Hayчная статья Original article

УДК 338

doi: 10.55186/2413046X_2022_7_11_632

ФОРМИРОВАНИЕ СТРАТЕГИИ УСТОЙЧИВОГО РАЗВИТИЯ ГАЗОВОЙ КОМПАНИИ

FORMATION OF A SUSTAINABLE DEVELOPMENT STRATEGY FOR A GAS COMPANY



Ованоглян Рипсиме Сергеевна, Ереванский государственный университет, экономический факультет, кафедра финансов, кредита и денежного оборота (Ереван, Армения), главный бухгалтер в ООО «Эс Джей Газ Компани» (Грузия)

Охотников Илья Викторович, доцент, кандидат экономических наук, доцент кафедры «Экономическая теория и менеджмент» Российского университета транспорта (МИИТ), Россия, Москва

Ovanoglyan Hripsime Sergeevna, Department of Finances, Credit and Money Turnover, Yerevan State University, ripsovanoghlyan@gmail.com

Okhotnikov Ilya Viktorovich, Docent, Candidate of Economic Sciences, Assistant Professor of the Economic Theory and Management Department of the Russian University of Transport (MIIT), Russia, Moscow, e-mail: roat.miit@mail.ru

Аннотация. В последнее время не только на мировом энергетическом рынке наблюдается усиление конкуренции в нефтегазовой отрасли, но и в любой стране. Не исключение и Грузия, где ценовая политика и вопрос установления тарифов на электроэнергию, природный газ входит в компетенцию Национальной комиссии по регулированию энергетики и водоснабжения Грузии (GNERC). [10] В статье рассматривается вопрос совершенствования ценообразования газовой компании на рынке газа. Предлагается метод совершенствования ценовой политики

газового предприятия на основе интеграции зарубежного опыта ценообразования на газ и системы мер по обеспечению «равнодоходности» импорта при изменении модели ценообразования, а также метод диверсификации. Правильное использование данной методологии позволит организации повысить гибкость и эффективность своей ценовой политики при продлении сотрудничества с потребителями без ущерба для рентабельности и присутствия на газовом рынке ЕС. Цель статьи –сформировать все методы развития газовой компании и выработать стратегии устойчивого развития, основываясь на практике и анализе известных зарубежных компаний. В настоящее время природный газ, в отличие от других видов энергии, является наиболее эффективным средством реализации целей устойчивого развития человеческой цивилизации. Актуальность темы связана с попытками продемонстрировать объективный вклад научной новой идеи в достижение устойчивого развития газовой компании.

Abstract. In recent years, competition in the oil and gas industry has increased not only in the global energy market, but also in any country. No exception is Georgia where pricing policies and the issue of establishment tariffs for electricity and natural gas fall under the competence of the Georgian National Energy and Water Supply Regulatory Commission (GNERC). [10] The Article reviews the issue of improving the pricing of a gas company in the market. The Article hereby introduces a method of improvement of pricing policy of a gas company on the basis of integration of foreign experience in gas pricing and system of measures to ensure import «netback parity» upon changing the pricing model and diversification method. The correct use of this methodology will allow a company to increase flexibility and efficiency of its pricing policy while extending cooperation with consumers without compromising the profitability and presence on the EU gas market. The aim of the Article is to establish all methods of development of a gas company and elaborate strategies for sustainable development based on the practice and analysis of well-known foreign companies. Natural gas, unlike other forms of energy, is now the most effective means of achieving the sustainable development of human civilization. The relevance of the issue is related to

the attempts to demonstrate the fair contribution of the new scientific idea to the sustainable development of a gas company.

Ключевые слова: импорт природного газа, экспорт природного газа, экспортноориентированная газовая компания, газовый рынок ЕС, модель ценообразования с нефтяной индексацией

Keywords: natural gas import, natural gas export, export-oriented gas company, EU gas market, oil indexation pricing model

The world's attention is now focused on the oil and gas markets. One of the criteria for the economic sustainability of these markets is, first, the sustainability of oil and gas. Nowadays, environmental protection is a priority in all sectors of the economy, but is particularly relevant in the oil and gas industry. Georgia was faced with this issue after the discovery of 16 billion cubic meters of natural gas [11].

This is explained by the fact that oil and gas are depleting natural resources, so it must be consumed conservatively to save resources for future generations. In addition, oil and natural gas production and transportation are associated with wastes that need to be reduced to prevent environmental disasters (e.g. gas leaks and oil spills) [1].

Second, to maintain balance of supply and demand in oil and gas markets: the energy deficiency. Oil and gas are essential for any State (for example, to maintain stable public infrastructure and institutions), households and businesses. The strength of the oil and gas markets lies in fully meeting demand, but it becomes more difficult every year, as the «clean» energy industry is actively developing, and the demand for oil and gas seems increasingly unpredictable.

The obstacle to meeting this criterion is that the «clean» energy in the current technological paradigm can not constitute a reliable alternative to fossil fuel. Even the world's most environmentally friendly economies are characterized by hybrid energy systems that combine «clean» and fossil energy in different proportions. The issue in question originates from the low and unstable productivity of «clean» energy, as well as the complexity of its storage and distribution.

As business ventures, gas companies must cover their costs, recover their investments and make profits for shareholders and investors. In addition, many gas companies are big employers and even city-based enterprises. Therefore, society (especially their employees) and the state are also interested in maintaining stable financial position (break-even) of energy companies [2].

Meeting these three criteria at the same time is a complex task and a challenging scientific and practical issue. This Article proposes to discuss this problem from the perspective of the fuel and energy companies in the gas market. The underlying concept of this study which ensures its contribution to the literature is that the sustainability of companies in the gas markets is largely determined by technology.

This concept is based on contemporary literature that highlights significant contribution of advanced AI technologies to the development of energy economy. Artificial Intelligence (AI) is advanced technology providing intellectual assistance for making complex decisions.

Therefore, the aim of this Article is to study the global best practices and identify prospects for improving the eco-management of companies in the oil and gas markets through the use of AI to achieve sustainable development. The originality of this Article is based on the scientific study of artificial intelligence as a new and prospective source of sustainability for enterprises of the fuel and energy sector in the oil and gas markets.

AI in Environmental Management of Oil and Gas Companies: Literature Review and Gap Analysis.

As a result of structural and functional analysis of value chains in the oil and gas industry, three sectors were identified: 1) commodity and market supply (energy distribution, efficiency and energy supply), 2) financial management (investment, returns on investment and returns to stakeholders, including employment and community welfare) and 3) environmental management that makes the oil and gas business sustainable [3].

By identifying the above three sectors a complex view of the oil and gas industry is outlined, which opens the possibility for its systemic study. In this regard, this Article

recommends that a study be carried out in each of the above three sectors of the oil and gas industry and the special aspects of the use of AI in various sectors be identified.

In the existing literature the essence of environmental management of oil and gas companies is explained in detail. The environmental management of oil and gas companies makes an important contribution to the protection of the environment and the improvement of the environmental performance of the energy sector. Nevertheless, the financial implications of environmental management for energy companies remain poorly explored and little understood.

The role of AI in oil and gas markets is also discussed in sufficient detail in existing publications. Many researchers in their works point to the significant role of AI in the distribution of energy and the promotion of energy efficiency, namely, in the implementation of SDG 7. However, the role of AI in the environmental management of oil and gas companies is not well-defined. An evaluation of the existing literature showed that despite a large number of publications, the issue of sustainable development of oil and gas markets is only partially studied [4].

The experience and prospects of using AI in the above sectors of the oil and gas industries are poorly understood and unclear. In this regard, the prospects of systemic (the unity of the following criteria: ecological, deficit-free and break-even) sustainable development of oil and gas markets, as well as the importance of AI for its achievement are not determined.

In addition to assessing sustainable development, it is advisable to assess the life cycle of technology as a factor in the production of energy resources in the oil and gas markets - an environmental impact assessment. The life cycle assessment, based on existing literature, showed a close link between AI and environmental management. At the first stage of the oil and gas life cycle, AI optimizes field survey and uses it in the most efficient way to preserve undeveloped oil and gas fields for future generations.

At the second stage of the life cycle, AI facilitates to optimize logistics and improve the safety of oil and gas transportation and storage. At the third stage of the oil

and gas life cycle, AI promotes more efficient and economical «smart» consumption of oil and gas resources in the energy sector.

This Article applies the Impact, Population, Affluence and Technology (IPAT) to clarify factors affecting renewable energy sources. Reliable and prestigious official World Bank statistics at the global level provide an empirical basis for research of the global best practices.

Pursuant to the selected method, the variable «I» in equation «I=PAT» reflects the impact of environmental management of the oil and gas market companies, the indicator of which is consumption of renewable energy (% of total final energy consumption), which increased from 16,86% in 2010 to 17.54% (the most recent statistics) [5]. Consequently, the impact has declined by 4.03% in recent years.

Despite the significant increase in the world population during the period under review, the population has demonstrated environmental responsibility in terms of energy use. In this Article, it is evaluated in the context of consumption fossil fuels for energy supply (% of the total), which decreased from 80.8% in 2010 to 79.7% (the most recent statistics). From this perspective, the population has declined by 1.36 per cent in recent years.

Prosperity, even with strong economic growth, is also reduced due to the enahnced responsibility of society towards the environment and the economy. In this Article, it is evaluated in terms of total revenues from natural resources (% of GDP), which decreased from 3.7% in 2010 to 2% (the most recent statistics). So, wealth has fallen by 45.95% in recent years.

Technology gained momentum with the Fourth Industrial Revolution, which ushered the world into the AI era in the period under review. In this Article, it is evaluated in terms of consumption of alternative and nuclear energy (% of total energy consumption), which increased from 8.3% in 2010 to 13.4% (the most recent statistics). Consequently, the machinery has dropped by 61.45% in recent years.

Thus, from 2010 to date, technology has been the most important contributor to minimizing the harmful effects of energy on the environment. In this regard,

technological progress is a key factor in improving the environmental management of energy companies in the oil and gas markets. It is therefore advisable to focus further research in this work on an in-depth study of the selected technological factor [6].

Considering the above given results of structural and functional analysis of value chains in the oil and gas industry, we analyse the practical experience of using AI in various sectors of the oil and gas industry.

In the production and supply sector (energy distribution, efficiency and supply), seismic and boring records analysis using AI allows drilling fewer wells and conducting less field surveys, saving both money and time. The profit from smart fields, as a result of introduction of AI, increased by 2-10%.

Chevron has invested more than \$6 billion in the i-Field «Connected Fields» project and now receives about \$1 billion additional revenue per year. The productivity of industrial facilities increased by 4%, and the oil recovery factor - by 6 LOI. In «Gazprom Neft», the time for interpretation of geological data thanks to the AI decreased by 6 times, and the amount of useful information extracted from them increased by 30%.

In the financial management sector (investment, returns on investment and returns to stakeholders, including employment and community welfare), the introduction of AI increases the return on investment. In this regard, C3.ai is a good example of a company applying artificial intelligence, that has developed several commercial platforms to introduce machine intelligence into business processes, including oil and gas.

The company was founded in 2009 by billionaire and technology investor Thomas Siebel, a former employee of Oracle. Among the customers (only approximately 30) there are oil and gas companies such as Shell and Baker Hughes. The company's revenue has grown exponentially over the past five years, from \$33 million in 2017 to \$183 million in 2021. Oil and gas investors can invest in projects related to the introduction of AI into the activities of oil and gas enterprises by acquiring C3.

Table 1. Financial indicators and values of the index «vector of sustainable

devel	lopment» o	f the	five	leading	g oil	and	gas	companies	in	Russia	in	2022	2.
-------	------------	-------	------	---------	-------	-----	-----	-----------	----	--------	----	------	----

Company	Rank (the	Sales,	Profit,	Assets,	Market	Value of the
	smaller	bln	bln	bln	value,	index «vector of
	the	dollars	dollars	dollars	bln	sustainable
	better)				dollars	development»
Rosneft	53	126,9	10,9	208,5	48,1	3,93
Gazprom	32	122,6	22,7	331,7	60,8	5,6
Lukoil	99	116,3	9,9	95,7	41,2	2,87
Novatek	316	13,2	13,4	32,5	42,6	3,43
Tatneft	539	14,8	3,0	19,9	16,7	2,97
Average of Top	207,8	78,76	11,98	137,66	41,88	3,76
5						
Variation, %	104,36	75,22	59,47	95,65	38,35	29,55
Correlation with	-57,09	48,46	88,46	91,26	78,36	-
the value of the						
index «vector of						
sustainable						
development»						
%						

With respect to environmental management, which makes the oil and gas business sustainable, due to the introduction of AI, the environmental indicators of «Gazprom» have increased, which is reflected in corporate sustainability reports for 2021, in particular, the waste was reduced by 6%. Optimization of logistics with the help of AI has reduced the frequency of accidents during oil transportation– which resulted in saving fuel and energy resources in the implmentation of energy supply programmes by 24.6% [7].

The data provided on whether AI had been used in the oil and gas industry showed that AI provided significant benefits in all sectors of the oil and gas industry. In the first two sectors (product development and financial management), AI facilitates only to increase the economic efficiency of oil and gas companies. In the third sector (environmental management), both the economic (savings in oil and gas resources) and the environmental efficiency of oil and gas companies have been increased [8].

Considering these achievements, priority should be given to increasing the use of AI in the third sector (environmental management). It is therefore advisable to focus on

the third sector (environmental management) in the oil and gas industry as the most promising in terms of economy and environmental protection. [9].

The environmental management activities of oil and gas companies may differ in terms of site-specific activities, environmental problems, and waste generation and disposal. Environmental management options may be different and site-specific.

AI can be useful for the environmental management of oil and gas companies, firstly for the planning of usage of imported gas as effectively as possible. This is the case in the countries where the gas is purchased and imported, but will be mined in the future. Oil and gas fields serve as an object of nature management, and as an alternative of the object of nature management based on AI, it uses intellectual assistance in planning and development of deposits. An example of best practice is Chevron, which dramatically increases the profitability of the gas company.

Secondly, to reduce production waste: optimize logistics and prevent accidents (natural disasters) in the transportation of oil and gas. In this case, the environmental management includes the transportation of oil and gas, and the environmental management alternative based on AI is the environmentally responsible for optimization of logistics. An example of best practice is «Gazprom», where the optimization of logistics reduced costs.

Thus, during the study the following results were obtained. First, structural and functional analysis of value chains in the oil and gas industry allowed to distinguish three sectors: 1) production and delivery to the market (energy distribution, energy efficiency and supply), 2) financial management (investment, returns on investment and returns to stakeholders, including employment and community welfare) and 3) environmental management, making the oil and gas business socially responsible.

Second, the best practices in the use of AI in each selected sector of the oil and gas industry were examined, and the benefits of AI were evaluated in quantitative and qualitative manners. Third, the maximum potential of use of AI in the environmental management has been substantiated, since it ensures growth of economic and

environmental indicators simultaneously, and, accordingly, is the most profitable for the economy and environmental protection.

Fourth, it has been substantiated that environmental management options can be diverse and site-specific. It is shown, how AI can be useful for environmental management of oil and gas companies for the sites, such as oil and gas fields (intelligent support for planning and development based on Chevron's experience in resource saving) as well as in the fields such as oil and gas transportation (environmentally responsible logistics optimization using AI based on the Gazprom experience).

The complex analysis of the problems of the formation of sustainable development of large gas companies allows us to draw the following conclusions and statements: the current condition of growing competition force companies to reconsider traditional ways and methods of achieving the main goal - profit. The main factor in the strategy of any gas company is AI. Companies should diversify activities that will ensure development, particularly through sustainability, regardless of market and political risks. The development of the gas sector, through the creation and merger of alliances and the expansion of the geography of activities, is also desirable for the strategy of growth.

References

1. Eremin S.V. Natural Gas Markets in the Context of International Economical Integration: Approaches to Transformation, Key Factors and Challenges: Dissertation.

... Doctor of Economic Sciences. M, 2018. 353 p.

2. Konoplyanik A.A. The Gas Market in Anticipation of the Post-revolutionary Struggle. [Electronic resource]. Available at: http://www.opec.ru/1465590.html (data extracted on 11.09.2022).

3. Konoplyanik A.A. European Gas Market: Monotony or Variety of Pricing? // "Нефтегазовая вертикаль". 2013. 15-16. Р. 16-24.

4. Kulagin V.A., Melnikova S.I., Galkina A.A. etc. Prospects of Russian Gas on the European Market in the Context of Changing Market Conditions, Means of Regulation

and EU Energy Policy // Bulletin of International Organizations. 2016. T. 11, 1. p. 28-47.

5. Munasypov A.M. Innovative Pricing Method System of Export-Oriented Gas Company in Competitive Environment of Digital Global Economy // News-Bulletin of Saint Petersburg State University of Economics. 2021. 5 (131). p. 191-197.

6. Munasypov A.M. Domestic and Foreign Experience in the Pricing Mechanism Study // Financial analysis: problems and solutions. 2013. 34 (172). p. 39-47.

7. Munasypov A.M. Estimation of Price Risk in Foreign Economical Activity of Export-Oriented Gas Company // Gas Industry. 2016. 3 (735). p. 51-55.

8. Munasypov A.M. Prospects of Russian Gas Export to the German Market under Conditions of Overcoming of Consequences of Covid-19, EU Green Deal and Digital Transformation // News-Bulleting of Saint Petersburg State University of Economics. 2022. 2 (134). p. 169-176.

9. Munasypov A.M. Problems of Development and Effective Functioning of Gas Companies in the Post-crisis Period // Economy and Management: Scientific and Practical Journal. 2013. 4 (114). p.118-121.

10. Georgian National Energy and Water Supply Regulatory Commission. Official website. [Electronic resource]. Available at: https://gnerc.org/ (data extracted on 28.10.2022).

11. Sakartvelos Moambe. [Electronic resource]. Available at: https://sputnikgeorgia.com/20220711/dasturebulia-saqartvelosigazis-msxvili-sabado-armoacines-268425950.html (data extracted on 25.10.2022).

Для цитирования: Ованоглян Р.С., Охотников И.В. Формирование стратегии устойчивого развития газовой компании // Московский экономический журнал. 2022. № 11. URL: <u>https://qje.su/otraslevaya-i-regionalnaya-ekonomika/moskovskij-</u> <u>ekonomicheskij-zhurnal-11-2022-2/</u>

© Ованоглян Р.С., Охотников И.В., 2022. Московский экономический журнал, 2022, № 11.