



Article

Innovative and Effective Development of Oil and Gas Industry Enterprises

Tashpulatov D.¹

1. Magister of Tashkent State technical University, Uzzbekistan, Tashkent

* Correspondence: d.tashpulatov@mail.ru

Abstract: This article outlines the organizational structure of oil and gas companies, one of the leading industries of the Republic of Uzbekistan and considered a driver industry for the development of our economy, the analysis of enterprises within this network, internal and external factors affecting effective development, and guidelines, phases, and directions for improving their activities in the near future. Special attention is given to innovation-driven approaches that improve production processes, optimize costs, and minimize environmental risks. The findings suggest that adopting advanced technologies and effective organizational models can significantly strengthen the global position of oil and gas enterprises, while also contributing to sustainable economic development.

Keywords: effective development, conditions of effective management, effective management principles, the influence of innovation, financial situation, financing of projects, source of financing, oil and gas enterprises, effective management styles, general management structure.

Citation: D, T Innovative And Effective Development Of Oil And Gas Industry Enterprises. American Journal of Economics and Business Management 2025, 8(9), 4358-4364.

Received: 10th Jun 2025

Revised: 16th Jul 2025

Accepted: 24th Aug 2025

Published: 03th Sept 2025



Copyright: © 2025 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

1. Introduction

Today, the most pressing problems are the development of the world industrial production according to development trends, including the efficient use of resources, competitiveness at a priority level, innovative and digital technologies, optimal organization of production, increasing labor productivity, organizing decent jobs. In the practice of oil and gas production systems, special software will be developed for the development of diversified, that is, enterprises with a multi-stage or large-scale production structure. On the other hand, innovative technologies are a necessary tool combining functional and practical tasks such as extraction, processing, and transfer at these enterprises.

The oil and gas industry of Uzbekistan occupies an important sector of the economy. It is one of the main sources of industrial production, gross domestic product, budget revenues and foreign exchange earnings, and plays a key role in the structure of industrial production and investment attraction. Development of the oil and gas industry, which employs about 1% of the country's employed population, allows to increase the efficiency of production, transportation, processing, and most importantly, to provide consumers with uninterrupted supply of natural gas. It also allows to attract not only funds, but also investors with modern technologies and experience to the implementation of projects. The Ministry of Energy is gradually implementing large-scale projects aimed at deep processing of natural gas, increasing its efficiency and transition to market relations.

JSC "Uzbekneftegaz" has 118 fields, of which 85 are produced natural gas. Geological exploration is underway for the remaining 33 deposits. The share of JSC "Uzbekneftegaz" in the production of hydrocarbons in Uzbekistan is 63% in natural gas production, 67% in gas condensate production, and 13% in oil production. In total, investments worth \$ 655.2 million were made in 2022 for the operation of the system at the demand level, for the exploration of new deposits and the operation of wells, as well as for the modernization of the Company's production facilities. Of these, \$ 355.2 million is directly accounted for by foreign direct investment and loans.

2. Materials and Methods

The oil and gas industry plays an important role in the economy of our country. This area is not only an energy source, but also the main raw material base for the production of polymers, organic chemicals, and nitrogenous mineral fertilizers, which are necessary for many industries.

If no concrete measures are taken to increase the reserves of hydrocarbons, in the next 10-15 years the existing reserve will be reduced by 2 times. In this regard, the management of Uzbekneftegaz carries out practical work to increase geological exploration and production volumes, modernize deposits and open new ones, deep processing of oil and gas raw materials, and increase investments. Based on world experience, the task is to develop new mechanisms that will ensure wider involvement of investors in this work, protection of the interests of the state and investors.

The President of the Republic of Uzbekistan signed a decree "On measures to ensure sustainable provision of energy resources to the population and the economy, financial rehabilitation of the oil and gas industry and improve its management system" [1]. For the further development of the oil and gas sector, it is planned to implement 30 investment projects by 2030 for geological exploration, hydrocarbon production and deep processing with a total cost of \$ 36.5 billion. In addition, instructions were given to attract foreign investment and loans for projects to modernize the gas distribution system, introduce a system of gas consumption accounting and control [2].

Over the past 20 years, the volume of natural gas production by the country's enterprises has decreased by 8%, while the volume of confirmed natural gas reserves decreased by 6% in 2012-2022, while the average for natural gas reserves replacement over the past 5 years was about 70%. In 2021-2022, due to lack of financial resources and a shortage of material and technical resources, the growth of natural gas production amounted to 42% compared to the forecast indicators.

In order to fully satisfy the needs of the economy and the population of the republic in energy resources, ensure financial recovery of oil and gas industry enterprises, create favorable conditions for the development of healthy competition on the basis of international practice, introduce modern digital technologies and advanced management methods: oil and gas of the Republic of Uzbekistan in cooperation with international consulting companies and international financial institutions 2030.

In the research on the topic of this article, different methods were used. Information collection and sorting methods of separation were used. The results obtained by the study were derived, as a final conclusion by induction method. Statistics were widely used to compare financial and non-financial data and to derive research results [3]. However, the research explores the relationship between corporate governance and organizational behavior through the analysis method. The synthesis method was used to calculate the generalization of the discussion.

Having tested the above methods in practice, we list the following mechanisms as factors that improve the innovation position of an industrial enterprise:

1. strengthening the innovative posture – its essential element is the monitoring and monitoring of the environmental impact to maintain a stable level;
2. government regulation – the development of this mechanism is one of the main tasks of economic regulation. At the same time, on the basis of economic and social methods of formation of state influence on various parameters of an industrial enterprise, it represents the system of formation of management relations;

3. budget-tax – direct economic regulation is budget-based regulation. A tax is the means by which we provide financial resources to cover government costs in the importation and application of innovations into an industrial enterprise and in their sorting.

The literature on innovation (various books, textbooks, scientific articles and monographs) presents a wide range of opinions and opinions on the topic of "digital technology", which does not have a single approach. As a result of our research and research, it turned out that the term "innovation" was originally coined by Don Tapscott in 1995 in his book "The Digital Economy: Network Intelligence and Risk". Don Tapscott believes that all processes in the digital economy are "based on a digital electronic system, that is, the internet, digital information and computer technologies." At the same time, economic and social processes in society, business, financial and credit services and a number of other activities are carried out on the basis of electronic technologies that contribute to the implementation of the Internet (web) and digital communications [4].

The attitude towards innovative development in industrial enterprises in the world has increased since the 70s of the 20th century, and countries with varying degrees of development began to pay special attention to the formation of innovative structures in these enterprises. By this time, international global corporations were formed through digitalization, and various innovative models were introduced. After all, scientists understood that in a situation where resources are limited and technology is developing rapidly, various innovations are needed in order to rapidly apply innovations in industry and achieve sustainable development without additional resources. In world practice, work on testing innovations in the oil and gas industry and laying the groundwork for the future has been discussed by scientists in a number of debates.

According to E. Brinolfsson and B. Kahin, the structure of the digital economy includes innovation, as well as innovations in processing information, products and services offered through innovation.

According to B. Karlsson and R. Stowe, the developed concept developed the impact of innovation on the process of transformation of the economy and substantiated the fact that innovations can play an important role not only in the development of production, but also in the development of processing systems [5].

The questions of improvement of industrial enterprises on the basis of innovation application are solved by the scientists of the CIS countries: M.Kastells, B.Panshin, A.Sokolov, A.Kunsman, R.Bukht, R.Hiks, M.Pologikhina, I.Strelkova, M.Kaluzhsky, S.Plugotarenko, R. Guseinov and other scientists are widely covered in scientific research. Based on historical roots, scientific disciplines on the proper and effective management of industrial enterprises in our country are undergoing sustainable development and transformation. The issues of effective use, management and improvement of the efficiency of innovative technologies in the industrial sectors of the national economy in our country were studied by B.A.Begalov, T.K.Iminov, A.N.Aripov, N.A.Iminova, N.M.Makhmudov, M.A.Makhkamova, G.J.Allayeva, S.A.Nabiyeva, G.K.Tarakhtieva, S.S.Salomov and a number of other scientists.

During the study, the analysis of graphs and statistics of the factors contributing to the innovative development of enterprises of the oil and gas industry and the important criteria for promising plans are given. We study the results of this analysis on the example of "Bukhara Oil Refinery".

3. Results and Discussion

Bukhara Oil Refinery (BNQIZ) It is the largest industrial enterprise for the processing of petroleum products in Uzbekistan. He was born on August 3, 1993. **Uzbekneftegaz** Located in the city of Karabulbazar in the Bukhara region. The construction work on the plant was completed and started operating on 22nd August 1997.

This plant produces oil products and participates in the processing of 18 types of products. The annual design capacity of the first stage is designed to process 2.5 million tons of gas condensate. The project cost of the plant is almost \$ 500 million. The Bukhara Oil Refinery was built in collaboration with the French company Technip. This company participated in the construction of the plant with a contribution of \$ 262 million. A

consortium was also formed by the Japanese companies Marubeni and J.G.C. In addition, Kellogg (KBR), Chase Manhattan, Eximbank, Credit Commercial de France, BNP Paribas, the Japanese Ministry of Trade and Industry, and the French insurance company Cofas contributed to the construction of the plant. The tender for the implementation of the projects was won by the Turkish international contractor Gama [6].

The catalyst in the gas oil hydrotreating unit of the Bukhara Oil Refinery was replaced with the most modern type by the specialists of Uzbekneftegaz JSC. As a result, for the first time in Uzbekistan, the production of Euro-4 and Euro-5 ecological diesel fuel was launched.

In 2022, the Bukhara Oil Refinery produced 945.9 thousand tons of gasoline, which is the highest figure in the 25-year history of the plant. For the first time in the history of the oil and gas industry of Uzbekistan, the sale of petroleum products was fully implemented on the basis of market principles.

The first step has been taken in the project "Modernization and reconstruction of the Bukhara Oil Refinery", which has been planned for many years, and the signing of a memorandum of understanding between Uzbekneftegaz JSC, Honeywell UOP (USA) and SK E&C (South Korea) has gone down in history. The Bukhara Oil Refinery, with a processing capacity of 2.5 million tons of oil and gas condensate per year, was commissioned on August 22, 1997. Today, targeted work is being carried out to develop this plant by attracting large investment projects [7].

Discussion

The plant produces petroleum products such as high-octane gasoline (AI-80, AI-91, AI-92, AI-95, AI-98), diesel fuel (ECO, Euro-4, 5), jet fuel (Jet A-1), fuel oil, liquefied gas, sulfur, pyrolysis gasoline, hydrocarbon solvents.

The plant is designed to supply raw materials via pipelines and railways. The plant has the following technological facilities:

1. Technological facility "Oil and gas condensate extraction under atmospheric pressure" (AT) with an annual processing capacity of 2,500 thousand tons;
2. Technological facility "Oil desalination and dehydration" (ELOU 1, 2) with an annual processing capacity of 1,500 thousand tons;
3. Technological facility "General naphtha hydrogenation" (GOB) with an annual processing capacity of 771 thousand tons;
4. "Gasoline hydrogenation" (GODT) technological unit with an annual processing capacity of 861 thousand tons;
5. "Catalytic reforming" (CCR) technological unit with an annual processing capacity of 532.8 thousand tons;
6. "Kerosine demercaptization" technological unit with an annual processing capacity of 300 thousand tons;

In addition, there are technological devices such as "Cleaning of gases with amines, "Evaporation of sour waters", "Sulfur removal", "Separation of liquefied gases into fractions"[8].

The plant produces 641 thousand tons of gasoline (AI-80, AI-91, AI-92, AI-95, AI-98), 1,026.6 thousand tons of diesel fuel (ECO, Euro-4, 5), 300 thousand tons of aviation kerosene (Jet A-1, hydrocarbon solvent), 480 thousand tons of fuel oil (M-40, M-100) and other types of petroleum products.

It should be recalled that in 2020, the Bukhara Oil Refinery launched the production of "Euro-4, -5" diesel fuel for the first time in the republic. In addition, during this period, improved quality "AI-95" fuel was produced under the "QuWatt" brand. gasoline production has been mastered [9].

Below we will touch on some figures about the products and their weight at the BNQIZ. The data is presented for 2022-2023. Products produced at the Bukhara oil refinery in 2022-2023.

This table 1 presents quantitative data on the main petroleum products produced at the Bukhara Oil Refinery (BNQIZ) over two consecutive years, 2022 and 2023. It compares

five product categories — Ecological Diesel, Euro-4 diesel, Euro-5 diesel, Liquid Hydrocarbons, and Gasoline — showing their output in million tonnes. The figures reflect steady year-on-year growth across all product types, with the largest production volumes attributed to liquid hydrocarbons and gasoline. The data illustrates the refinery's capacity expansion and modernization efforts, particularly in ecological fuel types such as Euro-4 and Euro-5

Table 1. Products produced at the Bukhara oil refinery in 2022–2023

Product type	Product quantity, in mln tonnes	
	2022 year	2023 year
Ecological Diesel	317,372	331,869
Euro-4	94,944	102,528
Euro-5	53,91	61,87
Liquid hydrocarbon	635,7	659,6
Gasoline	389,6	410,5

Coming to the analysis of the above, we have witnessed a certain amount of growth over the past 2 years. These 5 products are considered to have the largest volume compared to the others. The type of product with the largest share in BNQIZ was gasoline and liquid hydrocarbon. Both achieved gains of 0.05% and 0.04%. And in the last places [10].

We can see that Euro-5(0.15%) and Euro-4(0.9%) have achieved growth. Because they were considered the newest product type, and the growth was accordingly [11].

In 2022, BNQIZ achieved an economy of 8,711.6 thousand kWh (106.8 percent) of electricity and 1,105,7 thousand m³ (110.1 percent) of fuel gas. In turn, solar photovoltaic plants with a total capacity of 255 kW and solar water heaters with a total capacity of 12,200 liters were put into operation at the plant.

In May 2023, the production of motor gasoline at Uzbekneftegaz enterprises amounted to only 23.2 thousand tons. This figure is 51,2 thousand tons less than in May 2022. The company notes that such indicators are due to the modernization and scheduled maintenance work carried out at the Bukhara refinery in the period from May 10 to June 10, 2023. The last time such work was carried out at the plant was in 2018 [12].

Now Bukhara refinery has increased its daily production of motor gasoline from 2,500 tons to 3,000 tons. At the same time, despite the work performed, by the end of this year JSC "Uzbekneftegaz" provided only 995,8 thousand tons of gasoline production. And now let's cite the largest tax entities in the country and BNQIZ's contribution in it.

This table 2 summarizes the financial performance of major manufacturing enterprises in Uzbekistan for the year 2022, focusing on three key indicators: turnover, tax payments, and benefits, all expressed in trillion Uzbek soums (UZS). The listed companies include Uzbekneftegaz, UzBAT, UzAuto Motors, Bukhara Oil Refinery, Shurtan Gas Chemical Complex, Tolimarjon IES, Red Sandcement, Uzbekkumir, and Maxam Chirchik. The data highlights that UzAuto Motors had the highest turnover (33,068.3 trillion UZS), while Uzbekneftegaz led in tax payments (4,321 trillion UZS). In contrast, the Bukhara Oil Refinery showed relatively lower benefits (24 trillion UZS) despite significant turnover. This comparison underscores the varying contributions of these enterprises to Uzbekistan's manufacturing sector and national budget through taxes and profitability.

Table 2. Enterprises with the best working capital in manufacturing in Uzbekistan in 2022

Company name	Turnover (trillion UZS)	Tax payments (trillion UZS)	Benefits (trillion UZS)
Uzbekneftegaz	11 942	4 321	68.5
UzBAT	4 039	2 196.3	138.8
UzAuto Motors	33 068.3	2 052.1	702.9
Bukhara Oil Refinery	8 094.4	1 244	24
Shurtan gas chemical complex	3 331.3	1 069.3	3.8
Tolimarjon IES	2114.6	249.5	0.4
Red Sandcement	1645.4	233.8	19.2
"Uzbekkumir"	1232.3	229.3	33.9
Maxam Chirchik	2226.4	321,8	78.2

Among industrial enterprises the second place is occupied by BNQIZ – Uzbekneftegaz and UzAuto Motors – which have the highest working capital. This, of course, means that the share of this enterprise in GDP is also higher. In terms of tax payment, it ranks 4th after UzBAT. And the Uzbekneftegaz enterprise attracts attention as the largest taxpayer among the industrial enterprises [13].

There are enough problems in the oil and gas industry, mainly due to technical and technological upgrades. Natural gas exploration and oil products production forecast in 2018 was inadequately fulfilled due to insufficient reserves underestimated. The forecast for drilling volume in geological exploration is fulfilled by 67%. If these works were fully implemented, it would be possible to increase the reserve even further. At the same time, the forecast for operational drilling works has been fulfilled by 59% and the forecast for the number of completed wells by 50% [14].

On implementation of the Concept of development of the oil and gas industry of the Republic of Uzbekistan by 2030, a republican working commission was created. The working commission of the republic (A.N. Aripov) within a month:

1. approves the "road maps" for the implementation of the Concept for the development of the oil and gas industry of the Republic of Uzbekistan by 2030, taking into account the ongoing reforms, and pays special attention to:
 - a. increase the volume of extraction of hydrocarbon feedstock;
 - b. modernization of the gas transport system;
 - c. improvement of work on accounting and control for the production, processing, delivery and sale of natural gas;
 - d. critical study and optimization of investment projects, as well as improving the mechanisms for their implementation;
 - e. strengthening financial discipline and improving price formation at enterprises of the oil and gas industry [15];
2. approves the composition of working commissions in each direction of the Concept for the development of the oil and gas industry of the Republic of Uzbekistan until 2030;
3. in cooperation with the existing working commissions, takes measures to attract international financial institutions, financial institutions of foreign governments (IFI/SCO) and consulting companies to implement the Concept for the development of the oil and gas industry of the Republic of Uzbekistan until 2030;
4. the number of management staff at the Ministry of Energy does not exceed 20 staff, provides for the creation of a project office for coordination of the reform of the oil and gas industry, financed from the funds of the Fuel and Energy Industry

Development Fund, funds (grants) of the IFI/XI technical assistance under the Ministry of Energy of the Republic of Uzbekistan.

4. Conclusion

As a result of the research, the following conclusions were formed about the possibility of achieving economic recovery of financially unstable enterprises through the introduction of innovative technologies in the industry, which is associated with the use of important economic natural gas not as fuel in the national economy and not as a raw material:

1. We propose to improve the infrastructure of oil and gas enterprises operating in our country, at the same time to introduce new innovative products into the oil and gas sector, as well as into the process of extraction and production of oil reserves.
2. The methodology for integral assessment of the dynamics of economic growth in the sectors of the processing industry has been improved on the basis of indicators of labor productivity, return of funds on the basis of indicators of intensive economic growth and on the basis of the index comparison of extensive factors by indicators of items and fixed assets in the industry. According to this methodology, the increase in the overall economic growth index in the sectors of the processing industry by 1.07 coefficients was achieved.
3. Taking into account the experience of developed industrialized countries in the effective use of modern innovative technologies and their effective use, especially the experience of the Republic of Korea in the use of innovative technologies is distinguished by its importance. In this direction, we propose a strategy aimed at introducing modern innovative and innovative technologies in our country, namely foreign projects, techniques and technologies.

REFERENCES

- [1] Decree of the President of the Republic of Uzbekistan, "The third paragraph of subparagraph 'a' of paragraph 4 as amended," *National database of legislative documents*, Jun. 18, 2020, No. PF-6010. [Online]. Available: 06/20/6010/0776.
- [2] Cabinet of Ministers of the Republic of Uzbekistan, "Tasks for the development of the oil and gas industry were determined," Meeting of Nov. 20, 2018.
- [3] M. G. Rahmatova, "Economic assessment of production risks in industrial enterprises," *Modern American Journal of Business, Economics, and Entrepreneurship*, vol. 1, no. 2, pp. 456–464, 2025.
- [4] O. N. Kiseleva, A. V. Kulbyakina, and N. A. Ozerov, "Innovative development technologies of oil and gas industries," *IOP Conference Series: Materials Science and Engineering*, vol. 862, no. 6, p. 062090, 2020.
- [5] Z. T. Aralbaev, G. G. Aralbaeva, and A. M. Savina, "Directions for improving the management of innovative development of the oil and gas industry," *Международный научно-исследовательский журнал*, no. 2-2(104), pp. 6–12, 2021.
- [6] G. Shagaipova and M. Raxmatova, "Development of industry in Uzbekistan and its specific features," *Internauka*, vol. 7, no. 11(3), p. 35, 2017.
- [7] B. Soliyev, *Bukhara Oil Refinery*. Tashkent: National Library of Uzbekistan named after A. Navoi, 2007, 25 p.
- [8] Y. Baigaziev, B. F. Akhanov, and Q. M. Ansorov, "Improving the process of managing the innovation activity of oil and gas companies," *Łódzkie Studia Humanistyczne*, no. 2, pp. 64–66, 2025.
- [9] S. S. Salimovna, "State of production process at the enterprises of the oil and gas industry of Uzbekistan," *Central Asian Journal of Innovations on Tourism Management and Finance*, vol. 5, no. 8, pp. 588–592, 2024.
- [10] M. S. Saidov, "Improving management efficiency at oil and gas industry enterprises in Uzbekistan," *Academic Journal of Digital Economics and Stability*, vol. 25, pp. 15–24, 2023.
- [11] "History of the Company," Jul. 26, 2023. [Online]. Available: [Accessed: Jul. 26, 2023].
- [12] "Bukhara Oil Refinery: Ecologically Clean and High-Quality Products," *Uza.uz*, Dec. 20, 2021. [Online]. Available: [Accessed: Dec. 20, 2021].
- [13] D. M. Umarova and M. G. Rahmatova, "Formirovanie sistemy menedzhmenta kachestva na predpriyatiyakh Respubliki Uzbekistan," *Molodoy uchenyy*, no. 1-3, pp. 20–24, 2017.
- [14] S. Gafurov, "Prospects for development of the gas processing industry in Uzbekistan," *Journal of Theoretical and Applied Econometrics*, vol. 2, no. 1, pp. 16–24, 2025.
- [15] M. Myradov et al., "Modernization of the oil and gas industry," *Simvol nauki*, no. 12-1-2, pp. 49–50, 2023.