

OIL & GAS INDUSTRY

How the war has changed Russia

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Notes on Authorship and Accessibility

Since the start of the full-scale invasion of Ukraine by the Russian army, many Russian environmental experts have been publishing under pseudonyms to hide their identities. For those working in Russia, this helps to reduce the risk of repressions by Russian security services and harassment by government-controlled media and public associations while allowing them to continue participating in important discussions and sharing expert opinions. You can contact them via our email address peresborka@proton.me.

In this analytical review, the authors refer to government data sources. Many of these sources are not accessible to users with Internet providers outside Russia. To access these sources, you may need to use a VPN service that connects through Russia. Please ensure that the use of VPNs complies with the legal requirements in your country.

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Introduction

This paper is an overview of the consequences for the Russian oil & gas industries arising from the Western sanctions and the rift with the West in the aftermath of Putin's full-scale invasion of Ukraine in February 2022. Direct sanctions introduced against the Russian oil & gas industry included oil and product embargoes by the EU, U.S. and other Western countries, measures against some other Russian energy products like LPG, U.S. sanctions against Arctic LNG-2 project and major Russian LNG producer Novatek, as well as some others. G7 countries have also introduced the \$60 per barrel price cap against the Russian exported crude oil, which is supposed to be enforced by the international market players — shippers, traders, insurers.

Apart from the direct sanctions, some of the interruptions in energy trade also occurred for other reasons — since mid-2022, Gazprom began to voluntarily cut gas exports to most EU countries, which have never resumed — despite no sanctions were introduced against Russian natural gas imports — and are not supposed to resume, since most EU member states have found alternative sources of gas supply, and are not intended to increase purchases of Russian gas any time soon. The possibility of Gazprom's return to the European gas market was afterwards additionally damaged by the explosions of the Nord Stream gas pipelines in September 2022, which have greatly reduced technical possibilities for such resumption of supplies.

The paper below analyzes the major consequences of this new environment to the Russian oil & gas industry, which has faced a major challenge of finding new markets and supply routes — in 2021, Russia has exported 58% of its crude oil, 70% of petroleum products, 83% of piped natural gas and 66% of LNG to Europe and non-European G7 countries (including the U.S. and Japan).

Russian Oil Industry

Coping, but not without difficulties

Russian oil industry has proven to be the most resilient against Western sanctions and embargoes. There are two key reasons for that:

Russian oil companies have relatively low lifting costs (actual costs of producing the oil at the wellhead) of \$2-3 per barrel, as per pre-invasion financial accounts, and the costs of oil transportation to seaports are also not too high — meaning that the actual cost of producing and shipping oil and loading it onto tankers is not too high, and the industry itself can remain competitive even under very low prices;

The key major variable here is taxation — in Russia, the tax on oil exports increases progressively along with the increase of the international price of oil, and vice versa, meaning that most of the losses from oil price drops are borne by the state budget, and not the oil companies. Oil companies can still export oil relatively profitably under prices as low as \$30 per barrel, or probably even lower.

THAT MEANS THAT THE WESTERN OIL EMBARGO AND THE OIL PRICE CAP HAVE MOSTLY HAD THEIR INFLUENCE ON THE STATE BUDGET, BUT NOT ON COMPANIES AS SUCH, WHICH CONTINUED TO PERFORM QUITE WELL IN DEPRESSED CIRCUMSTANCES.

Russian crude oil production has grown by 2% in 2022, declined only modestly in 2023 (by less than 1%¹), and is expected to decline only by slightly over 1% in 2024². Russian authorities explain it with fulfilling Russia's obligations to cut oil output under OPEC+ agreements, rather than by organic production contraction³.

However, the detailed situation in the Russian oil producing industry is not known, since the oil companies ceased to publish detailed financial and statistical accounts following the Putin's full-scale invasion of Ukraine in 2022, and resumed to publish only very limited information in mid-2023. It is worth assuming that some of the most costly oilfields may be non-competitive in the current environment and would require to be shut down; also, decreased revenues and growing taxation pressure (see more on that below) will inevitably have a profound impact on future capital investment, and oil output dynamic over time (but these effects will become visible later). But it is not possible to analyze exact details at the moment due to lack of transparency and information.

Since the introduction of the EU oil embargo against Russia in December 2022, Russian oil revenues initially fell sharply — the average price of Russian Urals oil export crude fell in the first half of 2023 by nearly 40% as compared to first half of 2022, from \$84 to \$52 per barrel⁴.

OIL & GAS REVENUES OF THE FEDERAL BUDGET PLUNGED ACCORDINGLY IN THE FIRST HALF OF 2023, BY 47% YEAR-ON-YEAR⁵.

The reason for this were the steep discounts for Russian export crude at the Asian oil market, to which the Russian oil companies have re-routed export supplies amid the EU oil embargo. Discounts for Urals oil crude as compared to Brent have reached \$20-30 per barrel in the first half of 2023.

1 <https://www.interfax.ru/business/941855>

2 <https://www.interfax.ru/business/958077>

3 Interfax, "Снижение добычи нефти в РФ на 1,5% в 2023 г. обусловлено обязательствами ОПЕК+" (<https://www.interfax.ru/business/925485>)

4 Source: https://minfin.gov.ru/ru/press-center/?id_4=38572-o_srednei_tsene_na_neft_marki_urals

5 Source: https://minfin.gov.ru/ru/press-center/?id_4=38583-predvaritelnaya_otsenka_ispolneniya_federalnogo_byudzheta_za_yanvar-iyun_2023_goda

However, since mid-Summer 2023, Russian oil exporters managed to drastically reduce oil price discounts, with Urals oil price exceeding \$60 per barrel (the level of G7 price cap for Russian oil) in July 2023, reaching as high as above \$80 per barrel in September-October 2023. This led to significant jump in the Russian federal budget oil & gas revenues, which in July-November 2023 were just 5% below the level of July-November 2022 in ruble terms⁶. At least in part, the reduction of oil price discounts was achieved through imposing additional tax pressure on oil exporters: in 2023, the State Duma has approved the law introducing minimum legislatively defined discount to Russian Urals crude export blend⁷ — which allowed to define taxable oil export price at a level higher than the actual discounted sales price, forcing exporters to re-negotiate discounts with consumers.

On the background of sharply falling tax revenues, Russian oil companies were still able to make good profits from oil exports: Rosneft has increased its IFRS net earnings by 47% in 2023 as compared to 2022⁸, Lukoil — by 49%⁹ in 2023 as compared to 2021.

However, re-routing of oil exports to Asia came with significant increases of the transportation costs. Most of the Russian oil (about 60%) is still exported via Black Sea and Baltic Sea ports, because pipeline and railroad infrastructure from Western Siberia to the Pacific Ocean still has limited capacity, and simply can't accommodate extra volumes of crude oil that has to be exported to Asia due to European oil embargo against Russia. But shipping oil to Asia is a much more lengthy and costly exercise: shipping Russian oil to India from the Baltic or Black seas usually takes about a month or longer, as opposed to just a few days needed to ship oil to the European terminals like Rotterdam or Genoa, plus tankers have to pass through many additional bottlenecks (Gibraltar, Suez Canal, Bab-el-Mandeb strait, Malacca strait in case of shipping oil to China) — which is why almost none of the Russian crude oil was exported to India before Putin's 2022 full-scale invasion of Ukraine, and exports to China were mostly carried out through the Pacific oil terminals.

6 Source: https://minfin.gov.ru/ru/press-center/?id_4=38787-predvaritelnaya_otsenka_ispolneniya_federalnogo_byudzheta_za_yanvar-noyabr_2023_goda

7 TASS "Госдума утвердила снижение дисконта нефти Urals с \$25 до \$20 при налогообложении" (<https://tass.ru/ekonomika/18328859>)

8 Source: <https://tass.ru/ekonomika/20027601>

9 Source: <https://www.vedomosti.ru/investments/news/2024/03/12/1024871-lukoil>

RE-ROUTING OIL EXPORT FLOWS TO THE ASIAN MARKETS, THUS, HAS SIGNIFICANTLY INCREASED SHIPPING COSTS FOR THE RUSSIAN OIL EXPORTERS — PROBABLY IN THE RANGE OF \$10 PER BARREL OR HIGHER.

For instance, Lukoil's total transportation costs in 2023 made over 7% of the company's total revenue, against just 3% in 2021¹⁰. Rosneft doesn't currently provide a separate figure for transportation costs in its financial statements, but the data for Lukoil is most notable, since Lukoil doesn't have access to Eastern oil export routes, and is forced to ship most of its oil to international oil markets via Baltic, Black and Barents sea ports.

There's been much speculation about the "shadow fleet" of tankers secretly purchased by the Russian actors, as well as hidden network of oil traders with Russian beneficiaries registered in non-Russian jurisdictions to help Russia circumvent the G7 oil price cap. While Russia does use these schemes, and earn some extra money through that, it is important to note that, because nominal third-country parties are involved, these funds are accumulated somewhere outside Russia, and do not have direct impact neither on official revenues of the Russian oil companies, nor on the oil revenues of state budget — which is why this issue is largely irrelevant for purposes of analyzing Russian oil sector economics and budget oil revenues, despite these hidden amounts of income being available to the Russian actors. Companies and the budget still get their revenues on FOB Novorossiysk and FOB Primorsk conditions.

The G7 countries recently began to enforce the Russian oil price cap more strictly — the impacts remain to be seen yet, but probably they have already begun to show, as in November-December 2023, price discounts for Urals crude have visibly grown again¹¹, for the first time in months. If the G7 oil price cap — which had proven not to be working in 2023 — will be more properly enforced through direct pressure on shipping, trading and insurance companies worldwide, that may dramatically reduce revenues of the Russian oil industry and the state budget in the coming years. So far, the oil price cap is not fully enforced, despite the fact that price discounts for Russian oil exporters remain significant: in April 2024, Russia was exporting its Urals crude oil well above \$70 per barrel¹².

10 Source: <https://e-disclosure.ru/portal/FileLoad.ashx?Fileid=1824775>

11 Prime, "Минфин назвал цену нефти Urals с 15 ноября по 14 декабря" (<https://1prime.ru/oil/20231215/842582384.html>)

12 <https://www.interfax.ru/business/959237>

Facing certain loss of revenue at the international markets, Russian oil companies have traditionally exerted additional pressure on the domestic refined products consumers and sharply increasing domestic product prices, which have grown by 7-10% in end-December 2023 as compared to December 2022¹³ (including 10% price growth for diesel and premium AI-98 gasoline), prompting the Government to temporarily prohibit petroleum products exports and exerting other forms of pressure on companies to stop price growth. It is worth noting that the Russian domestic motor fuels markets is highly monopolized, with top four oil producers (Rosneft, Lukoil, Surgutneftegaz and Gazprom Neft) controlling over 75% of crude oil production and over 80% of the oil refining capacities.

GENERALLY, RUSSIAN OIL INDUSTRY HAS SURVIVED THE SANCTIONS PRESSURE WITH LEAST CONCERNS, MANAGING TO KEEP THE OUTPUT LEVELS AND REMAIN PROFITABLE.

But further pressure on state budget revenues from the oil industry are under threat due to potential stricter enforcement of G7 price cap on Russian oil, and oil companies' profits and capital investments are under pressure from increasing costs of shipping oil to Asia, as well as growing Government's appetites to increase taxation of the oil industry (see a separate section on that below) — which risks to create pressure on output levels in the future, due to lack of investment and shrinking profitability of oil production at the least economically attractive oil fields. Russian natural gas industry was hurt the most significantly as a result of Russia's rift with the West in 2022-2023 — despite the fact that no major sanctions were introduced against Russian natural gas, and export volumes were lost due to Russia's own voluntary cutoff of gas supplies to Europe in mid-2022 (which have never resumed due to lack of interest from the EU), and explosions on the Nord Stream pipelines in September 2022.

13 Source: Rosstat (https://rosstat.gov.ru/storage/mediabank/208_27-12-2023.html)

Gazprom

In search for a new business model

Russian natural gas industry was hurt the most significantly as a result of Russia's rift with the West in 2022-2023 — despite the fact that no major sanctions were introduced against Russian natural gas, and export volumes were lost due to Russia's own voluntary cutoff of gas supplies to Europe in mid-2022 (which have never resumed due to lack of interest from the EU), and explosions on the Nord Stream pipelines in September 2022.

Gazprom, the industry's leader, lost most of its lucrative European market: in 2023, gas exports to Europe have contracted by 70% compared to 2021 level¹⁴, and natural gas production, as a result of that, fell by 21,5% compared to 2021¹⁵. According to Gazprom's 2023 financial statements,

REVENUE FROM NATURAL GAS SALES FELL BY 46% IN 2023 AS COMPARED TO 2021, AND GAZPROM HAS SHOWN NET LOSSES FOR THE FIRST TIME IN 25 YEARS, AMOUNTING TO \$6,9 BILLION¹⁶.

Moreover, the losses of the core natural business exceeded \$13 billion, only to be somewhat offset by the profits of the company's oil business.

14 <https://www.vedomosti.ru/business/articles/2024/01/27/1017014-postavki-gaza-po-truboprovodam>

15 <https://www.kommersant.ru/doc/6467610>

16 Source: <https://www.vedomosti.ru/business/articles/2024/05/03/1035238-gazprom-ypervie-za-chetvert-veka-poluchil-ubitok>

It will not be easy — if at all possible — to find alternative markets to substitute the loss of European gas market, which means that Gazprom will now have to find a completely new business model, replacing the old model of exporting large volumes of relatively cheap gas to Europe, and redistributing super-profits earned from European gas sales for other purposes. Unlike private gas producer Novatek, Gazprom lacks liquefied natural gas (LNG) production capacities — the only LNG plant owned by the company is located at the island of Sakhalin and can't be connected to the company's main gas production base in Siberia. Gazprom planned to develop LNG production, but was forced to delay — and potentially fully scrap — its plans on building the Baltic LNG plant which intended to liquefy and export Western Siberian gas¹⁷.

THE DELAY IS CAUSED BY **LACK OF ACCESS** TO CRITICAL GAS LIQUEFACTION **TECHNOLOGIES** DUE TO WESTERN SANCTIONS.

Gazprom may not be able to find non-Western alternatives, some of which are simply not available at the LNG technology markets.

Lack of LNG export capacities means that Gazprom will not be able to simply re-route natural gas exports to Asia, as the Russian oil companies did. To reach markets like China or India, Gazprom would have to massively invest in new infrastructure which is non-existent at present — and it would make sense only if the Asian customers agree to sign new large-scale long term contracts for purchase of Russian piped gas. That issue alone is questionable: since 2015, Russia had been constantly announcing that it had "reached an agreement" with China on supplying large volumes of gas from Western Siberia (over the years, the project had different names: "Altai", "Western Corridor", "Power of Siberia-2"), but China never confirmed that, and there seem to be no progress in these negotiations to this date. Many experts are pointing out that China already has plenty of sources of natural gas to meet its future needs, and doesn't need a new massive gas purchase contract with Russia¹⁸.

17 Vedomosti, "Запуск завода по сжижению газа в Усть-Луге сдвинули на конец 2026 г." (<https://spb.vedomosti.ru/economics/articles/2023/08/02/988127-zapusk-zavoda-po-szhizheniyu-gaza>)

18 Reuters, "Explainer: Does China need more Russian gas via the Power-of-Siberia 2 pipeline?" (<https://www.reuters.com/business/energy/does-china-need-more-russian-gas-via-power-of-siberia-2-pipeline-2023-03-22/>)

**EVEN IF GAZPROM DECIDES TO BUILD A NEW MAJOR GAS PIPELINE
CONNECTING WESTERN SIBERIAN GAS FIELDS WITH CHINA, IT WOULD
COST IN EXCESS OF USD 100 BILLION,**

as the experience of construction of the existing "Power of Siberia" gas pipeline shows. Gazprom simply doesn't have extra money to finance ambitious new infrastructure projects: recently, in a show of financial weakness, it was forced to cut its annual capital expenditure program for 2024 by 32% as compared to the initial level of capital spending program for 2023 as approved in end-2022¹⁹. Building a gas pipeline to India is simply not plausible, as it will have to run either through high altitude mountainous terrain lacking proper infrastructure (roads, electricity), or through many geopolitically challenging territories, including Afghanistan and Pakistan.

Moreover, there's a question of financial viability of pipeline gas supplies from Western Siberia, main Russian gas producing region, to Asia. When Gazprom signed a contract on gas supplies via the "Power of Siberia" pipeline to China back in 2014, the price of supply was widely discussed to be in the range of \$350-380 per tcm (Gazprom never actually confirmed the price). Under these conditions, Gazprom asked the Russian Government for near-total exemption from taxes — stating that the "Power of Siberia" project will not be possible if the tax exemptions are not granted (Government agreed, and the tax exemptions were provided as requested²⁰). But, since the launch of gas supplies through "Power of Siberia" in 2019, gas supply price possible have never ever reached even \$300 per tcm²¹ (Gazprom never discloses financial results of gas supplies to China, but some Russian Government document leaks and Chinese customs data allow to estimate the actual supply price), and gas is being sold to China with heavy discounts²².

19 Interfax, "Газпром" сократит инвестпрограмму-2024 до 1,57 трлн руб. с 2 трлн руб. в 2023 г." (<https://www.interfax.ru/business/932868>)

20 RBC, "Газпром» из-за налоговых льгот сэкономит на «Силе Сибири» до \$1 млрд" (<https://www.rbc.ru/business/11/11/2014/54621156cbb20f7b38b392ef>)

21 Reuters, "Russia gas price seen much lower for China than for Europe" (<https://www.reuters.com/business/energy/russia-gas-price-seen-much-lower-china-than-europe-document-2023-09-08/>)

22 <https://www.bloomberg.com/news/articles/2024-04-23/russia-forecasts-lower-price-for-its-gas-to-china-versus-europe>

IT MEANS THAT **GAZPROM DOESN'T MAKE PROFIT** FROM GAS SUPPLIES TO **CHINA**

even today — and the "Power of Siberia" project produces gas from two remote Eastern Siberian gas fields, Chayanda and Kovykta, which are located much closer to the Chinese borders than the major gas-producing Western Siberian gas fields, which have served as Gazprom's main resource base in supplying gas to Europe.

The fact that Gazprom reports record levels of gas exports to China — over 15 billion cubic meters (bcm) in 2022, 23 bcm in 2023, and expected 38 bcm in 2025 — against the weak financial data reporting and heavy losses is in itself an indirect proof that gas supplies to China are hardly profitable at all.

In these conditions, China has to agree to buy Russian gas from Western Siberia at a much higher price than it currently pays for the gas supplied via "Power of Siberia", to make Russian gas exports from Western Siberia to China even slightly profitable. That seems totally implausible, given the lack of significant shortage of gas at the Chinese market as discussed above. The whole history of Russia's resource trade with China since the beginning of Putin's full-scale invasion of Ukraine in 2022 proves that

RUSSIA MAY ONLY SELL EXTRA VOLUMES OF VARIOUS NATURAL RESOURCES AT THE CHINESE MARKET (OIL, LNG, COAL, TIMBER, FISH) OFFERING A PRICE DISCOUNT, BUT NEVER WITH A PREMIUM.

At the end of the day, there doesn't seem to be a viable economic model that may help Gazprom find alternative gas export markets to substitute the loss of profits from the European gas market. Production of LNG seems to be seriously contained by the Western sanctions and lack of access to critical technologies, and supplies of pipeline gas to Asia, if they will ever materialize against major objective difficulties, will not be able to generate comparable levels of profit as the European market did for Gazprom. There seem to be no good options left, which means that Gazprom's gas production business will remain depressed in the coming years.

To compensate for the loss of European market, Gazprom tries to find any possible second-best alternatives available at hand — trying to expand gas supplies to neighboring "friendly" countries (like the recent gas supply contract with Uzbekistan, which may buy up to 4 bcm of Russian gas per year), or expanding domestic gas sales. This year, Gazprom came up with ambitious proposals both to liberalize Russian domestic gas prices for non-household consumers, as well as to boost the gasification of Russian regions and to expand domestic gas use in transport, petrochemical and other industries²³.

HOWEVER, NEIGHBORING COUNTRIES AND DOMESTIC RUSSIAN MARKET DO NOT SEEM TO BE EVEN A REMOTELY COMPARABLE ALTERNATIVE TO THE LOST EUROPEAN GAS MARKET.

Russian economy is in depressed condition due to sanctions and decoupling from the West — it is a separate topic for discussion, but even the Russian Government economic forecast do not foresee GDP growth higher than slightly over 2% a year for 2024-2026, and rampant inflation, which has recently prompted the Russian Central Bank to raise the interest rate to 16% and to pledge a "lengthy period of tight monetary policy", will most likely put brakes on plans to significantly increase domestic gas prices.

GAZPROM HAS ALSO BEEN MULLING THE IDEA OF CREATING A "GAS HUB" IN TURKEY, ESSENTIALLY ENABLING THE RE-EXPORTS OF WHITEWASHED RUSSIAN GAS TO EUROPE THROUGH TURKISH TRADERS, AND ALLOWING RE-ENTRY OF SOME OF THE VOLUMES OF GAZPROM'S GAS TO THE EUROPEAN MARKET.

23 State Duma, "Комитет по энергетике обсудил развитие внутреннего рынка газа и переход к конкурентному ценообразованию" (<http://duma.gov.ru/news/56392/>)

However, despite the fact that this idea came up almost immediately after Putin's full-scale invasion of Ukraine in 2022, there still seems to be little progress — the implementation of this idea is marred both with disagreements between Russia and Turkey²⁴, as well as by potential resistance from the European Union, since there are not too many sources of gas from other suppliers to truly hide Russian gas, which will comprise about 80% (or more) of the total sources of gas input for the "hub".

All these circumstances will most likely leave large part of Gazprom's upstream production capabilities stranded for years to come, and its capital expenditure potential will be limited. Another major constraining factor will be Government's desire to impose additional taxes on Gazprom: it already did increase taxes on the company after the full-scale invasion of Ukraine in 2022-2023²⁵, and will most likely continue doing it further²⁶, constraining the company's ability to finance new projects related to reinvention of its business model after the loss of European gas market.

24 Reuters, "Disagreements delay Russian gas hub plans in Turkey" (<https://www.reuters.com/business/energy/disagreements-delay-russian-gas-hub-plans-turkey-sources-2023-09-14/>)

25 TASS, "Госдума приняла закон о повышении НДС на конденсат "Газпрома" и на газ" (<https://tass.ru/ekonomika/19309775>)

26 RBC, "Что будет с акциями «Газпрома» в 2024 году. Прогнозы экспертов" (<https://quote.rbc.ru/news/article/657818fb9a7947213ca6aad1>)

Consequences of gas output reduction for gazprom

One of the questions frequently asked is related to the potential consequences of swift and massive shutdown of Gazprom's natural gas output for future production capabilities of the natural gas fields — whether it will be possible to further re-introduce gas producing wells into operation in the future. Despite the fact that the current production management process at Gazprom is not too transparent, the available information, however, suggests that reducing the natural gas output at Gazprom's fields is a much less challenging effort than shutting down oil production:

- Idle oil wells are subject to paraffin wax depositions, and their re-introduction into operation requires complex and costly measures to remove paraffin waxing;
- About 15-20% of Gazprom's gas reserves are located in matured fields, where well pressure declines over time. To boost output from low-pressure matured reservoirs, a system of booster compressors is used; when output reduction is needed, Gazprom is able to simply turn off the compressor boosters, thus reducing the gas flow. Therefore, in the natural gas production industry, the partial shutdown of production is significantly easier than in the oil production.

However, the long-term effects of massive shutdown of gas production are yet to be studied; natural gas output reduction clearly causes problems for Gazprom, which can be seen both in the hectic manner of attempts to boost domestic gas consumption, albeit low profitable, as well as in recorded cases of flaring the produced gas in 2022 following the unexpected rapid shutdown of gas exports to Europe²⁷.

27 Reuters, "Russia burns gas into the atmosphere while cutting supplies to EU" (<https://www.reuters.com/business/energy/russia-burns-gas-into-atmosphere-while-cutting-supplies-eu-2022-08-26/>)

LNG Production

Thriving, but for how long?

Unlike Gazprom, Russian liquefied natural gas exports to Europe has been thriving in 2022-2023. In 2023, according to Kpler, Russia exported 15,6 mmt of LNG to the EU — up 38% as compared to 2021²⁸. 15,6 mmt of LNG exports equals to about 22 bcm, which is still a fraction of Europe's gas consumption and of the amount of gas that Gazprom exported to Europe in 2021 (about 150 bcm) — but its still a significant source of revenue for Russia (around 10 billion Euros per year), and, most importantly, it delivers significant profits due to low costs of LNG production at exports for Novatek, Russia's only LNG producer that is able to export LNG to Europe (the other major producer, Sakhalin-2 oil & gas project, only exports LNG to Asia Pacific markets). Novatek's profits have increased in 2023²⁹, and in 2022, Novatek's founder and CEO Leonid Mikhelson has been boasting about enormous excess profits from exporting LNG to the European spot gas market, due to low costs and premium gas purchase prices³⁰.

However, question remains, for how long this situation will last.

**THE EUROPEAN UNION HASN'T INTRODUCED SANCTIONS AGAINST
THE RUSSIAN LNG YET,**

28 <https://www.reuters.com/business/energy/new-west-east-route-keeps-europe-hooked-russian-gas-2024-04-03/>

29 Interfax, Чистая прибыль "НОВАТЭКа" за 2023 год составила 463 млрд рублей" (<https://www.interfax.ru/business/945388>)

30 Prime, "Михельсон назвал основной источник прибыли "Ямала СПГ" (<https://1prime.ru/gas/20221028/838622112.html>)

but things are moving in that direction. In December 2023, the EU reached a tentative deal on a gas regulation enabling countries to effectively ban Russian shipments of liquefied natural gas without new energy sanctions. The measure would allow the EU member state governments to block Russian exporters from booking the infrastructure capacity needed for the shipments of LNG and natural gas³¹. EU officials have been repeatedly saying that they are planning for phasing out Russian LNG by 2027³².

The United States have been recently introducing sweeping sanctions against Russian LNG, including Novatek's next large gas liquefaction project, Arctic LNG-2, placing it under the the Specially Designated Nationals list³³, which prompted Novatek to halt operations under the project³⁴. Recently, the U.S. Treasury has been sanctioning other Novatek's future LNG project³⁵. Clearly, clouds are gathering over the prospects of Novatek's continuing LNG exports to Europe, which remains Novatek's largest market at the moment — about two thirds of Novatek's LNG exports from the currently operational Yamal LNG project go to Europe (roughly 14 mmt of 21 mmt total production).

Asian markets are more difficult for Novatek due to market saturation, higher transportation costs, and lack of sufficient fleet of icebreaker class LNG carriers enabling exports to Asia eastwards through heavily iced North Sea Route (gas to Europe is exported via relatively ice-free Barents Sea). Novatek faces significant challenges with manufacturing of the necessary fleet of Arc7 icebreaker class LNG carriers for the Arctic LNG-2 project: after Putin's full-scale invasion of Ukraine in 2022 and the U.S. sanctions against Novatek's LNG projects, South Korean vessel manufacturers, Daewoo Shipbuilding & Marine Engineering (DSME), recently renamed Hanwha Ocean, and Samsung Heavy Industries (SHI), have cancelled their

31 Bloomberg, "EU Reaches Deal to Enable Nations to Ban Russian LNG Imports" (<https://www.bloomberg.com/news/articles/2023-12-08/eu-reaches-deal-to-enable-nations-to-ban-russian-lng-imports>)

32 Upstream Online, "EU says it can phase out Russian oil and gas supplies by 2027" (<https://www.upstreamonline.com/energy-security/eu-says-it-can-phase-out-russian-oil-and-gas-supplies-by-2027/2-1-1540770>)

33 Energy Intelligence, "Arctic LNG 2 Shareholders Brace for US Sanctions Impact" (<https://www.energyintel.com/0000018b-a45f-d38b-ab9f-f7ff61730000>)

34 <https://www.reuters.com/markets/commodities/russias-arctic-lng-2-suspends-gas-liquefaction-amid-sanctions-lack-tankers-2024-04-02/>

35 High North News, "U.S. Targets Future Russian Energy Projects in Arctic in New Round of Sanctions" (<https://www.highnorthnews.com/en/us-targets-future-russian-energy-projects-arctic-new-round-sanctions>)

cooperation with the Russians on manufacturing of these vessels³⁶. Novatek is trying to fill the gap with ordering more vessels from the Russian shipyard Zvezda in the Far East, which was supposed to manufacture these vessels in cooperation with South Korean SHI. But South Koreans withdrew from cooperation since Putin's aggression against Ukraine, and the terms of delivery and reliability of Zvezda-produced vessels in the absence of cooperation with Koreans are highly questionable — Zvezda shipyard has been already delaying promised delivery of LNG carriers more than once.

Another set of challenges is related to Russian lack of access to critical gas liquefaction technologies. As said above, Gazprom was already forced to delay implementation of the Baltic LNG project because of that. Novatek still plans to go ahead both with the Arctic LNG-2 project, and the recently announced Murmansk LNG project, and Russia reiterates its plans to conquer 20-30% of the global LNG market³⁷, increasing LNG production to over 100 mmt per year (actual output in 2022 by Novatek's Yamal LNG and Sakhalin-2 LNG projects — 32,5 mmt).

However, these plans are potentially seriously constrained by lack of technologies, ice class LNG carriers needed to transport LNG through the North Sea Route to Asia, and current and possible new Western sanctions. Technology is an important factor: Novatek plans to expand the use of its own Arctic Cascade liquefaction technology, but whether it will be able to scale it up and sustain competitive Russian manufacturing of the necessary equipment, remains an open question. Potential closing of the European market for Novatek's LNG is also a challenge: apart from higher shipping costs for exporting LNG to Asia from Yamal, Asian market becomes clearly saturated with all the additional flows of Russian energy exports re-oriented from Europe, and China, as the main potential market, is facing economic slowdown, which puts into question Russia's bet on China as a main consumer which is supposed to accommodate all the extra volumes of Russian gas that can no longer be supplied to the European market.

36 "Unclaimed Arctic Gas Carriers Threaten Russia's LNG Expansion" (<https://www.bloomberg.com/news/articles/2024-03-05/unclaimed-arctic-gas-carriers-threaten-russia-s-lng-expansion>)

37 Vedomosti, "Новак рассказал о планах занять 20% мирового рынка СПГ" (<https://www.vedomosti.ru/economics/news/2023/11/04/1004292-novak-rasskazal-o-planah>)

Looming Tax Increases

One of the important consequences of Putin's full-scale invasion of Ukraine is the significant change of tax conditions for the Russian oil & gas industry, and creeping tax hikes. Government clearly needs more and more money to finance both the war and the ailing economy, and the oil & gas industry is visibly considered as the obvious "low-hanging fruit" source of additional income for the state budget. In 2022-2023, the Government has been introducing some of the key changes in taxation for the oil & gas companies, significantly raising the fiscal pressure on the industry. These decisions have included:

- Various measures on extra taxation of Gazprom in the total amount of RUR 1,8 trillion in 2023-2025³⁸;
- Additional taxation of Novatek³⁹, Russia's main LNG producer, which was significantly exempt from taxes in the previous years, as the pre-condition for investment in complex and capital-intensive natural gas liquefaction projects in the Arctic;
- De-facto increased taxation of the oil exports, through approving a minimum legislatively defined discount to Russian Urals crude export blend (as explained above in the oil industry chapter) — which allows to define taxable oil export price to be higher than the actual discounted sales price. Russian Ministry of Finance proposes to further lower the legally allowed minimum level of oil price discount;

38 Prime, "Газпром" за три года заплатит дополнительные 1,8 триллиона рублей налогов" (<https://1prime.ru/nalogy/20220928/838286007.html>)

39 Interfax, "Ставка налога на прибыль для производителей СПГ может вырасти до 32%" (<https://www.interfax.ru/business/864698>)

Introduction of "additional hydrocarbon production income tax" — "налог на дополнительный доход от добычи углеводородов" — a windfall profit tax for the Russian oil industry, which brought additional revenue for the federal budget in the amount above RUR 1 trillion after 9 months of 2023⁴⁰.

The extent of creeping tax hikes for the Russian oil & gas industry is difficult to measure due to serious restrictions on data transparency, but some of the indicators are known. For instance, Lukoil's IFRS financial accounts for 2023 show that the share of taxes paid (except profit tax) were up to 19,4% of the total revenue, whereas in 2021 this share was just 13,9%. In March 2024, Rosneft's CEO Igor Sechin has sent a letter to Vladimir Putin, complaining about "unjustified increase in the tax burden" due to the current procedure of calculating Urals oil prices for the purposes of taxation⁴¹.

Recently, Russian oil companies have been already complaining to the Government about losses in the retail petroleum products sales business⁴²; Gazprom was forced to drastically cut its capital expenditure program in 2023-2024, and is predicting significant losses as early as in 2025 due to new and expected tax hikes, as described above.

However, the most important challenge for the Russian oil & gas industry in terms of increasing taxation is not what happened in 2022-2023, but what is yet going to happen from 2024 onwards. The major new development that happened recently is the approval of new federal budget for 2024-2026, which envisages significant increase of military spending for the next three years — by 2-3 times as compared to the pre-war year of 2021⁴³. Where would this money come from? To dramatically expand military spending, Russia expects to increase federal budget revenue in 2024 by over 22% as compared to 2023;

40 Kommersant, "Нефтегазовым доходам помог календарь" (<https://www.kommersant.ru/doc/6320497>)

41 <https://www.kommersant.ru/doc/6635256>

42 Kommersant, "В нефти всплыли налоги" (<https://www.kommersant.ru/doc/6296533>)

43 Euronews, "Russia approves record spend for its military in new 2024 budget" (<https://www.euronews.com/business/2023/11/28/russia-approves-record-spend-for-military-in-new-budget>)

OVER RUB 1,5 TRILLION OF THESE EXTRA REVENUES (OVER \$16 BILLION UNDER THE CURRENT EXCHANGE RATE) ARE EXPECTED TO COME FROM ADDITIONAL TAXATION OF THE OIL & GAS INDUSTRIES⁴⁴.

It means that, if the international oil prices will not increase considerably (to the level of \$100 per barrel or higher), the Russian oil & gas industry will face shrinking profits and significant pressure on capital expenditures — as explained above with the case of Gazprom, which was forced to cut its annual capital expenditure program by about a third in just two years.

Russian Finance Minister Anton Siluanov has confirmed plans for significant additional taxation of the Russian oil & gas industry: "Now we are taking a more stringent approach to taxation of the oil industry. In the previous years, the distribution of rent was not entirely fair⁴⁵".

Needless to say that cutting the capital spending will further reduce oil & gas industry output in subsequent years, further shrinking the government's revenue from the industry. This situation is strikingly similar to the 1980s, when the Soviet Government had repeatedly ignored calls from the oil industry not to take away additional revenue with purpose to maintain old levels of budget spending — which had led to dramatic cuts in capital spending and subsequently shrinking output. These developments are explained in detail in Yegor Gaidar's book "Collapse of an Empire" documenting the collapse of the Soviet economic system⁴⁶. Russian oil & gas industry will be clearly heading toward similar pattern in the coming years.

44 Source: Supplementary note to the Russia's federal budget for 2024-2026 (<https://sozd.duma.gov.ru/bill/448554-8>), pages 25 and 34

45 Forbes Russia, "Силуанов объяснил, «где взять деньги» на рост бюджетных расходов" (<https://www.forbes.ru/finansy/498498-siluanov-ob-asnil-gde-vzat-den-gi-na-rost-budzetnyh-rashodov>)

46 Yegor Gaidar, "Collapse of an Empire", page 143, chapter" § 4. Нарастающие проблемы советской экономики"

Loosening Environmental Discipline

One of the major consequences of Russia's growing international isolation and increasingly repressive and non-transparent domestic political situation will be loosening of control over environmental damage caused by the activities of the Russian oil & gas industries. The extent of it is difficult to assess because of decreased transparency of data, but the trend is clear.

In March 2022, immediately after the beginning of Putin's full-scale invasion of Ukraine, and subsequently adopted Western sanctions, Russian Government had introduced a sweeping package of legislation aimed at loosening environmental regulations "to assist Russian businesses in adapting to the consequences of sanctions" — including significant amendments to the Russian Urban Planning Code, the laws “On Specially Protected Natural Areas”, “On Environmental Expertise”, etc.⁴⁷

BASIC IDEA BEHIND THIS ANTI-ENVIRONMENTAL PACKAGE WAS TO LOWER COSTS RELATED TO ENVIRONMENTAL PROTECTION FOR THE RUSSIAN BUSINESSES TO COMPENSATE ECONOMIC LOSSES FROM SANCTIONS.

Although not all of the proposed legislation was actually adopted, the vector of the Russian governmental thinking regarding the environment in the current conditions is clear: Russian officials do not value environmental protection too much, as opposed to the profitability of Russian business. Some environmentally destructive policies may not be adopted immediately, but the policy direction is evident. It means that all the difficulties that the Russian oil & gas sector is currently experiencing — worsening export conditions due to sanctions, growing taxation pressure at home — will force them to loosen the environmental protection practices, and the Government will generally support that approach.

⁴⁷ Kommersant, "Природе оставляют некоторых охранителей" (<https://www.kommersant.ru/doc/5356868>)

The negative consequences of the new loosened environmental regulations were summarized by the Russian Socio-Ecological Union (RSEU) in the response to the newly proposed legislative changes⁴⁸:

"The more aggressive tendency of de-ecologization and restriction of citizens' rights to participate in ensuring environmental protection in the country arose and becomes an increasingly aggressive. Key directions this trend can be determined as follows:

- Reducing mandatory requirements for ensuring environmental safety;
- Complication of access and deprivation of citizens of their rights to participate in resolving issues related to the protection of nature and protecting their habitat;
- Reducing state control over the activities of environmentally hazardous objects;
- Reducing or canceling the legislative prohibition of economic development of specially protected natural territories, forest protection requirements;
- Transfer of the responsibility of the current generation of officials the terms for the implementation of national projects and state programs."

Regarding the consequences of loosening the environmental regulations for the oil & gas industry, RSEU specifically writes: "The expansion of the period of uncontrolled activities for subsoil users up to 3 years is discussed. In the conditions of an occurring reduction in oil production due to a reduction in sales, the lack of planned control over tamponing (clogging) of unused wells can lead to large-scale oil spills."

Oil spills are ravaging the Russian oil & gas industry: average number of spills exceeded 10,000 per year⁴⁹, whereas large-scale oil spills were happening quite frequently in the past years⁵⁰. However, 2022 brought an explosive dynamics (no data is yet available for 2023): according

48 Source: <https://rusecounion.ru/ru/deecologicalization>

49 Important Stories, "Нефтяные аварии случаются каждые полчаса: исследование реальных масштабов загрязнений природы" (<https://istories.media/investigations/2020/10/15/neftyanie-avarii-sluchayutsya-kazhdie-polchasa-issledovanie-realnikh-masshtabov-zagryaznenii-prirodi/>)

50 RIA Novosti, "Крупные разливы нефти и нефтепродуктов в России в 1994-2021 годах" (<https://ria.ru/20210811/razliv-1745316414.html>)

to the Russian Ministry of Natural Resources and Environment, pipeline ruptures and resulted oil spills went up by 2,6 times as compared to 2021, to 26,311 total spills, split almost evenly between trunk and upstream pipelines. As a result, about 1,2 million barrels of oil were leaked in 2022⁵¹.

Loosening the regulations, as stressed above by RSEU, leads to significant increase of the oil spills from the oil & gas industry, in the environment of decreased transparency and reduced ability of the Russian society to monitor and influence the situation with oil spill prevention.

One of the other major new challenges is the threat of increased gas flaring in the Russian oil & gas industry.

SANCTIONS, RIFT WITH THE WEST, AND **LOOSENING** GOVERNMENT'S **REGULATORY CONTROL** OPEN WAY FOR **MASSIVE INCREASE** OF THE AMOUNTS OF **FLARED GAS**.

Although the World Bank does not report significant increase of gas flaring in Russia in 2022⁵² — just a modest growth by 0,1% year-on-year — Russian sources, instead, have been reporting significant increases in gas flaring after the full-scale invasion of Ukraine⁵³, and the Russian Ministry of Natural Resources and Environment reported associated gas utilization rate drop by 1,3 percentage points in 2022, from 83,6% to 82,5%, a minimum since 2019⁵⁴.

In May 2022, Chairman of the Russian Union of Industrialists and Entrepreneurs Alexandr Shokhin has asked the Russian Government to increase the minimum limit for gas flaring for oil

51 Source: Ministry of Natural Resources and Environment of Russia, "State report on the condition and protection of the natural environment in the Russian Federation in 2022", page 114 (https://www.mnr.gov.ru/docs/gosudarstvennye_doklady/)

52 Source: The World Bank, "Global Gas Flaring Tracker Report 2023" (<https://thedocs.worldbank.org/en/doc/5d5c5c8b0f451b472e858ceb97624a18-0400072023/original/2023-Global-Gas-Flaring-Tracker-Report.pdf>)

53 RIA Rating, "Обзор: в России все больше газа сжигают в факелах" (<https://riarating.ru/macroeconomics/20220823/630227956.html>)

54 Source: Ministry of Natural Resources and Environment of Russia, "State report on the condition and protection of the natural environment in the Russian Federation in 2022", page 119 (https://www.mnr.gov.ru/docs/gosudarstvennye_doklady/)

companies allowed without penalties from 5% to 30%⁵⁵, citing absence of demand for LPG after the introduction of Western sanctions and lack of alternative to gas flaring. This proposal was not approved yet, but clearly, oil & gas industry will continue to exert more pressure on the authorities to allow larger scale of gas flaring — particularly after Russian LPG was included in the European Union's 12th sanctions package in December 2023. LPG is produced from oilfield associated gas, and there is no comparable demand for it in Russia to substitute lost export markets — which means that

DECREASE OF EXPORTS WILL INEVITABLY RESULT IN INCREASED AMOUNT OF FLARING.

To ease the economic pressure from Western sanctions, Russia has been significantly loosening environmental discipline in many areas related to the oil & gas industry — from allowing non-ice class tankers to travel through the icy North Sea Route⁵⁶, risking major oil spills in the Arctic, to rolling back Euro-5 vehicle standards to “Euro-0”⁵⁷, effectively allowing vehicles to built to pre-1992 Euro-1 EU emission standards, with strong negative impact on air quality.

More negligence in the area of environmental protection in the oil & gas sector should be expected in the future, as the Government and the oil & gas lobbyists seem to be unrestricted from any forms of control by the Russian civil society over environmental protection in the new repressive environment, as described above.

It should be also said that, in case Russia choose to develop new trunk oil & gas pipeline infrastructure routes aimed at China and other Asian countries, that may significantly increase methane leaks from the trunk pipeline systems, due to lengthier distanced required to transport hydrocarbon resources.

55 Interfax, "В РФ предложили увеличить норматив сжигания попутного нефтяного газа без штрафа" (<https://www.interfax.ru/business/841664>)

56 ProFinance, "Россия впервые отправила нефтяные танкеры не ледового класса в Китай через Арктику" (<https://www.profinance.ru/news/2023/09/19/ca40-rossiya-vpervye-otpravila-neftyanye-tankery-ne-ledovogo-klassa-v-kitaj-cherez-ar.html>)

57 Kommersant, "В России разрешили выпуск автомобилей «Евро-0», без ABS и подушек безопасности" (<https://www.kommersant.ru/doc/5355130>)

Conclusions

Sanctions and the rift with the West in the aftermath of Putin's full-scale invasion of Ukraine in 2022 have had significant impact on the Russian oil & gas industries, the effect of which will most certainly be growing over time. Gazprom, Russia's gas giant, is seeing its business model built over decades nearly completely destroyed, and finding new markets in Asia to substitute to loss of lucrative European gas market proves to be an extremely challenging — if at all achievable — task.

Russian oil industry has survived the sanctions much better, and has proven to be able to maintain the levels of output and make good profits even in the environment of lower oil prices — but the state budget faced significant losses of revenue from oil exports, which can become a sustainable trend in case G7 countries properly enforce the \$60 price cap against Russian oil. In the longer term, however, the Russian oil producers may face much more serious challenges due to pressure on capital investment imposed by the Russian Government's appetite to raise taxes on the oil industry with purpose to finance both the ailing economy and the war.

Russia still continues to unrestrictedly export LNG to international markets, but the future of LNG exports is threatened by recently imposed U.S. sanctions against major Russian LNG suppliers and projects, and the looming phasing out of the Russian LNG by the EU in the next few years.

One of the key consequences of the recent developments is loosening environmental controls over the Russian oil & gas industry, relaxed by the Government in response to the sanctions pressure — which risks becoming a progressing trend, negatively impacting the environment and increasing Russian CO₂ emissions. If Russia will be building more trunk pipeline infrastructure aimed at China and other Asian countries, that may significantly increase methane leaks from the trunk pipeline systems, due to lengthier distanced required to transport hydrocarbon resources.

Negative Effects For The Environment

Commentary by Zakhar Marzhanov, environmental expert

We should give regard to several dramatic changes and their effects: failure to comply with the technological discipline and environmental control standards, consequences of the imposed sanctions and use of the “black” tanker fleet.

Failure to comply with technological discipline and environmental control standards

Following February 24, 2022, compliance with technological discipline in Russia has been on the decrease, as is apparent, for example, from the data for high and extremely high emissions⁵⁸. Most of the Russian oil industry facilities operate in sparsely populated areas; they were difficult to control even prior to 02/24/2022. After the de facto omission⁵⁹ of environmental control, their operation became even more destructive to nature.

58 <https://www.meteorf.gov.ru/product/infomaterials/99/?year=2024&ID=99>

59 Resolution of the Government of the Russian Federation No. 336 dated 10 March 2022; Resolution of the Government of the Russian Federation No. 1743 dated 01.10.2022; Resolution of the Government of the Russian Federation No. 2140 dated 14.12.2023.

AFTER WAR WAS STARTED, RUSSIAN GOVERNMENT BANNED PUBLICATION OF ALL DATA OIL EXTRACTION AND ASSOCIATED INFORMATION⁶⁰.

As another indicator, we can point out the dismissal, in the spring of 2022, of the key official figure (according to Greenpeace Russia — the most effective leader) of the regional environmental authority of the Khanty-Mansiysk Autonomous Okrug, the largest oil-producing region of the Russian Federation.

Sanctions and equipment

The imposed sanctions⁶¹ have hampered, limited or even completely prevented the acquisition of much of the new equipment and spare parts used in the oil and energy industries. In addition to associated technological problems, sanctions led to the longer routes used for export oil shipments with consequent enhanced likelihood of accidents with transporting tankers. As an immediate result of the changes mentioned above, there has been a sharp increase in the number of pipeline ruptures. For many decades data on leaks have been collected by the Central Dispatching Department of the Fuel and Energy Complex; since 1993, they have been published annually in State Reports. In 2022, the number of oil pipeline ruptures increased 2.2 times and amounted to almost 13 thousand cases⁶².

THAT IS MORE THAN ONE LEAK EVERY HOUR.

60 Russian Government Executive orders: from 26.03.2023 N° 1074-p and from 5.03.2024 N° 513-p

61 https://finance.ec.europa.eu/eu-and-world/sanctions-restrictive-measures/sanctions-adopted-following-russias-military-aggression-against-ukraine_en#overview-of-sanctions-in-place; <https://eur-lex.europa.eu/eli/reg/2014/269/2022-11-14>; https://www.bis.doc.gov/index.php/component/fsj_faqs/cat/16-russia-oil-and-gas-sanctions

62 State Report on the State and Environmental Protection of the Russian Federation in 2022 — https://www.mnr.gov.ru/docs/gosudarstvennyye_doklady/gosudarstvennyy_doklad_o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsii_v_2022/

In the pre-war period, the number of ruptures decreased by an average of almost 10% per year, (calculation covered the period of five years — from 2017 to 2022, according to State Reports)⁶³, also thanks to the activities of some NGO's (or CSOs).

In the period preceding February 2022, experts were able to identify a correlation between the number of oil pipeline ruptures and the volume of oil products carried by rivers through the main oil-producing provinces of Russia. The correlation was exposed on the basis of the long-term data from Roshydromet⁶⁴ on the volume of oil products transported by these rivers in their lower reaches (outlet sections). By comparing data on the number of oil pipeline ruptures and the mass of oil products carried by rivers in their lower reaches in the past, it was possible to estimate the increase in the volume of oil products carried by Russian rivers towards the Arctic Ocean: whereas in 2021 the total amount was ca. 85 thousand tons, in 2022 it was already as much as 120 thousand tons according to the State Report. In 2023 it is expected to rise all the way to 200-250 thousand tons. Considering that only a portion of oil products reach down to a river estuary⁶⁵,

**IT IS HIGHLY POSSIBLE THAT IN 2023 AS MUCH AS 10 MILLION
BARRELS OF OIL WILL ADDITIONALLY CONTAMINATE WATERS,
AS A RESULT OF THE WAR.**

No doubt that an increase in the number of oil pipeline ruptures will lead to a significant increase in river pollution with oil products. However, such growth will become detectable by the observers not before several months later, and a statistically significant growth will be observed only after a year and a half. At the same time, generalized annual observation data also become available 9-12 months after the end of the calendar year at best. Therefore, not all effects can be expressed in numbers now: some can be estimated, and for some we can only make assumptions.

63 https://www.mnr.gov.ru/docs/gosudarstvennye_doklady/

64 These data are given in the Yearbooks of surface water quality of the Russian Federation by hydrochemical indicators — <https://gidrohim.com/node/44>

65 Ivan Blokov. Environment and its protection in Russia, Changes in 25 years. Monograph. Moscow. Greenpeace Russia, 2018, 396 pages (book)

Use of “shadow” and “black” fleets for oil transportation

After the start of the war, and as an aftermath of sanctions, Russian companies began to widely use “shadow” and “black” vessels for transporting oil. Many of these vessels are known, and the available data suggests that they may carry more than 50-100 million barrels of oil per year. Accident probability for such ships is much higher than for ordinary tankers⁶⁶, they may not be covered by insurance or insurance may not cover the costs of eliminating environmental damage. A notable example is the accident that occurred in the Exclusive Economic Zone of Denmark⁶⁷, that fortunately occurred when the ship was not loaded with oil.

At the same time, the volume of Russian oil transported by sea amounts to about 5-15% of global oil shipments. Because of the use of “shadow” and “black” ships, the potential increase in accident rates can also be estimated at 10%. However, in this case, the greatest concern is not the increase in the probability of an accident itself, but the increasing potential for a catastrophic outcome of an accident.

To summarize, we may lay out some estimates of the immediate environmental effects of the Russian war associated with oil extraction.

In 2022 the number of oil pipe ruptures increased 2.2 -fold, and that related to oil industries specifically increased 2.6-fold.

The additional contamination of water reservoirs with oil fractions may rise to 10 mln barrels in the year 2023.

The probability of accidents with “shadow” and “black” tankers used for oil shipments could potentially rise by 10% or more.

66 <https://www.vox.com/world-politics/24113745/russia-shadow-fleet-oil-tankers-environmental-risk>; <https://cepa.org/article/russias-shadow-fleet-goes-rogue/>

67 <https://gcaptain.com/shadow-fleet-oil-tanker-that-crashed-had-void-western-insurance/>; <https://foreignpolicy.com/2024/03/26/russia-shadow-fleet-denmark-straits-shipping-sanctions/>