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Multi-Vector Diversification Concept for Russian Oil and Gas Company: Prerequisistes, Trends, Opportunities

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ABSTRACT

The study's relevance is explained that nowadays, Russian oil and gas companies are under the pressure of some negative factors and circumstances that adversely affect both their activities and the national economy entirely. All this dictates the need for a thorough understanding and elaboration of the current situation for the subsequent adoption of effective measures and management decisions strategic. The purpose of the paper is to form a concept and show new promising areas for diversifying the activities of Russian oil and gas companies. The authors used theoretical tools that combine deduction methods, induction, analogy, generalization, and classification. Also, the authors applied such empirical approaches as comparison, observation, and description. As a result, the work summarized an experience and analyzed key aspects of diversification of high-tech Russian and foreign companies in an ecosystem approach to making a business. The authors planned conceptual principles and proposed a model for managing the activities of domestic oil and gas enterprises. There have been carried out the example of PJSC Gazprom, an analysis of the current organizational and economic activities of a Russian oil and gas enterprise, which gave a possibility to identify the main prerequisites and reasons for its diversification. With the help of the data obtained, new trends for the diversification of the business of domestic oil and gas companies from this sector are substantiated. That is an important strategic decision, since the economic results of these enterprises are of decisive importance for the economic stability of Russia.

Keywords: oil & gas company; diversification; energy security; ecosystem; hydrogen; gas hydrates; liquefied natural gas

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RELEVANCE, AIMS AND OBJECTIVES OF THE STUDY

Russian oil and gas companies[1] are currently facing a number of problems and circumstances that are detrimental both to their current economic performance and to the economic prospects of this domestic industrial sector as a whole. In addition to restricted access of Russian enterprises to foreign markets, innovative technologies and borrowed funds, joint projects with foreign partners to develop new fields and transport hydrocarbons have been suspended. Imports of equipment and components have been hampered. Foreign assets have been frozen, foreign capital has withdrawn and investments have been refused. There is a negative impact on core revenues, due to both push-back by competitors and lower consumption of hydrocarbons as a result of climate change, the decarbonisation of the economy, stricter international environmental legislation and the development of alternative energy sources. Problems such as low profitability of developed fields and low geological exploration of new production areas, development of technologies for developing raw materials reserves on the Arctic shelf, dependence on imported equipment, high tax burden and worn-out fixed assets remain unresolved. [1].

Taking into account the economic and social importance of the national oil and gas sector to Russia and its fundamental role in ensuring the economic sustainability of the country, it is necessary to conduct a thorough reflection and elaboration of the problems identified, followed by the prompt implementation of necessary measures and the adoption of fundamentally new effective measures.

[1] Catalogue of upstream oil and gas companies (oil and gas production and exploration). URL: https://energybase.ru/upstream?ysclid=l72d0poqjm621778554 (accessed on: 15.11.2022).

Much attention to the topic of diversification of the oil and gas sector has been paid in a number of works of Russian [2–4] and foreign authors [5–7]. However, with each passing day, the problem of finding, justifying, and implementing new promising directions of diversification of domestic oil and gas companies is becoming more relevant and acute, requiring an urgent solution. This is what has determined the continuation of the development of this topic in the framework of the present analytical study. Its purpose is to propose a concept and identify strategic directions of development of enterprises of the domestic oil and gas sector.

In order to realise this objective, a number of objectives are considered:

- consideration of methodological aspects of diversification, taking into account the specifics of the oil and gas industry;
- summarising the experience of expanding the scope of activities of international and Russian high-tech companies, including oil and gas companies;
- formation of conceptual approaches and basic principles for diversification of domestic oil and gas enterprises;
- study of the current results of the economic activity of the Russian oil and gas enterprise as an object of diversification;
- to identify and characterize the factors of diversification of the Russian oil and gas industry;
- identification and justification of new prospective areas of diversification of Russian oil and gas companies.

The authors have posed three key research questions.

1. What are the conceptual principles of diversification in Russia?

2. What are the reasons and prerequisites for diversification of national oil and gas companies?

3. In what new directions should it be pursued in the domestic oil and gas industry?

AN OVERVIEW OF THE THEORETICAL FOUNDATIONS AND PRACTICAL ASPECTS OF DIVERSIFICATION

Diversification as a long-term strategy for modern business

Every large enterprise periodically needs to expand and then shift its strategic focus, which entails a reallocation of funds and assets to new areas of activity, taking into account developments in the overall economic situation, technological advances, market considerations, "shifts" in markets and changes in the business environment. The term "diversification" is commonly used to refer to such a transfer of activities into new areas and is understood as one of the possible strategies for business development, a turnaround of the enterprise towards the production of relevant, competitive, and market-demanded products [8].

Experience of diversifying high-tech Russian companies and the ecosystem approach

The successful diversification of Russian giant companies, including "Sberbank" and "Yandex", is largely due to the creation of ecosystems[2] [9]. "Sberbank's" ("Sber") ecosystem is an extensive network of more than 40 businesses that help clients to optimally address a wide variety of current issues and challenges. It includes services from almost all areas: medicine (SberZdorovye), food and food delivery (SberMarket and DeliveryClub), real estate transactions (DomClik), mobile telecommunications (SberMobile), job and employee search (Rabota.ru), creating a "smart" environment, cloud services and data storage (*VisionLabs*, MDG, *SberCloud*[3]) [10]. Sber is also developing several business areas: production of "smart" devices (*SberDevices*), logistics services (SberLogistics), FoodTech platform (*SberFood*), integrated solutions in the categories of "goods", "auto", "real estate", "work", "services", etc. (Classified).

"Yandex" is a pioneer in online solutions for customers' everyday tasks. In 2010, it already had about 50 specialised services in its portfolio, and today that number has surpassed 120. Last year Yandex launched several ecosystem projects. Among them are Yandex.Pro (Taxometer) — an application for self-employed people who can provide taxi driver or courier services in their vehicle; and Yandex Go — a service that helps to move around the city, implementing the functionality of taxi, carsharing, food delivery, courier service, ground transport schedule [11].

"Sberbank's" ecosystem was developed with funds derived from the company's core business — banking, while Yandex was financed from the funds generated by its flagship products — search engine and advertising [12]. Today, "Sberbank" and "Yandex" are high-tech multinational companies whose areas of interest include completely different business areas linked by an ecosystem approach.

Examples of diversification by foreign oil and gas companies

Diversification of foreign oil and gas companies is aimed at finding effective methods of risk management and reducing the impact of negative factors. Its basic directions are: *diversification of sales markets, procurement activities, logistics and business*. The latter is based on the development of new activities — both related and completely unrelated to the main profile and specialisation of companies. Major oil and gas players are moving in this direction.

[2] The business ecosystem — is a network of players in different markets that provide consumers with comprehensive value propositions based on modular solutions with flexible layout options. The ecosystem approach blurs the boundaries between businesses and industries.

[3] Were part of Sber's business ecosystem until May 2022.

Table 1

Activities of leading oil & gas companies on creating renewable energy sources (RES)

Company name (country affiliation)	Type of RES being promoted					Purchase of RES assets	Source
	Sun	Wind	Biofuel	Hydrogen	Geotremal		
Saudi Aramco (Saudi Arabia)	+	-	-	-	-	Yes	https://www.aramco.com
Exxon Mobil Corporation (USA)	-	-	+	+	-	Yes	https://corporate.exxonmobil.com
Shell (United Kingdom-Netherlands)	+	+	+	+	-	Yes	https://www.shell.com
TotalEnergies SE (France)	+	-	+	-	-	Yes	https://totalenergies.com
StatOil ASA (Norway)		+		-	-	Yes	http://www.norge.ru/staoil_geninfo
PetroChina (China)				-	+	No	http://www.petrochina.co.id/SitePages/Home.aspx
Qatar Petroleum (Qatar)	+	-	-	-	-	No	https://www.qatargas.com
Eni (Italy)	+	+	+	-	-	Yes	https://www.eni.com /en-IT/home.html

Source: compiled by the authors.

For example, they are expanding their presence in the renewable energy sources (RES) segment by setting up relevant subsidiaries and partially disposing of their oil and gas assets (*Table 1*) [13, 14]. Shell, for example, sold more than USD 4 billion worth of renewable energy assets in 2017. Today, 12% of investments made by oil and gas companies are in renewables, but companies are actively "shifting" towards other non-core projects.

For example, France's *TotalEnergies* (the world's fourth-largest producer) acquired *Lampiris*, Belgium's third-largest supplier of natural gas, for USD 224 million. *Lampiris* is also a producer of "green energy" and a provider of a range of services such as boiler maintenance, insulation, "smart" thermostat

supply, pellet heating supplies and more.[4] In addition, *TotalEnergies* has bought *Saft*, a global leader in high-tech batteries.[5]

Therefore, diversification is becoming a vital strategy for oil and gas companies' strategies and making informed choices of their directions is a top management challenge and a pressing issue for resource economies.

Gazprom's business and economic activities and strategic objectives as a diversification interest

"Gazprom" is a Russian energy company whose main activities include the geological exploration, production, transportation, storage, processing and sale of gas, gas condensate and oil, and the production and sale of heat and electricity, and employs around half a million people.

"Gazprom" accounts for about 11% of global gas production. The company supplies around 66% of the Russian market with its share in the total volume of oil and gas condensate refined in the country reaching 19%. "Gazprom" accounts for 13% of Russian electricity production, and 9% of heat production. The company has the exclusive right to export gas [15]. Including those under construction, it has about 180,000 km of gas pipelines.

"Gazprom" has a significant reserve base in terms of explored resources. The company's proven reserves will not be depleted before the following dates: natural gas in 35 years, oil in 15 years and gas condensate in 44 years. Gazprom's share of global natural gas reserves is 16% and 70% of Russian reserves [16].

[4] Total to buy Belgian clean energy supplier. Lampiris. De Standaard URL: https://neftegaz.ru/news/Acquisitions/219465-total-pokupaet-belgiyskuyu-lampiris-nesmotrya-na-trebovaniya-3-energopaketa-es/ (accessed on: 27.11.2022).

[5] Total to buy Saft to boost renewable energy business. The Wall Street journal (online). 09.05.2016. URL: https://www.wsj.com/articles/total-to-buy-saft-to-boost-renewable-energy-business-1462780542 (accessed on: 15.11.2022).

THE METHODOLOGICAL AND INFORMATIONAL BASIS OF THE STUDY

The analytical tools applied in the study are deduction, induction, analogy, generalisation and classification. A combination of methodological tools such as comparison, observation and description were used.

The informational and empirical foundation of the study was based on specific and scientific knowledge obtained in the course of:

- studying theoretical and practical aspects of diversification based on the materials of Russian and foreign companies and publications of domestic and foreign authors;
- getting acquainted with the experience of diversification by Russian high-tech giant companies "Sberbank" and "Yandex";
- searching for examples and systematization of the facts of diversification of transnational oil and gas companies;
- analysing the Russian oil and gas sector in order to identify specific challenges and problems and the prerequisites and reasons for adopting a diversification strategy;
- gathering and elaborating on technological advances in oil and gas related fields and high-tech sectors.

RESEARCH RESULTS

Management mix and sustainability model in the context of diversification

According to the best practices, the modern integrated approach to company management, which also achieves a favourable impact on the environment and society, is the combined principle *of environmental, social, and corporate governance — ESG* [17]. It is positioned as universal and comprehensive, and the international business community, including high-tech companies and transnational oil and gas corporations, seek to follow it whenever possible [18].

However, projecting the *ESG* complex onto the reality in which Russian companies find themselves today reveals a demand for its revision, overhauling, and fine-tuning. In this regard, based on exemplary foreign examples, guided by the experience of high-tech enterprises, and remaining in line with multi-vectorism, as well as based on the fundamental role of the raw materials sector in the domestic economy, in line with changes in the business environment of Russian companies operating in foreign markets and taking into account the inspired processes within the country, we have formulated a general principle of economic activity in modern conditions: *6ES+D*. It is based on creation of a business ecosystem (*EcoSystem*), implementation of an effective business strategy and diversification against the background of a common priority of *economic security, energy security and environmental safety*. It is envisaged that adherence to this integrated principle will lead each company and the country as a whole to economic wellbeing, prosperity and sustainability (*Economic Sustainability*) (*Fig. 1*).

The *6ES+D* management package is a set of management principles which, through a diversified and ecosystem-based approach, engage businesses in addressing economic, energy and environmental security issues. It takes into account the conditions, circumstances and constraints under which national oil and gas companies, the drivers of the national economy, operate today, and is designed to help them achieve their fundamental goals and strategic objectives.

The *6ES+D* package clarifies the basic priorities within which new directions for diversifying the oil and gas sector can be proposed and justified:

- Ecosystem principle and multi-vector business building by leveraging funds from core business activities;

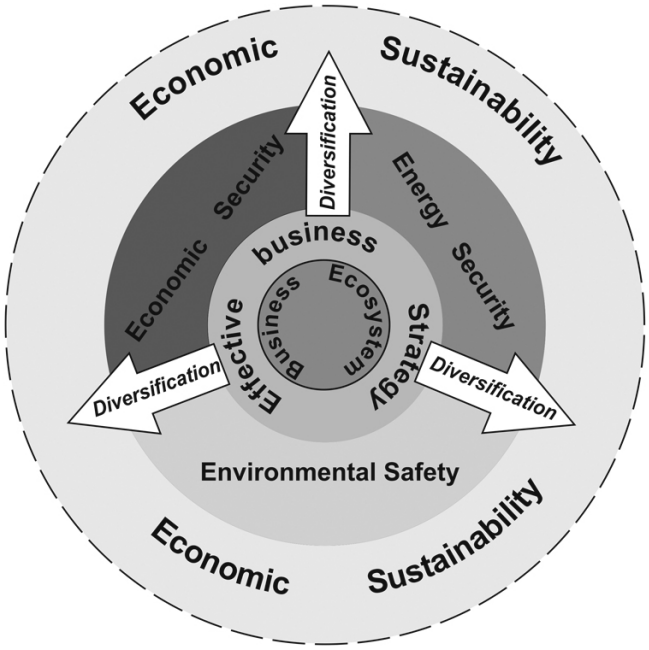

Fig. **Management mix *6ES+D***

Source: compiled by the authors.

- Creating new and promising ways to diversify based on innovative technologies and effective strategic planning;
- Ensuring energy security, achieving economic sustainability, and preserving the environment;
- dispersing revenues and respecting the long-term interests of shareholders and investors;
- Striving for economic prosperity both within each individual enterprise and throughout the national economy.

The above mentioned business vectors associated with innovative technologies and other resources are designed to ensure the long-term economic sustainability of oil and gas companies and therefore require strategic solutions.

Diversification factors for Russian oil and gas companies

An analysis of the successful business practices of Russia's leading high-tech

companies "Sberbank" and "Yandex" (and in particular their experience of implementing an ecosystem approach [19, 20]) has highlighted the following characteristics of their diversification, which, according to the deduction rule, also apply to other major players, including the domestic oil and gas sector and "Gazprom" (*Table 2*):

1. *Using a donor company* at whose expense financing and development of new business directions will be implemented until they themselves start generating sufficient economic and financial returns.

2. *The availability of a bank* to provide financial services for the diversification project, including credit and transactional transactions, payments to employees, settlements with counterparties, etc.

3. *Digital literacy* (knowledge of innovative technologies and possession of digital competences), which is based on experience in economic activities based on digital and "smart" production technologies.

4. *Obtaining state support* in the form of tax incentives, subsidies, grants, as well as information and human resource support and other forms of assistance.

5. *Attracting highly qualified managers* able to undertake the selection and implementation of promising new business lines, company strategy revision, business planning, human resources issues, investment management and project analysis, as well as other organisational functions.

Among the factors characterising the reasons for diversification by Russian oil and gas companies are sanctions pressure, lower revenues due to falling demand and volatile hydrocarbon prices, a growing share of alternative sources in energy production (due to stricter and tougher environmental regulations), increased complexity of hydrocarbon production and depletion of developed fields.

New directions for diversifying the domestic oil and gas sector

Industrial production of hydrogen from natural gas. The main consumers of hydrogen are the chemical, oil refining, glass, and food industries, as well as metallurgy and energy. Others include nuclear fuel fabrication facilities, electronic and electrical industries, transportation companies and pharmaceuticals. The global demand for hydrogen currently exceeds 73 million tonnes per year, and among the arguments for its growth are tougher pollution laws.

One of the prerequisites for hydrogen production, storage and transportation is the EU's declared goal of decarbonizing the economy, for which more than 1 trillion euros have already been committed, which is evidence of its high priority. However, for the foreseeable future, the EU's needs will not be covered by European hydrogen producers.

At the moment, several technological schemes for the production of hydrogen are known [21]. The most environmentally friendly and sufficiently economically feasible is low-carbon production by pyrolysis: decomposition of natural methane into hydrogen and solid carbon, which is used in industry and does not pollute the environment [22]. It has already been announced that the Norwegian energy company *Equinor ASA* is going to start implementing low-carbon production plans.[6] But so far, this method has not been implemented on an industrial scale anywhere in the world and very few organizations are engaged in its development: "Gazprom" and Tomsk Polytechnic University (Russia), *BASF, Wintershall Dea, Linde, Uniper* and Karlsruhe Institute of Technology (Germany), Technical University of Madrid (Spain) and several others. In

[6] URL: https://www.equinor.com/ — official website of a Norwegian energy company Equinor.

Table 2

Prerequisites for the diversification of Russian oil and gas company (on the example of PJSC Gazprom)

Prerequisites	Specification
Using a donor company	"Gazprom" is a large company with sufficient financial and material resources to invest in the development and implementation of new areas of diversification
The availability of a bank	"Gazprombank" is one of Russia's largest banks. In addition to the oil and gas sector, it provides banking services to enterprises in other sectors, including machine-building, defence, chemical and nuclear industries, etc. "Gazprombank" is "Gazprom's" trusted financial and technological company that can efficiently address financial issues in connection with diversification
Digital literacy	"Gazprom" employs a variety of professionals: engineers, programmers, analysts, lawyers, financiers, managers, project managers and other specialists whose work is directly related to the implementation of innovative technologies and digitalisation tasks
Obtaining state support	With the state controlling over 50% of "Gazprom's" shares, administrative resources and state support are guaranteed
Attracting highly qualified managers	"Gazprom's" human resources policy is based on attracting experienced, highly qualified professionals from various fields who are capable of competently setting and effectively solving strategic and tactical tasks. The Company has the necessary financial resources for these purposes

Source: compiled by the authors.

this context, "Gazprom", as the largest gas producer and having already some scientific and technological know-how, has a real opportunity to become a supplier of hydrogen to the Russian and international markets [23]. A three-stage scheme for the implementation of this direction is envisaged:

1. The extraction of hydrogen from natural gas by means of wind energy technology that eliminates carbon dioxide emissions.

2. Transporting it by repurposing existing pipelines in the company and those under construction.

3. Sales of hydrogen through affiliated trading organisations.

Gas extraction from gas hydrates. Gas hydrates are crystalline compounds of water and methane that exist at low temperature and high pressure (making them present in permafrost and deep-water areas) and have the potential to become a vast source of natural gas [24]. There are various estimates of the world's recoverable gas hydrates, but even the most modest ones are an order of magnitude greater than the conventional natural gas reserves. In Russia their accumulations have been confirmed at the bottom of the Black, Okhotsk and Caspian Seas and Lake Baikal, as well as in the Bovanenkovskoye, Yamburgskoye,

Urengoyskoye and Messoyakhskoye fields. Gas hydrates have been proven in Russia's Arctic shelf. According to VNIIGAZ estimates (Russian Research Institute for Natural Gases and Gas Technologies), our country has 1,100 trillion m³ of gas hydrate reserves.

At the moment industrial production of gas hydrates is not profiTable, (the development of natural gas deposits is much cheaper) and in addition associated with environmental risks [25]. Meanwhile the industrial production of methane from them has already been planned in Japan which has already made considerable progress in the study of this raw material. The most active in the study of gas hydrates (apart from Japan) are the USA and Canada; in Russia they are dealt with by Lomonosov Moscow State University, Gazprom Russian Research Institute for Natural Gases and Gas Technologies, Gubkin Oil and Gas University and "Skolkovo" Innovation Centre.

The following steps for the commercialisation of gas extraction technology from gas hydrates are outlined:

1. Improvement of existing methods. Carrying out geological exploration works to clarify the reserves and conditions of gas hydrates occurrence, identification of the most promising fields.

2. Pilot launch of gas hydrates production at gas condensate fields under development.

3. Scaling up and commercial production of gas hydrates with their subsequent sale, as well as re-profiling or conversion of the existing ones and the creation of new production facilities on their basis.

The last of the above-mentioned steps involves the development of innovative technologies, which makes this proposal a fundamentally new area of diversification.

The production of liquefied natural gas (LNG) is not an entirely new idea, but it is one of the priority areas for diversification. The fields of application for natural gas converted to liquefied natural gas are wide-ranging. First and foremost, it is used as a motor fuel, but also for the production of electricity and heat energy [26].

The global LNG market has grown rapidly over the past few years. Cumulative LNG imports have reached 495 billion m³. The largest buyers are the UK, India and the Netherlands; the main exporters are Qatar, Indonesia, Malaysia, Australia and the US [27]. Russia's share is about 6%, with "Novatek" and "Gazprom" being the main domestic players in the LNG market. The latter sells 10 billion m³ of LNG annually. It has established a subsidiary, "Gazprom LNG Technologies",[7] which acts as the operator of the LNG projects. As part of one of them, the Sakhalin-2 project[8] — is the first domestic LNG plant that has been built. There are plans to launch two more plants in 2025: one on the Black Sea coast and one near Vladivostok.[9]

Due to the mobility of liquefied gas, its ease of transportation and the consequent good prospects of access to markets inaccessible to pipeline gas, LNG production should be characterised as a strategic direction for diversification. The technology used eliminates the need for laying and leasing pipelines, as well as the theft of energy through "taps" and other similar manipulations.

Creating a conglomerate of high-tech industries. The rapid development of innovation is not beyond the sight and sphere of interest of big business with its considerable administrative, financial and other resources, which makes it possible to acquire virtually any as-

[7] Gazprom LNG Technologies (official website). URL: https://www.gspgt.ru/ (accessed on: 15.11.2022).

[8] Russia's first liquefied natural gas plant. URL: https://www.gazprom.ru/projects/sakhalin2/?ysclid=lazd21nzoy443242827 (accessed on: 27.11.2022).

[9] Gazprom will build two new LNG plants. Vedomosti (online). 22.03.2021. URL: https://www.vedomosti.ru/business/articles/2021/03/22/862660-gazprom-spg-zavoda (accessed on: 20.08.2022).

set, technology, expertise, etc. And the oil and gas sector is no exception [28]. In this respect, the creation of a kind of conglomerate under the aegis of "Gazprom",[10] which will include the structures engaged in the promotion and adaptation of innovative technologies, seems promising. Specific activities are planned:

- searching for promising innovative business areas;
- selecting specific organisations working in these areas;
- analysing the opportunities and conditions for acquiring these companies;
- financing their leading innovations.

Joint projects with "Rosatom" State Corporation. In addition to ideas related to technology, diversification requires financial and other resources. While one of the current peculiarities of Russian oil and gas companies is the problem of attracting external financing due to the denial of access to foreign capital, as well as the withdrawal of Western companies from projects, increased caution on the part of Eastern partners, etc. In other words, in addition to their own resources, state support and loans from Russian banks, close cooperation with domestic giant companies from related or relatively related sectors seems absolutely logical. In particular, it seems reasonable to develop cooperation between oil and gas companies and the state nuclear energy corporation "Rosatom", which is a powerful diversified holding with serious assets and competences in such economic sectors as energy, engineering and construction.

Working contacts and consultations are taking place between the companies in search of areas of common ground. Moreover, Rosatom is already exploring the possibility of replacing "Gazprom's" gas turbines with electric drives, for which a nuclear power plant project is being considered for power supply. To fully electrify the gas infrastructure, some 40 GW of power-generating capacity would need to be built in different regions of the country.[11] The main point of this project is to reduce the so-called carbon footprint. The project fits in well with "Rosatom's" programme to build a small nuclear power plant.

"Rosatom Overseas" (part of the state corporation) and the French company *Air Liquide* have completed a feasibility study for the construction of a hydrogen production complex in Sakhalin.[12] An agreement has already been signed between "Rosatom Overseas" and "Gazprom Neft" on cooperation in the field of hydrogen energy, which coincides with the intentions of creating a corresponding new area of diversification [29], the implementation of which, as well as many others, will contribute to the energy and environmental security and economic sustainability of Russia in addition to the development of domestic oil and gas companies.

Challenges and opportunities for diversification of Russian oil and gas companies in the current political and economic realities

In the current difficult political and economic situation, it is advisable to analyze the real prospects for diversification of Russian oil and gas companies in a three-dimensional system of coordinates, the axes of which are: 1) access to markets; 2) financial security and investment attractiveness; 3) availability of technology and equipment. After all, it is along these lines that major shifts occur,

[10] A conglomerate is a form of association under a single financial control of a network of diverse companies operating in completely different fields.

[11] Atomic methanmorphosis. Kommersant (online). 07.02.2022. URL: https://www.kommersant.ru/doc/5204917?ysclid=lasbcqyc1g21496033 (accessed on: 15.11.2022).

[12] "Rosatom" Corporation (official website). URL: https://www.rosatom.ru/journalist/news/ao-rusatom-oversiz-i-air-liquide-zavershili-teo-proekta-sooruzheniya-zavoda-po-proizvodstvu-vodoroda/ (accessed on: 15.11.2022).

predetermining the range of further economic activities.

Access to markets and prospects for diversification. There is an attempt to redistribute global energy sales platforms, with the main beneficiaries being the US, Norway, and several other countries, which are making additional profits by substituting hydrocarbons from Russia on the back of unprecedented high oil and gas prices.

In addition to restricting hydrocarbon imports, there is a price cap on Russian energy and a ban on shipping insurance for domestic oil, making it difficult for us to supply Asia.

For several decades, "Gazprom" has been the largest supplier of gas to the European market [30]: about a third of the blue fuel consumed on the continent came from pipeline gas from Russia. In 2022, some European countries had given up on Russian gas, replacing it with Norwegian, American, etc., whose prices were several times higher than those of the previous year. The disruption of the Nord Stream 1 and 2 pipelines has finally cut off domestic suppliers from European consumers.

In this context, despite Gazprom's high revenues in 2022 (already surpassing those of last year due to record-high blue fuel prices), the company's revenues will decrease in the future [31]. Even with growing exports to Asia, the planned construction of new pipelines (including through Mongolia) and increased gasification of Russian regions, the company's financial performance and, consequently, its diversification potential will inevitably decline.

Diversification in the context of financial security and investment attractiveness. In 2022 domestic oil and gas companies were confronted with the freezing of foreign assets, termination of foreign investment, and suspension of international projects [32]. For example, the German company *Linde* abandoned the construction of a gas terminal in Ust-Luga in the Leningrad Oblast,[13] while *Shell* abandoned the "Sakhalin-2" project and ceased its participation in Gazprom Germania.[14]

The situation is partially mitigated by the fact that in some cases it is only a matter of suspending investments in new projects while maintaining a presence in existing ones. For example, France's *TotalEnergies* is not interrupting its cooperation with Novatek,[15] Germany's *Wintershell Dea* and *Trafigura* continue to manage their joint assets with "Gazprom" and "Rosneft" in Russia,[16] and Japan's *Mitsui* and *Mitsubishi* remain in the Sakhalin-2 project.[17]

Certainly, the withdrawal of foreign investors and the closure of access to foreign borrowing will be a significant (but not insurmounTable) problem in implementing such capital-intensive tasks as the diversification of the domestic oil and gas sector [33].

As for "Gazprom", this year, due to unprecedented external pressure, the company's capitalisation has declined sharply. It is necessary to point out two multidirectional factors related to its investment attractiveness as of the end of 2022:

[13] German company turns down megaproject with Gazprom. RBC NEWS AGENCY. 21.06.2022. URL: https://www.rbc.ru/spb_sz/21/06/2022/62b1ce0e9a7947c6794b7973?ysclid=lajmsskhmo961536520 (accessed on 15.11.2022)

[14] Shell notified Russia of its refusal to participate in the operator of Sakhalin-2. RBC NEWS AGENCY. 01.09.2022. URL: https://www.rbc.ru/business/01/09/2022/6310d45d9a794764759ebf63?ysclid=lajmxngt8j586954238 (accessed on: 15.11.2022).

[15] Source: Total will not sell its stake in NOVATEK. Kommersant (online). 22.03.2022. URL: https://www.kommersant.ru/doc/5270961?ysclid=lajn22b45y603902264 (accessed on: 15.11.2022).

[16] Wintershall Dea and Trafigura remain in Russia for now. Kommersant (online). 02.03.2022. URL: https://www.kommersant.ru/doc/5239498?ysclid=lajn9u7rmf809405098 (accessed on: 15.11.2022).

[17] Source: Mitsubishi and Mitsui decide to stay in Sakhalin-2. RBC NEWS AGENCY. 25.08.2022. URL: https://www.rbc.ru/business/25/08/2022/6306dc2c9a7947498a1eb14c?ysclid=lajnhk5grk701228451 (accessed on: 15.11.2022).

• the company's share price was adversely affected by an increase in the mineral extraction tax in Russia[18];

• the company made record payments per share of more than RUB 1.2 trillion in aggregate.[19] The company's financial stability and sTable dividend policy with respect to investors is evidence of this.

Overall, however, it must be recognised that the investment appeal (and hence the financial security of diversification) of Russian oil and gas enterprises can only improve dramatically if the international political context changes.

Availability of technology and equipment for diversification. Even if sufficient funding is found, bans on equipment imports and restrictions on access to technological know-how, which have become a way of putting pressure on the domestic economy, including its oil and gas sector, remain difficult to overcome [34, 35]. The difficult situation is further exacerbated by the fact that foreign partners, who are willing in principle to work together, are forced to refuse to cooperate with the Russian side due to the threat of sanctions against them.

As we can see, the current position of domestic hydrocarbon suppliers in the economic system of coordinates is fraught with very difficult, yet not fatal, problems and difficulties accompanying the diversification of the oil and gas engines of our economy.

CONCLUSIONS

In the current economic and geopolitical conditions, the production and financial activities of Russian oil and gas companies are more exposed than ever to a variety of negative factors and risks: economic, technological, political, natural. The authors have made an analytical study of the readiness of domestic oil and gas enterprises to choose multidirectional diversification as a long-term strategy to overcome them.

The paper elaborates on three key aspects:

1. Evidence and examples of successful diversification by a number of large companies (including oil and gas companies), which argues for its strategic feasibility.

2. Technological areas and R&D underway that prioritise the diversification of oil and gas companies and confirm the technological capabilities of the overall diversification effort.

3. Problems and prospects of diversification of domestic oil and gas companies in the context of sanctions pressure, embargo on Russian hydrocarbons supplies and other instruments of economic warfare with Russia.

The most important aspects of diversification of international oil and gas companies are analysed in the context of the ecosystem approach to business organisation, the experience of expanding the range of activities of high-tech Russian enterprises is comprehended. Based on the current realities, conceptual principles are formulated and a model for managing the economic activities of Russian oil and gas companies in the context of their diversification is proposed. The main prerequisites and reasons for the latter have been identified (on the example of "Gazprom"). Vectors for diversification of Russian oil and gas companies have been selected: industrial production of hydrogen from natural gas using renewable energy sources, extraction of natural gas from gas hydrates, production of liquefied natural gas. The creation of a conglomerate of high-tech production facilities under the

[18] State Duma passes law to raise MET (Mineral Extraction Tax). Vedomosti (online). 30.09.2020. URL: https://www.vedomosti.ru/economics/news/2020/09/30/841676-gosduma-prinyala-zakon-o-povishenii-v-35-raza-ndpi-na-dobichu-rud-i-udobrenii?ysclid=lajnmo9b94360839338 (accessed on: 15.11.2022).

[19] "Gazprom" decides to pay a record dividend: Should you buy the shares? Forbes (online). 30.09.2022. URL: https://www.forbes.ru/investicii/478547-gazprom-resil-zaplatit-rekordnye-dividendy-stoit-li-pokupat-bumagi?ysclid=lajnqoj84p639992240 (accessed on: 15.11.2022).

auspices of "Gazprom" is proposed. It is recommended to develop cooperation with large state corporations, which have serious resource potential, significant financial assets, and high working competences in various economic sectors. The implementation of these areas will fully contribute to solving the problems and challenges currently facing the Russian oil and gas sector and the economy as a whole.

Only a few of the most promising areas of diversification for Russian oil and gas companies have been considered, but in reality, there could be more. The study should continue in terms of identifying and justifying new technical and economic opportunities for diversification. In addition, a detailed analysis of the areas already proposed in terms of increasing the efficiency of the oil and gas industry and improving the economic performance of specific companies is required. Finally, there is a need to monitor and take account of developments in the political economy vector, which inevitably affects the nature, scale, and prospects of most major domestic companies, including oil and gas companies.

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