

Improving Management Efficiency at Oil and Gas Industry Enterprises in Uzbekistan

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Abstract

This scientific article examines the experience of advanced foreign countries in improving management efficiency at enterprises operating in the oil and gas industry. The state of oil and gas reserves in the countries of the world, the shares of enterprises operating in Uzbekistan in oil and gas reserves are analyzed. The problems accumulated over the years in the fuel and energy sector of Uzbekistan and ways to overcome them are indicated. Energy efficiency indicators on the territory of Uzbekistan were analyzed.

Keywords: *oil and gas industry, fuel and energy complex, hydrocarbon raw materials, oil reserves, natural gas reserves, energy production, energy-efficient technologies, innovation technologies, market mechanisms, market principles, management efficiency, digital transformation, digital management, energy sources, price coefficient.*

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INTRODUCTION. The oil and gas industry is one of the leading sectors of our country's economy. Uzbekistan ranks among the world's leading natural gas producers. During the years of independence, fundamental changes were made in the oil and gas industry of our country. Our country has become a major exporter of gas, polyethylene and refined petroleum products. Special attention is being paid to the liberalization of the economy and the creation of a favorable investment environment that serves to further develop all its sectors, including the oil and gas industry. Construction of new buildings and structures, reconstruction and modernization of the existing ones based on the requirements of the times are in full swing. Favorable conditions, opportunities and benefits are being created in the oil and gas industry for increasing production efficiency, increasing the share of local products in the domestic market, expanding localization, and developing cooperative relations. Today, oil is refined in our country, gasoline, diesel fuel, fuel oil, petroleum oils, bitumen, jet kerosene are produced. Gas processing plants plan to further expand the production of liquefied gas and polyethylene. The oil and gas industry of Uzbekistan (NGS) is one of the main links of the country's fuel and energy complex (fuel and energy complex). Today, it forms the basis of the country's economy. In the economic development of the Republic of Uzbekistan, effective use of oil and gas resources, application of innovations in the fuel and energy complex, and use of modern technologies in the field are considered necessary. Therefore, it is important to organize innovative management in the activities of enterprises in the oil and gas industry as the main direction of increasing the efficiency of the oil and gas industry in the economy of Uzbekistan. Based on this, it is important and urgent to study the possibilities of using external and internal resources in order to improve the management of enterprises in the oil and gas industry.

There are a number of problems that have accumulated over the years in the fuel and energy sector of Uzbekistan. The problems that negatively affect the activity of the energy sector and hinder its development can be indicated as follows:

- that energy markets in the sector are not sufficiently based on market principles;
- insufficiently developed legislation regulating and stimulating the activity of fuel and energy enterprises;
- non-compliance of the investment environment developing the industry with foreign standards;
- high level of depreciation of the main means in the field, low level of modern scientific and technical potential in production activities;
- lack of funds for development and use of new prospective mines in the field;
- the presence of a high price coefficient for energy sources, etc.

Therefore, improving management efficiency in enterprises operating in the oil and gas industry in Uzbekistan is considered one of the important tasks. For this, the use of modern innovations in the production of oil and gas products, social and legal support of the industry, innovations in oil production technology, effective use of the experiences of advanced countries in the regulation and management of environmental problems in the field of drilling, transportation, and processing are of great importance.

Analysis of literature on the topic. Oil and gas products are proving to be one of the most important raw materials in the world today. The oil and gas industry is one of the important components of the country's economy and has a significant impact on the development of other

industries. The oil and gas industry is the main source of energy for the production of electricity, providing fuel for vehicles, providing raw materials for the operation of the entire industrial chain, extracting chemicals used in modern medicine, household cleaning products, and many other types of activities.

The main problem facing the oil and gas industry today is the importance of using low-cost methods in the production and delivery of finished products to consumers. For this, effective management of the supply chain in the field is to increase the efficiency and competitiveness of oil and gas enterprises and its supply in general.

The authors consider useful and interesting to perform analysis of main approaches to enhancing the efficiency of the Russian OGI functioning, to elaborate ways of improving the organizational and management mechanism of increasing the efficiency of the OGI functioning based on the system approach as the factor of the country's energy security, to suggest priority measures of state regulation and stimulation of the Russian OGI development, to determine and substantiate the necessary conditions for realization of the OGI development innovation strategy with due account of the membership of Russia in the international economic organizations, to suggest and justify the priority ways to enhance the efficiency of the OGI functioning from the perspective of ensuring of the Russian energy security [1,2,3,4,5,6,7,8].

Also, Christopher M. Chime in his article "Supply-Chain Management Issues in The Oil and Gas Industry" wrote about the role of supply-chain management in the oil industry, about strategies for improving supply-chains in the oil industry and showed how improving supply-chain logistics can improve efficiency. Author wrote that the oil industry is involved in a global supply-chain that includes domestic and international transportation, ordering and inventory visibility and control, materials handling and information technology. Thus, the industry offers a classic model for implementing supply-chain management techniques [9].

According to the problem of logistics processes in oil industry, in the article was considered also the key factors for reducing costs and increasing the company's profits in managing supply chains: demand management, efficient distribution of petroleum products among customers, better transportation scheduling, warehouse management, and quality and timeliness of information. But the real effectiveness of supply chain management is to manage these factors, not separately, but as a whole process, which is possible precisely through the automation of the supply chain. And this principle is carried out within the framework of the logistics concept of supply chain coordination - Supply Chain Management [10].

The current state of the oil and gas industry is characterized by a deterioration in the quality of industrial oil reserves due to the transition of most large fields to a late stage of development and the discovery of new hard-to-recover reserves, the commissioning of which requires large capital investments [11].

It is worth noting that financial actions in the oil and gas industry are considered quite transparent, which is beneficial for factoring companies. An important point should be considered that the transactions concluded by the organization are of a one-time nature, which suggests that a factoring company should have the ability to adapt quickly [12]. This implies that companies need to make decisions quickly for both small and large amounts, have an infrastructure with prepayment limits for the buyer and the debtor, and develop electronic document flow channels [13].

In the oil and gas industry, the most important factor in the rational use of resources in the field

by increasing production efficiency is the choice of an optimal field development system at the design stage. The scientific implementation of these works determines the amount of capital investments, the location and development of the oil industry. Economic substantiation and the choice of a reasonable option for the development of an oil field is an important condition for increasing production efficiency in state regulation and management of oil and gas production.

Research methodology. In the article, the methods of scientific study, comparative comparison, study of statistical data and economic comparison and analysis, logical thinking, scientific abstraction, analysis and synthesis, induction and deduction are widely used.

Analysis and results. The reforms carried out in the oil and gas industry in Uzbekistan should be focused on the result that ensures the satisfaction of the growing needs of consumers for the products of the oil and gas industry, and ensures the balance of the economic interests of suppliers and consumers.

Taking into account the forecast of natural gas consumption reaching 56.5 billion cubic meters by 2030, the main goal is to implement comprehensive measures to meet the growing demand. For this purpose, the following is planned:

- increasing the energy efficiency of the economy by encouraging the use of energy-saving technologies, machines and equipment;
- to further develop the introduction of market mechanisms and create equal conditions for the implementation of business activities for all market participants, regardless of the form of ownership;
- by introducing innovative technologies, modern principles of corporate management, increasing work efficiency in the fields of geological exploration, extraction, transportation, processing and sale of hydrocarbon raw materials;
- development of the base of hydrocarbon raw materials of branch enterprises at the expense of carrying out geological-exploration works in the oil and gas regions of the country;
- maintaining the necessary volumes of hydrocarbon production by introducing newly discovered and previously suspended deposits;
- to increase the volume of hydrocarbon production in mines with long-term developed reserves, involving internationally recognized companies based on the terms of the risk service contract.

Natural resources, including oil and gas and other reserves, are unevenly distributed across the countries of the world. Therefore, we can see various differences in the economic development trend of countries in the world. We will pay attention to the state of oil reserves by countries of the world (Table 1).

Table-1. State of oil reserves by countries of the world

№	Countries	Reserves (barrel)	№	Countries	Reserves (barrel)
1	Venezuela	302 300 000 000	41	Ghana	660 000 000
2	Saudi Arabia	266 200 000 000	42	Romania	600 000 000
3	Canada	170 500 000 000	43	Turkmenistan	600 000 000
4	Iran	157 200 000 000	44	Uzbekistan	594 000 000

5	Iraq	148 800 000 000	45	Italy	487 800 000
6	Kuwait	101 500 000 000	...		
7	UAE	97 800 000 000	51	Turkey	341 600 000
8	Russia	80 000 000 000	...		
9	Libya	48 360 000 000	56	Belarus	198 000 000
10	Nigeria	37 450 000 000	...		
11	Kazakhstan	30 000 000 000	77	Japan	44 120 000
12	China	25 630 000 000	78	Austria	41 200 000
13	Qatar	25 240 000 000	79	Kyrgyzstan	40 000 000
14	Brazil	12 630 000 000	...		
15	Algeria	12 200 000 000	89	Tajikistan	12 000 000

Source: <https://nonews.co/directory/lists/countries/oil-reserves>

If we pay attention to table 1, according to the countries of the world, the first place in terms of oil reserves is Venezuela, the second place is Saudi Arabia, and the third place is Canada. We can see that Iran, Iraq, Kuwait and UAE are in the next places. If we focus on the countries of the Commonwealth of Independent States (CIS), we can see that Russia is in 8th place, Kazakhstan is in 11th place, Turkmenistan is in 43rd place, Uzbekistan is in 44th place, Belarus is in 56th place, Kyrgyzstan is in 79th place, and Tajikistan is in 89th place. According to the estimates of most experts, reserves of high-viscosity oils and natural bitumen amount to 790 billion. 1 trillion per ton. to tons, which is approximately 162 billion. tons, 5-6 times more than recoverable reserves of low and medium viscosity oil. This indicator is significantly higher than light and low-viscosity oil reserves. Therefore, one of the potential ways to stabilize the level of oil production and increase the recoverable reserves is to activate fields with reserves that are difficult to extract.

In a number of developed countries, high-viscosity oils are not considered as a reserve of oil production, but are considered as the main basis for its development in the coming years. [14,15].

Let us analyze the state of natural gas reserves in the countries of the world. According to natural gas reserves, the countries of the world are ranked in the following order (Table 2).

Table-2. State of natural gas reserves by countries of the world

№	Countries	Reserves (million m3)	World share, %	№	Countries	Reserves (million m3)	Жаҳон улуши, %
1	Russia	1 688 228 000	24,3	16	Egypt	77 200 000	1,1
2	Iran	1 201 382 000	17,3	17	Norway	72 358 000	1
3	Qatar	871 585 000	12,5	18	Canada	71 794 000	1
4	USA	368 704 000	5,3	19	Uzbekistan	65 000 000	0,9
5	Saudi Arabia	294 205 000	4,2	20	Kuwait	63 500 000	0,9
6	Turkmenistan	265 000 000	3,8	21	Libya	53 183 000	0,8
7	UAE	215 098 000	3,1	22	India	50 398 000	0,7
8	Venezuela	197 087 000	2,8	23	Ukraine	39 000 000	0,6
9	Nigeria	180 490 000	2,6	24	Malaysia	38 284 000	0,6
10	China	163 959 000	2,4	25	Azerbaijan	35 000 000	0,5
11	Algeria	159 054 000	2,3	26	The Netherlands	31 702 000	0,5

12	Iraq	111 522 000	1,6	27	Australia	30 400 000	0,4
13	Indonesia	103 350 000	1,5	28	Oman	24 910 000	0,4
14	Mozambique	100 000 000	1,4	29	Vietnam	24 700 000	0,4
15	Kazakhstan	85 000 000	1,2	30	Pakistan	24 700 000	0,4

Source: <https://www.worldometers.info/gas/gas-reserves-by-country/>

If we pay attention to the data in Table 2, we can see that Russia ranks first in the world in terms of natural gas reserves, with a share of 24.3 percent, Iran ranks second (17.3 percent), and Qatar ranks third (12.5 percent). The USA (5.3 percent), Saudi Arabia (4.2 percent), and Turkmenistan (3.8 percent) are in the next places. Kazakhstan (1.2 percent) is in 15th place, while Uzbekistan (0.9 percent) is in 19th place. According to the data in this table, Russia has a clear advantage in terms of natural gas reserves in the world. A quarter of the natural gas reserves of the countries of the world, i.e. 24.3 percent, are located on the territory of Russia. Today, the number of member states of the United Nations (UN) is 193, which means that Uzbekistan ranks 19th among these countries in terms of natural gas reserves. 0.9 percent of the world's natural gas reserves are located on the territory of our country. Significant deposits of high-viscosity oil and natural bitumen have been collected on the territory of a number of countries. The largest reserves of heavy oil and bituminous oil are located in Canada, with reserves of 522.5 billion. t. and mainly collected in the following provinces: Alberta - 374.5 billion. t.; Athabasca - 131.1 billion. t.; Wabaska - 16.9 billion. t. The second country in terms of this type of oil reserves is Venezuela, with reserves of 177.9 billion. t. and collected in the bituminous stem of the Orinoco. Mexico, USA, Russia, Kuwait and China also have significant reserves. In Norway, high-viscosity oils are produced using a number of large deposits, for example, the recoverable oil reserves of Grain, located on the North Sea shelf, are 105 mln. t., includes large oil fields in the Norwegian sector [16].

Uzbekistan ranks 19th among countries in terms of natural gas reserves. Table 3 shows the share of natural gas reserves in our country by companies.

Table-3. Share of natural gas reserves and companies of the Republic of Uzbekistan

№	Company	Reserves (billion m3)	World share, %
	Total for the Republic of Uzbekistan	1 866,9	100
1	"Uzbekneftgaz" JSC	934,1	50,0%
2	Lukoil	413,1	22,1%
3	Uz-Kor Gas Chemical	109,6	5,9%
4	Surhan Gas Chemical	108,6	5,8%
5	Jizzakh Petroleum	84,9	4,5%
6	Natural Gas Stream	52,3	2,8%
7	Epsilon Development Company	50,2	2,70%
8	Gazli Gas Storage	48,1	2,6%
9	Gissarneftgaz	40,5	2,6%
10	Gazprom Uzbekistan	12	0,6%
11	New Silk Road	11,9	0,6%
12	Petromaruz	0,491	0,03%

Source: <https://www.gazeta.uz/ru/2021/08/10/gas-reserves/>

According to the data in Table 3, we can see that 50% of natural gas reserves in Uzbekistan

belong to JSC "Uzbekneftgaz". We can see which enterprises own the remaining 50 percent of natural gas reserves through the information presented in this table.

In the draft government decision of 2020, it was estimated that Uzbekistan's natural gas reserves will increase by 361 billion cubic meters and oil reserves by 20.4 million tons in 2020-2025. In particular, it was envisaged that "Uzbekneftgaz" would increase gas reserves by 120 billion cubic meters and oil reserves by 5 million tons. Also, Epsilon Development Company (USA) gas reserves to 194 billion cubic meters, oil reserves to 9 million tons, Gas Project Development Central Asia and NaturalGas-Stream company formed by "Uzbekneftgaz" to increase gas reserves to 11 billion cubic meters, oil reserves to 600 thousand tons was expected. In 2021, it is planned to produce 53.8 billion cubic meters of gas in Uzbekistan. According to information, most of the production is accounted for by "Uzbekneftgaz" enterprises (64.3%), "Lukoil" is in the second place in terms of production, and Uz-Kor Gas Chemical companies are in the third place. At the current production volume, gas reserves reach at least 34 years. But these numbers may be higher in the future, given the increase in reserves. According to "Uzbekneftgaz" JSC, in order to ensure the stability of the base of hydrocarbon raw materials in the republic, to replace the extracted oil and gas products, geological exploration works are being carried out in the oil and gas regions of Ustyurt, Bukhara-Khiva, Hisar, Surkhondarya and Fergana. In addition, there are 16 mines in the territory of our country, 4 in the Ustyurt region (Beshkala, Lower Surgil, Kushkair, Oralik), 2 in the Fergana region (Uchtepa, Chakar), 10 in the Bukhara-Khiva region (Topichaksoy, Marvarid, Shortak, Chordarbaza, To'maris, Andakli, Southern Kulbeshkak, Yormoq, Doltatepa, Shorkum). Today, geological exploration works are carried out in the central part of the Ustyurt region (Alpomish, Ultan, Arslan, etc.), in the western part of the Bukhara-Khiva region (Tomaris, Andakli, Southern Kulbeshkak, Eastern Khatar, etc.), in the southern part of the Fergana region (Uchtepa, Chakar, Lower Kashkarqir, etc.) are being carried out rapidly. "Sanoat Energetika Group" (SEG) together with "Kontiki-Exploration" company discovered the largest highly viscous oil and bitumen field in Uzbekistan - "New Uzbekistan" in the Zarafshan abyss of Navoi region. The mine will become one of the most high-tech mines in Central Asia. Bituminous oil reserves of the "New Uzbekistan" field are estimated at approximately 100 million tons. The maximum annual level of bituminous oil production will be 1 million tons by 2025. It is planned to drill 1,500 wells per year to ensure the production level of bituminous oil. It is estimated that 2.5 billion US dollars will be invested in the development of the mine over the next 12 years.

The indicators of energy efficiency by regions of the Republic of Uzbekistan are presented in Table 4.

Table-4. Energy efficiency indicators by regions of the Republic of Uzbekistan (2020)

Regions	Energy - efficiency %	Fuel and energy to resources (YoER) expenses: (billion soums)	From this:			The share of fuel costs in relation to the total YoER, %	The share of electricity costs in relation to the total YoER, %	The share of thermal energy costs in relation to the total YoER, %
			fuel	Electricity	thermal energy			
Republic of Uzbekistan	2,5	15634,9	11230,1	4338,8	65,9	71,8	27,8	0,4
Republic of	3,2	654,2	446,2	207,4	559,3	68,2	31,7	0,1

Karakalpakstan								
regions:								
Andijan	2,7	1220,1	1049,6	170,4	83,9	86,0	14,0	0,0
Bukhara	1,4	392,9	241,2	125,4	26,3	61,4	31,9	6,7
Jizzakh	2,9	325,5	235,6	89,9	0,07	72,4	27,6	0,0
Kashkadarya	1,6	358,7	286,7	71,7	0,277	79,9	20,0	0,1
Navoi	4,4	3009,2	2799,7	206,4	3,171	93,0	6,9	0,1
Namangan	2,2	450,5	286,9	163,2	0,423	63,7	36,2	0,1
Samarkand	1,8	530,2	289,2	239,4	1,553	54,6	45,2	0,3
Surkhandarya	1,5	227,1	178,6	47,9	0,602	78,6	21,1	0,3
Sirdarya	1,4	180,1	112,6	66,9	0,577	62,5	37,1	0,3
Tashkent	3,1	2955,3	2487,5	447,8	19,922	84,2	15,2	0,7
Ferghana	2,9	1110,6	731,3	377,9	1,415	65,8	34,0	0,1
Khorezm	2,0	273,4	189,9	82,9	0,636	69,5	30,3	0,2
Tashkent	1,9	3946,9	1895,1	2041,5	10,401	48,0	51,7	0,3

Source: Information of the State Statistics Committee of the Republic of Uzbekistan

According to the data presented in Table 4, the energy efficiency indicator for the Republic of Uzbekistan is 2.5 percent. If we pay attention to the highest energy efficiency indicators in terms of regions, Navoi region is 4.4%, Republic of Karakalpakstan is 3.2%, Tashkent region is 3.1%. Bukhara and Syrdarya regions have the lowest energy efficiency indicators at 1.4%, Surkhandarya region at 1.5%, and Kashkadarya region at 1.6%.

Conclusions and suggestions. Today, it is necessary to develop innovative strategies for effective management of the oil and gas industry of Uzbekistan. For this, our country has a number of features for the development of innovations in the enterprises of the oil and gas industry:

- development of a fully functional system of innovative development between state and oil and gas industry enterprises;
- adaptation of production and product delivery processes to the principles of low cost, using the experience of foreign advanced countries in oil and gas industry enterprises;
- support of digital transformation and transition to a modern management system by the management of oil and gas industry enterprises;
- participation of oil and gas industry enterprises, development of digital management culture and potential of employees, continuous improvement of use of digital management system in product delivery;
- development of an action plan for the implementation of priority initiatives in the field of digital transformation in oil and gas industry enterprises;
- development of open databases and a mechanism for regulating information circulation among oil and gas industry enterprises;
- creating an analytical system for monitoring tax benefits of oil and gas industry enterprises and forecasting the development of the industry;
- to create a "single window" for the provision of operational state services of the oil and gas industry and to create a single unified data set for the state in the field of operational requests.

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