
| RESEARCH ARTICLE

A look at the oil and gas industry of Afghanistan

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| ABSTRACT

Afghanistan is one of the oil and gas-rich countries in the world, especially Asian countries. Also, one of the reasons for the periodic developments and instability of Afghanistan's political currents is the presence of hidden and even untouched mines, especially oil and gas. Oil exploration in Afghanistan dates back to the 1950s, when in 1958, Afghan and Soviet experts conducted a topographic and geological survey in the northern provinces of Afghanistan, then two years later announced the discovery of oil and gas in the cities of Sheberghan, Sar-e-Pul and Faryab. Oil and gas play a vital role in the sustainable development of a country, because they provide the main energy sources and have a wide impact on the economy, technology and environment. Proper exploitation of these resources can lead to economic growth, job creation and improvement of people's living standards. On the other hand, the importance of oil and gas in sustainable development leads to a balance between economic exploitation and environmental protection. The main objective of this article is the importance of oil and gas in defining Afghanistan's position in the world, especially in Asia. The research method in this study is considered by separating the research and statistical perspectives, which was selected from the perspective of the development goal, from the perspective of the qualitative method, and from the perspective of the nature of the data, descriptive-analytical. In this study, a questionnaire was distributed to experts, specialists in the oil and gas field, graduates of this field, and university professors and analysed with SPSS software. The results of this study showed that Afghanistan is in the category of rich and mineral-rich countries; but a suitable percentage has not yet been used to provide community facilities and government self-sufficiency. The reason for this is political instability, lack of relative security, lack of technical and skilled personnel, and also the lack of technical facilities for mining. Fortunately, recently, necessary investments have been made in the extraction of oil and gas mines in the northern provinces of the country (Jawzjan and Sar-e-Pul).

| KEYWORDS

Industry, Oil, Gas, Jawzjan, Sar-e-Pul.

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1. Introduction

The oil and gas industry are one of the most vital and influential sectors of the global economy, playing a major role in energy supply, industrial development, transportation, and electricity generation. The industry has experienced significant growth in the 20th and 21st centuries and is constantly changing and evolving [1].

Currently, oil production is concentrated mainly in OPEC member countries, the United States, Russia, and Middle Eastern countries. In recent years, attention to the development of new resources and new technologies, including horizontal drilling, inland drilling, and the use of renewable technologies, has led the oil and gas industry to move more towards sustainability. In addition, the issue of climate change and international pressures to reduce carbon emissions have influenced the policies and future of the industry [2].

Despite the growth in the use of renewable energies, oil and gas still play a major role in global energy supply and are expected to play an important role in the coming decades, although they are gradually facing challenges such as climate change and cleaner needs [3].

Oil and gas, as strategic and fundamental resources, play a key role in the economic development and construction of any country. These resources are the main source of foreign exchange income for many countries and can provide and develop various economic infrastructures [4]. Using revenues from the sale of oil and gas paves the way for investment in transportation, education, health, and technology infrastructure. For example, the development of oil and gas networks, refineries, and transmission lines increases the level of welfare and poverty reduction in the country and strengthens the country's ability to use new technologies. In addition, a strong presence in the global oil and gas markets puts the country in a superior political and economic position and allows for the establishment of a balance in foreign policy. In general, oil and gas, as the main pillars of economic development, play an important role in the construction and progress of the country, but it is necessary to exploit these resources with rational policies, scientific management, and attention to environmental sustainability in order to prevent short-term and long-term damage. In the global ranking, Saudi Arabia, the United States, Russia, Canada, and Iraq are among the top, which have the largest oil reserves and revenues, respectively. Countries such as Kuwait and the United Arab Emirates are also in high ranks, but their revenues differ due to selling prices and economic policies [5]. The world's oil and gas-rich countries and their revenues According to 2023 data, Iran has proven oil reserves of about 157 billion barrels and revenues from this address of \$ 50 billion. Saudi Arabia has proven oil reserves of about 266 billion barrels and revenues from this address of \$ 150 billion. Russia has proven oil reserves of about 80 billion barrels and revenues of \$120 billion. Kuwait has proven oil reserves of about 101 billion barrels and revenues of \$70 billion. The United Arab Emirates has proven oil reserves of about 107 billion barrels and revenues of \$100 billion. The United States has proven oil reserves of about 40 billion barrels and revenues of \$70 billion. Iraq has proven oil reserves of about 145 billion barrels and revenues of \$50 billion. Libya has proven oil reserves of about 48 billion barrels and revenues of \$20 billion. Venezuela has proven oil reserves of about 303 billion barrels and revenues of \$10 billion. Canada has proven oil reserves of about 170 billion barrels and revenues of \$80 billion [6].

According to available reports, Afghanistan does not have significant oil and gas reserves and has not been able to exploit them extensively so far. Although estimates indicate that the country has oil and gas resources, infrastructural, political and security constraints have prevented the effective exploitation of these resources. Therefore, Afghanistan ranks low in the global ranking in terms of oil and gas reserves in general terms and does not play an effective role in the global market for these resources [7].

1.1. Research Objectives

The following objectives were pursued in this study:

- The current status of the oil and gas industry in Afghanistan.
- What are the natural and mineral potentials in the country's oil and gas sector?
- Challenges and opportunities for the development of the Afghan oil and gas industry.
- Suitable strategies for the optimal and sustainable exploitation of oil and gas resources in the country.
- Investigating the role of the oil and gas industry in the economic and social development of Afghanistan.

1.2. Importance and necessity of the study

Given the abundant natural and mineral potentials of Afghanistan, the development of the oil and gas industry can play an important role in the country's economy. This study is of particular importance for better understanding the current situation, existing challenges and opportunities, as well as proposing development strategies. In addition, in the current situation, the urgent need to diversify the country's economic resources and reduce dependence on international aid increases the need to develop this industry.

2. Research Methodology

The research method in this study includes reviewing existing documents and evidence, analyzing secondary sources, interviewing experts and activists in the oil and gas sector, and analysing statistical data. This study uses qualitative and quantitative methods to collect and analyze data. In order to determine the current situation and determine effective solutions to achieve the research objectives, a questionnaire with five prominent questions was designed to express the opinions of experts in this field. In the current questionnaire, the issues of age, expertise, and work experience have been given more attention. The analysis of the questionnaire questions was performed using SPSS software.

The Oil and Gas industry in Afghanistan is good.									
		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percenta			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	Strongly Agree	7	22.6	22.6	22.6	.0	7.2	9.7	38.7
	Agree	12	38.7	38.7	61.3	-.2	8.5	22.6	54.8
	Somewhat Agree	8	25.8	25.8	87.1	.1	7.7	12.9	41.9
	Have no Opinion	4	12.9	12.9	100.0	.1	6.0	3.2	25.8
	Total	31	100.0	100.0		.0	.0	100.0	100.0
a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples									

The Flexibility of Government Policy in the Oil and Gas Sector is Positive									
		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap For Percenta			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	Strongly Agree	9	29.0	29.0	29.0	-.1	8.0	12.9	45.2
	Agree	8	25.8	25.8	54.8	.3	7.9	9.7	41.9
	Somewhat Agree	9	29.0	29.0	83.9	-.2	8.1	12.9	45.2
	Have no Opinion	5	16.1	16.1	100.0	.0	6.4	3.2	29.0
	Total	31	100.0	100.0		.0	.0	100.0	100.0
A. Unless Otherwise Noted, Bootstrap Results are Based on 1000 Bootstrap Samples									

The Role of New Technologies in the Development of the Oil and Gas Industry is Tangible									
		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap For Percenta			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper

Valid	Strongly Agree	7	22.6	22.6	22.6	.0	7.2	9.7	38.7
	Agree	12	38.7	38.7	61.3	-.2	8.5	22.6	54.8
	Somewhat Agree	8	25.8	25.8	87.1	.1	7.7	12.9	41.9
	Have no Opinion	4	12.9	12.9	100.0	.1	6.0	3.2	25.8
	Total	31	100.0	100.0		.0	.0	100.0	100.0
A. Unless Otherwise Noted, Bootstrap Results are Based on 1000 Bootstrap Samples									

Management and Extraction of Minerals Contribute to the Country's Economic Prosperity									
		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percenta			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	Strongly Agree	12	38.7	38.7	38.7	-.5	8.6	22.6	54.8
	Agree	8	25.8	25.8	64.5	.5	7.8	9.7	41.9
	Somewhat Agree	11	35.5	35.5	100.0	.0	8.3	19.4	51.6
	Have no Opinion	31	100.0	100.0		.0	.0	100.0	100.0
A. Unless Otherwise Noted, Bootstrap Results are Based on 1000 Bootstrap Samples									

Mining Management And Extraction Creates And Increases Employment.									
		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap For Percenta			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	Strongly Agree	7	22.6	22.6	22.6	.0	7.2	9.7	38.7
	Agree	12	38.7	38.7	61.3	-.2	8.5	22.6	54.8
	Somewhat Agree	8	25.8	25.8	87.1	.1	7.7	12.9	41.9
	Have no Opinion	4	12.9	12.9	100.0	.1	6.0	3.2	25.8
	Total	31	100.0	100.0		.0	.0	100.0	100.0
A. Unless Otherwise Noted, Bootstrap Results Are Based on 1000 Bootstrap Samples									

By distributing the questionnaire and analyzing it, it was found that the oil and gas industry and the role of technology in its development are important, and it was shown that the management and extraction of minerals create employment and increase this opportunity. On the other hand, the management and extraction of minerals promotes the economic prosperity of the country and creates a better basis for the welfare of the society.

3. Findings and Conclusions

The current status of the oil and gas industry in Afghanistan is relatively limited and in the early stages of development. The country still has significant resources of oil and natural gas, but commercial exploitation and infrastructure development face challenges such as political instability, lack of sufficient investments, and security problems. As a result, the oil and gas industry in Afghanistan is not very developed compared to neighboring countries, and most of the country's resources have not yet been fully exploited. Afghanistan has significant potential in the field of natural and mineral resources, especially oil and gas, but they have not yet been fully explored and exploited. According to geographical and geological research and studies, the country has the following resources:

According to maps and reports, oil and natural gas resources exist in parts of Afghanistan, especially in the eastern and southeastern regions. Several areas in the provinces of Nangarhar, Herat, Farah and Nimroz have been identified as having initial potential for oil and gas [8].

Afghanistan is one of the countries rich in minerals, including copper, gold, nickel, iron, coal and other rare materials that can have economic importance alongside oil and gas.

Currently, in the oil and gas sectors, the focus is more on initial and geographical studies, but there is a need for large investments for deeper exploration and resource development.

Overall, given the rich natural resources, there is good potential for the development of the oil and gas industry in the future, provided that security, economic and international cooperation interests are improved.

Jawzjan is one of the northwestern provinces of Afghanistan, with several areas having natural gas potential, but due to security problems and lack of appropriate infrastructure, the development of these resources is still incomplete. Some reports indicate the existence of small and medium-sized gas fields in this region, which require investment and development projects.

Sar-e-Pul province is also located in the north of the country, and oil resources have been identified in this region, but industrial development and commercial exploitation of these resources have not yet taken place. Initial studies indicate the existence of oil reservoirs in some areas, but extensive operations and drilling for confirmation and exploitation require large investments.

Overall, these two regions have significant potential, but for various reasons, including insecurity, lack of infrastructure, and limited investment, they have not yet been fully exploited. The development of these resources requires security, international cooperation, and sustainable investments.

Despite its rich potential, Afghanistan's oil and gas industry is currently facing numerous challenges and opportunities that have a significant impact on its development. Among the fundamental challenges, unrest, wars, and insecurity in some regions severely limit exploration and development activities. The lack of transportation routes, pipelines, processing, and export facilities has made the development of the oil and gas industry difficult. The lack of domestic capital and the inability to attract foreign investment limit the development of new technology and equipment. The lack of experienced technical personnel and modern technologies in the exploration and exploitation process. For the optimal and sustainable exploitation of oil and gas resources in Afghanistan, we need comprehensive and multidimensional solutions that pay attention to economic development, security, technology, and the environment. Some of these issues include:

- Develop and implement specific laws for the exploration, extraction, processing and export of oil and gas.
- Ensure property rights, private partnerships and support for domestic and foreign investors.
- Improve security for field activities, drilling and project launch.
- Regional cooperation to create security and stability in transmission routes and infrastructure.
- Build communication routes, pipelines and processing terminals.
- Use advanced technologies in exploration, drilling and exploitation to increase productivity and reduce environmental damage.
- Invest in training technical and engineering personnel.
- Cooperate with universities and research centers to train experienced personnel in the oil and gas field.
- Conduct environmental studies before starting projects.
- Use green technologies and reduce pollutants.
- Develop waste management and environmental damage prevention programs.
- Launching different phases of exploitation and export, based on domestic needs and regional markets.
- Cooperating with neighboring and regional countries to build export routes and energy transmission.
- Continuous monitoring of operations, costs, and resource protection.
- Transparency of bidding processes, contracts, and revenues to combat corruption and violations.

- Developing a long-term strategy for the exploitation and storage of elements.
- Diversifying sources of income and activating other sectors of the economy to reduce dependence on oil and gas.

The oil and gas industry can play an important role in the economic and social development of Afghanistan. This industry has the ability to create jobs, attract domestic and foreign investments, improve infrastructure, and strengthen the country's economic strength. Also, revenues from oil and gas trade can contribute to the government budget and facilitate the development of infrastructure projects and social services [10].

Socially, the development of this industry can provide job opportunities and technical training for young people, raise the level of welfare, and contribute to regional development. Also, sustainable and responsible exploitation of resources can improve public welfare and people's livelihoods [11].

Overall, if properly managed and with the cooperation of all sectors, the oil and gas industry can be a driving force for economic growth, poverty reduction, and improved living conditions in Afghanistan.

4. Conclusion

The results of this study show that this sector, despite its huge natural potential, is still in the early stages of development and, due to several reasons such as insecurity, weak infrastructure, lack of investment, and lack of strong legal and management frameworks, is overlooking great opportunities for economic and social exploitation. Oil and gas resources in various parts of the country, especially in the eastern, northern and northwestern regions, represent a potential that, if properly managed, can play an important role in economic growth, job creation, infrastructure development and improving the welfare of the community.

Along with these opportunities, security, technological, environmental and political challenges require careful planning, structural reforms and regional and international cooperation. Given the rich resources and domestic and regional needs, sustainable and responsible development of the oil and gas industry can be a turning point towards the stability, prosperity and development of Afghanistan. Therefore, focusing on policy reform, attracting foreign capital, strengthening technical expertise and creating the necessary infrastructure will be the keywords for success in the systematic and effective exploitation of the country's natural resources.

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