for crude oil and petroleum products by 2.4% and amounted to 1125.4 billion rubles.

In countries with a clear focus on raw materials, the formation and accumulation of sovereign funds is considered generally accepted and politically justified — this is how the principle of state regulation in the oil and gas sector is implemented.

In order to solve the tasks of the National Welfare Fund (NWF), formed in Russia on January 1, 2018, a formalized actual budgetary rule has been put into effect since then, which establishes the procedure for filling the NWF. For this purpose, the cut-off price for 1 barrel of Urals oil is set at USD 40.0 in 2017 prices. Annual indexation of 2% of the cut-off price was assumed: in 2018 — 40.8, etc. in 2022 — USD 44.2. “Oil” revenues from oil prices exceeding the cut-off level are sent to the National Welfare Fund. Thus, in 2018, the NWF 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 [9, p. 44].

In 2022, OGR exceeded the level of 2021 (Table 2) by 2500 billion rubles and amounted to 11556.5<sup>9</sup> billion with a forecast of 11666.2 (Table 3).

Thus, the basic OGR corresponding to oil prices from USD 40.8 (2018) to USD 43.3 (2022) were formed at the level shown in table. 3. In 2022, basic OGD would have amounted to 6563.6 billion rubles according to the 2017 budget rule (with a cut-off price of USD 44.2). However, in March 2022, due to new geopolitical conditions, the current budget rule was suspended, and the new one came into force in 2023, first in a truncated form, and from 2025 — in full.

Under the new geopolitical conditions, the current budget rule has been reformulated and tied not to the world prices of 1 barrel of Urals oil, but to the basic oil and gas revenues of the Federal budget (FB). Thus, the formula for oil and gas revenues in 2022 looks like this (billion ru-

<sup>8</sup> According to [12, p. 19].

<sup>9</sup> V 2022 g. v RF uvelichilsya eksport gaza i nefi [In 2022, gas and oil exports to the Russian Federation increased]. URL: <https://dprom.online.ru> (accessed 27 February 2023).

bles): 11556.5 = 8000.0 (basic OGR corresponding to the cut-off price of approximately USD 62–63) + 3336.5, of which slightly over 2000.0 billion rubles<sup>10</sup> were aimed at covering the deficit of FB-2022. Thus, in 2022, 1336.5 billion rubles were allocated to the NWF, i.e., at the beginning of 2023, the reserves of the NWF amounted to about 14900 billion rubles.

The 2017 budget rule has been optimized to new geopolitical realities. In the first three years (2023–2025), OGR is determined in the amount of 8000.0 billion rubles, which is achievable while maintaining oil and gas production and export volumes at the 2021 level at prices no lower than USD 62–63 per barrel Urals brand oil. From 2026, an annual indexation of OGR by 4% is provided. OGR received in excess of the indicated amounts are directed to the formation of reserves of the NWF.

New geopolitical conditions and sanctions led to the fact that Russia had to urgently maneuver in search of new buyers, so oil was offered at a significant discount to the exchange price.

Table 3

*Parameters of the Federal budget in 2019–2025, billion rubles<sup>11</sup>*

Parameter	2019	2020	2021	2022*	2022**	2023	2024	2025
INCOME	20188.8	18719.1	25286.4	27693.1	27770.0	26130.3	27239.8	27979.4
OGR	7924.3	5235.2	9056.5	11666.1	11556.2	8939.0	8656.3	8488.5
Basic OGR	4967.4	5557.6	5889.5	6563.6	8000.0	8000.0	8000.0	8000.0
NOGR	12264.5	13483.8	16229.9	16027.0	16213.8	17191.3	18583.5	19490.9
EXPENSES	18214.5	22821.6	24762.1	29006.2	31120.0	29055.6	29432.5	29243.7
BALANCE	1974.3	−4102.5	524.3	−1313.1	−3350.0	−2925.3	−2192.6	−1264.3
NWF	7773.0	13545.7	13565.4	17354.8	15121.6	13135.3	11599.0	10823.2

\*forecast \*\*fact

Against the backdrop of the G7 and the EU countries establishing a price ceiling for Russian oil, future OGRs are no longer determined only by the exchange price; the main criterion for determining the OGR value has become the balance of the Russian Federal budget.

In 2023–2025, the NWF funds will be spent rather than replenished. Replenishment of the National Welfare Fund will begin no earlier than 2026 and in the currencies of friendly countries, for example, in yuan, rupees or rands, and other countries cooperating with Russia.

According to the data<sup>12</sup>, the FB-22 deficit was expected to be at the level of almost the maximum value over the last 20 years and amounted to 3350.0 billion rubles with revenues of 27770.0 billion rubles and expenses of 31110.0 billion rubles against the plan of September 2022 of 29010.0 billion rubles, i.e. increased by 2100.0 billion rubles.

Previously, in September 2022, the FB-22 deficit was planned at the level of 0.9% of GDP or 1313.0 billion rubles (Table 3).

The historical maximum deficit of the Federal budget of the Russian Federation in recent years occurred in the pandemic year of 2020 and amounted to 4102.0 billion rubles (Table 3).

<sup>10</sup> Defitsit byudzheta po itogam 2022 g. stal odnim iz krupneyshikh v istorii Rossii [The budget deficit at the end of 2022 became one of the largest in the history of Russia]. URL: <https://www.forbes.ru/> (accessed 27 February 2023).

<sup>11</sup> According to [13, p. 58]

<sup>12</sup> Unified portal of the budget system of the Russian Federation. URL: <http://budget.gov.ru> (accessed 21 February 2023).

The FB-22 deficit is covered by government borrowings (about 1350 billion rubles) and funds from the NWF, a little more than 2000.0 billion rubles.

This deficit of FB is caused by an increase in expenditures on the SMO, not only in terms of the production of weapons and military equipment and, in general, logistical support of the SMO military grouping, but also by the provision of massive social support to the Russian population during this period, as well as by demilitarization and restoration of vital activity in the liberated territories.

The planned deficit values of FB-23, 24, 25 are at the level of 2925.3, 2192.6 and 1264.3 billion rubles, respectively (Table 3), indicate the end of the acute phase of SMO at the turn of 2025–2026. The deficit in these years is supposed to be covered by the National Welfare Fund.

### **Conclusion**

#### ***Mobility of Arctic pipeline gas and LNG in Asia-Pacific countries***

The drop in pipeline gas export volumes in 2023 is forecast to be about 82 billion m<sup>3</sup>. The change in OGR resulting from a decrease in gas exports was taken into account when forecasting the parameters of FB-23 (Table 3). The share of gas revenues in total OGR is about 21%. Thus, natural gas accounts for about 550 of 2617.2 billion rubles decrease in OGR in 2023. This amount is compensated by an increase in the MET of PJSC Gazprom by 50 billion rubles per month in 2023–2025, which will amount to 600 billion rubles annually.

Domestic consumption of natural gas, taking into account the ongoing gasification program, has fluctuated over the past ten years (2012–2022) from 408 to 484 billion m<sup>3</sup> in 2015 and 2022, respectively. It is possible to use the remaining 82 billion m<sup>3</sup> in the domestic market within the current planning horizons (up to 2025), doubling the gasification rate of 2022 in order to maintain production at the level of 700–720 billion m<sup>3</sup> by 2026.

Pipeline gas exports in Russia were until recently focused exclusively on Europe; European countries, including Turkey, accounted for 82.8% of Russian gas exports in stable 2021, while CIS countries, including Belarus and Kazakhstan, accounted for 13.4%, and the only Asia-Pacific country, China — 3.8% [8, p. 27].

In the eastern direction, the Power of Siberia project is being developed, which consists of three routes: eastern (Power of Siberia-1), western (Power of Siberia-2) and far-eastern (Power of Siberia-3).

The Power of Siberia-1 pipeline is currently in operation, with a design capacity of 38 billion m<sup>3</sup> per year. Essentially, in the new geopolitical conditions, this is the maximum possible supply of pipeline gas to China in the foreseeable future. The gas pipeline was put into operation on December 2, 2019. Given the lack of enthusiasm from the Chinese side in implementing this project, the contract stipulated the following procedure<sup>13</sup>: the volume of natural gas supplies will be in-

<sup>13</sup> «Sila Sibiri» zapushchena: chto vpered — triumf ili proval ["Power of Siberia" launched: what lies ahead - triumph or failure]. *Biznes i finansy* [Business and Finance], 2019. URL: [http://social.ridus.ru/blog/43578090601/-Sila-Sibiri-zapuschena-chto-vpered-triumf-ili-proval?utm\\_referrer=mirtesen.ru](http://social.ridus.ru/blog/43578090601/-Sila-Sibiri-zapuschena-chto-vpered-triumf-ili-proval?utm_referrer=mirtesen.ru) (accessed 28 February 2023).

creased gradually as the infrastructure and the Chinese gas transportation system are ready — 5 billion m<sup>3</sup> in 2020; 10 billion m<sup>3</sup> in 2021; 15 billion m<sup>3</sup> in 2022, reaching the design capacity of 38 billion m<sup>3</sup> by 2025. This is the way it is going — in 2021, the supply volume was 7.6, and in 2022 — 15 billion m<sup>3</sup>.

This route is used to supply natural gas to the sparsely populated by Chinese standards (only 70 million people) north-eastern provinces of Jilin and Liaoning. Gas consumption in this region has reached the level of 14–15 billion m<sup>3</sup>, and further development seems to be an urgent, but very distant task.

At the beginning of 2022 (before the start of the SMO), a feasibility study was completed for the western route (through Mongolia) with a capacity of 50 billion m<sup>3</sup> per year. Commissioning of this gas pipeline is expected in 2027–2028<sup>14</sup>. Taking into account financial restrictions (Table 3), it is quite possible to change these deadlines.

Power of Siberia-3 (Far Eastern route) involves the supply of natural gas from the offshore Kirinskoe gas condensate field (Sakhalin — Khabarovsk — Vladivostok — state border of China). The capacity of the route is 5–10 billion m<sup>3</sup>. Since the Kirinskoe gas condensate field is under sanctions, the commissioning of this route has been postponed indefinitely.

For more details on the implementation details of the Power of Siberia project, see [14, p. 21–28].

Thus, the restoration and/or increase in the export of Russian pipeline gas, both to the east and to the west, is realistic only with a radical change in the current new geopolitical conditions.

Exports of natural gas to the Asia-Pacific region account for 36.5% of global exports, and the volume of LNG supplies is five times higher than pipelines. In 2021, the ratio was 372 to 74 billion m<sup>3</sup>. It should be emphasized that if, before recent events, pipeline gas supplies to Europe were of a strategic nature and carried out over long distances, then the Asia-Pacific countries used pipelines to solve tactical problems — providing gas to sparsely populated areas remote from the sea; and wherever there is any possibility, LNG is used. The locality of pipeline gas is confirmed by the example of China.

The less developed northern provinces are supplied with gas from Russia (15 billion m<sup>3</sup>), the western ones — from Kazakhstan, Turkmenistan and Uzbekistan (41.7 billion m<sup>3</sup> in total), the southwestern — from Myanmar (3.9 billion m<sup>3</sup>). This accounts for about 80% of all pipeline exports to Asia-Pacific countries. Neighboring countries also supply each other with short-distance pipelines: Myanmar to China and Thailand, and Indonesia to Malaysia and Singapore.

As for LNG, 74% of all supplies to Asia-Pacific countries come from China, Japan and South Korea. All deliveries are long-distance, passing along the Indo-Pacific route, called according to

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<sup>14</sup> Yarlyk poluchen. «Sila Sibiri-2» budet vvedena v ekspluatatsiyu cherez neskol'ko let [The shortcut has been received. "Power of Siberia-2" will be put into operation in a few years]. URL: <https://dzen.ru/a/YfEvQtijFQ4iSOB0> (accessed 28 February 2023).

Chinese tradition the Southern Silk Road, through the Strait of Malacca, which is easily blocked at the narrowest point in the Singapore area.

Russia may well build an alternative LNG supply route through the Northern Sea Route via the eastern route. It is necessary to build new LNG plants, but the most important things are to build our own fleet of gas carriers, to obtain the necessary competencies and to acquire the skills of building reinforced ice-class vessels at the shipbuilding complexes of the Far East. This is the only way to restore the previous level of Arctic natural gas exports over time.

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