



The Value Implication of Shaanxi Oil and Gas Industry History in the Context of Chinese Modernization

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Abstract

Based on the theory of historical materialism, this paper studies the value implication of the history of the development of Shaanxi's oil and gas industry in Chinese modernization and holds that the development of Shaanxi's oil and gas industry is a microcosm of China's industrialization process, and the discovery and development of Shaanxi's oil and gas resources is the inevitable result of natural resource endowment. It is also an accidental product of multiple factors such as national policy guidance, changes in market demand, and technological progress. The development of Shaanxi's oil and gas industry is a concrete manifestation of the Chinese-style modernization road, which has had a profound impact on local and even national economic and social development. The development and utilization of Shaanxi's oil and gas resources also promote the optimization of energy structure and the guarantee of energy security, which constitute the distinctive features of Chinese modernization. With the global emphasis on environmental protection and sustainable development, Shaanxi's oil and gas industry is also constantly exploring the road of green development, which shows that China attaches importance to and pursues the construction of ecological civilization in the process of modernization.

Subject Areas

Sociology

Keywords

Shaanxi Oil and Gas Industry History, Value Implication, Chinese Modernization

1. Introduction

Modernization and industrialization in different periods have different connota-

tions, and China's practice has been continuously enriched and consolidated. It promotes the innovation and development of modernization and industrialization theory [1]. Chinese modernization emphasizes harmonious coexistence between man and nature, actively and steadily promotes carbon to reach the peak of carbon neutrality, and realizes China's energy independence and national rejuvenation, which is of great significance to the construction of a new green energy system and the establishment of a green ecological earth [2]. Advocating the Chinese modernization of harmonious coexistence between man and nature puts forward new requirements for the high-quality and sustainable development of China's energy field, starting from accelerating the cultivation of green and low-carbon culture, stepping up the transformation of energy structure, speeding up the upgrading of industrial structure, quickening the research on key core technologies, hastening the construction of institutional and institutional guarantees, and comprehensively promoting the construction of a new energy system [3]. In the process of promoting Chinese modernization, Shaanxi's oil and gas industry not only provides strong energy support for economic and social development but also actively promotes industrial upgrading and innovative development, making important contributions to the realization of green, low-carbon, and high-quality development. Looking forward to the future, with the continuous progress of technology and the constant change of market demand, it is believed that Shaanxi's oil and gas industry will continue to play an important role on the road of Chinese-style modernization and contribute to promoting national energy security and sustainable economic and social development. Detailed coverage of resources and exploration, pipeline development, refining and marketing, petroleum and natural gas pricing policies, and international cooperation is followed by consideration of conservation, renewable energy, and environmental impact focus on the role of oil in the industrialization of China [4]. Starting from "industrial learning Daqing", from Daqing experience, Daqing standards, to Daqing samples, Daqing road, Daqing as a model of adhering to the road of China's industrial development, has had an unprecedented influence on the economic and social development of the Republic, unprecedented promotion of socialist industrialization, and provides a "Daqing version" with "reference book" significance for Chinese modernization [5]. The oil and gas industry in Shaanxi Province is of similar significance to Chinese modernization. Yanchang oilfield followed the "work hard and keep innovating" entrepreneurial spirit of Chinese oil workers, overthrew the conclusion that "China was an oil-poor country", gradually recognized the laws of geology, developed a series of drilling and production technologies for tight and low-permeability and sandstone reservoirs and realized the theoretical and technological innovations in the exploration and development of unconventional oil and gas reservoirs. This may enlighten the development of China's petroleum industry in the new era [6]. Yanchang Petroleum Plant has played an important role in the modernization of Shaanxi and the whole of China and will continue to play an important role in today's western development [7]. The

theme of the urban memory route in the main city of Karamay is set as the research route of petroleum culture. In the tour of the petroleum culture research route, visitors can feel the historical features of the petroleum industry heritage, understand the rich knowledge of the petroleum industry and the unique urban culture of Karamay, which is also conducive to the shaping of the city image of the oil city of Karamay [8]. This paper intends to study the value implication of Shaanxi oil and gas industry history under the background of Chinese modernization, which is of great significance.

2. Several Milestones in the Development of Shaanxi Oil and Gas Industry

Before 1907, China had been considered a non-oil-producing country, relying mainly on imports of oil. In 1905, the Qing government officially approved Shaanxi Province to run its own Yanchang oil plant. In 1907, Yanchang Petroleum Plant selected a well site outside the West gate of Yanchang County, Shaanxi Province, and began drilling on June 5th. After several months of drilling, a strong oil flow was observed on 6 September at a depth of 68.9 m, and drilling was completed on 10th September to 81 m. The well, named Yan-1 Well, became the first onshore oil well in China, ending the history of no onshore oil production in China. The successful drilling of “Yan-1 Well” not only proves the existence of China’s domestic oil resources but also lays a cornerstone for the development of China’s oil industry as shown in **Figure 1**. The successful drilling of “Yan-1 Well” is an important milestone in the history of China’s petroleum industry, which marks the beginning of the discovery, development, and utilization of China’s domestic petroleum resources. This historical event inspired the pride and confidence of the Chinese people and demonstrated the Chinese people’s ability and wisdom in science, technology, and industrial development. At the same time, Yan-1 Well also provides valuable experience and reference for China’s later oil exploration and development. On August 1, 1952, a deep exploration well was officially started named Yanshen Tan-1 well, and on December 27, 1954, a deep exploration well was completed, which was the first deep exploration well in the history of Yanchang Oil as shown in **Figure 2**. This well has witnessed the new starting point of Shaanxi Yanchang Petroleum’s scientific and technological exploration, the practical practice of the fine tradition of Yanchang oil people working hard and not afraid of difficulties, and the vigorous development of the 100-year oil plant.

Another oil company, Changqing Oilfield, also developed rapidly after the founding of the People’s Republic of China. Since the 1970 Oil campaign, through hard work, Changqing Oilfield has successively built Maling oil fields in Gansu Province, Wuqi oil fields in Shaanxi Province, Hongjingzi oil fields in Ningxia Province, and rapidly developed into a large-scale production capacity of one million tons. In 1983, Sai 1 well obtained a high production of 64.45 tons of industrial oil flow per day, became the discovery well of Ansai oilfield, opened a new situation of oil exploration in the Triassic Yanchang Formation, and broke

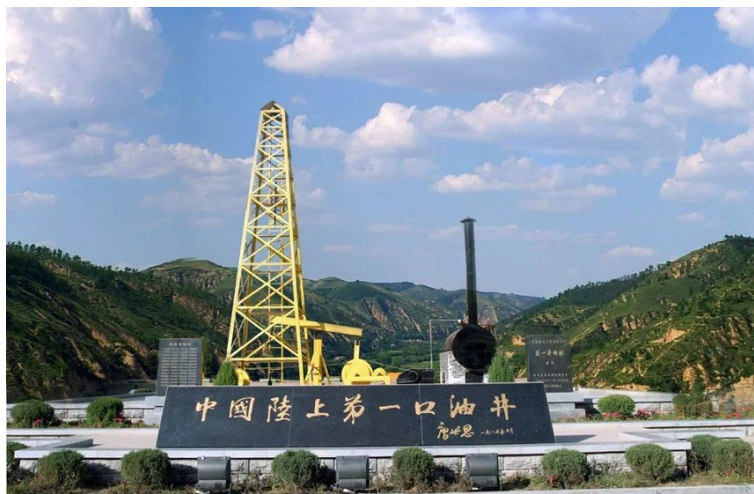


Figure 1. China's first onshore oil well named Yan-1 well (Source: Yanchang oilfield).



Figure 2. Yanshen Tan-1 well (Source: Yanchang oilfield).

the trend of Changqing Oilfield's annual crude oil production of about 1 million tons. The discovery of the Jingbian gas field in 1989 made the Changqing oilfield shift from Mesozoic to Paleozoic, forming a new pattern of simultaneous and coordinated development of oil and gas. After entering the new century, with Jiyuan Oilfield, Xifeng Oilfield, and Yulin Gas field successively proved and developed on a large scale, Changqing Oilfield's annual output of oil and gas equivalent has continuously exceeded 10 million tons and 20 million tons. In 2013, the oil and gas equivalent of Changqing Oilfield exceeded 50 million tons, and it became the modern large oil and gas field with the highest oil and gas equivalent in China, realizing the grand goal of building "Daqing in the west of China". On December 27, 2020, the oil and gas production equivalent of Changqing Oilfield reached 60.08 million tons, including 24.518 million tons of crude oil and 44.531 billion cubic meters of natural gas, marking the birth of China's first super-large integrated oil and gas field with an annual output of 60 million tons. The exploration and development of the Changqing oilfield not only provides a large amount of oil and gas resources for the country, but also

drive the construction of local infrastructure, promotes local economic development, and helps poor areas get rid of poverty and get rich. The development course of Changqing Oilfield is a history of hard work, overcoming difficulties, and constantly breaking through. From the initial small oil field of one million tons to today's world-class large oil and gas field, Changqing Oil field has made great contributions to China's energy security and economic and social development.

In September 2021, Hero Slope was selected for the “List of the first batch of Industrial Cultural Heritage of China Petroleum”, which indicates that Hero Slope not only has profound historical significance and spiritual value but also has important cultural value as shown in **Figure 3**. Why is it called Hero Slope? Hero Slope is located in the hinterland of Ansai, Yan'an city, in northern Shaanxi Province, with an altitude of 1300 meters and a slope of 70 degrees. Such a natural environment brings great challenges to well patrol work. Because the slope is extremely steep and dangerous, the local villagers called it “Hell Slope”, and spread the phrase “On the Hell Slope, ten people shivered, looking down from the top, scared out of their wits”, which shows its sinister. Inspired by this, employees began to call the slope “Hero Slope” and carved three characters “hero Slope” on one side of the soil slope of the well site. Subsequently, for the sake of safety, the first oil production plant built 463 steps added a guardrail, and officially named this section of the steep winding path as “Hero Slope”. The origin of the name “Hero Slope” not only reflects its steep natural environment but also highlights the spirit of Changqing oilfield employees who work hard and climb the peak. Hero Slope is not only the historical witness of the hard work of Changqing oilfield employees but also the true embodiment of their patriotism and love for the factory. With the spirit of “He who does not reach the Great Wall is not a true hero”, the employees overcame many difficulties and opened up the road to patrol the well on the steep hillside, showing the tenacity and perseverance of the oil workers. Nowadays, the Hero Slope has become an important spiritual symbol and cultural symbol of the Changqing oilfield and even the entire oil industry and it has witnessed the development and progress of the petroleum industry.



Figure 3. Geomorphology of Hero Slope (Source: Changqing oilfield).

3. The Relationship between Chinese Modernization and the Shaanxi Oil and Gas Industry

3.1. The Role of Shaanxi Oil and Gas Industry in Promoting Chinese-Style Modernization

The role of the Shaanxi oil and gas industry in promoting Chinese-style modernization is mainly reflected in the following aspects:

First of all, the oil and gas industry is an important part of the energy industry, which is of great significance to ensuring national energy security. As an important oil and gas producing area in China, the stable development of Shaanxi's oil and gas industry plays a key role in ensuring the security and stability of China's energy supply, thus providing stable energy support for China's modernization.

Secondly, the development of Shaanxi's oil and gas industry has also promoted the optimization of China's energy structure. With the increasing demand for clean and sustainable energy, Shaanxi's oil and gas industry pays attention to improving resource utilization efficiency and promoting green and low-carbon development in the process of exploration and development, which plays an important role in promoting China's clean energy consumption and low-carbon transformation.

In addition, the development of Shaanxi's oil and gas industry has also driven the upgrading and expansion of related industrial chains and promoted employment growth and economic development. The boom in the oil and gas industry has not only created a large number of local jobs but also attracted more investment and talent inflow, further promoting the process of Chinese-style modernization.

Finally, it also shows China's scientific and technological strength and innovation ability in the field of energy. Through continuous scientific and technological innovation and technological progress, Shaanxi's oil and gas industry has achieved remarkable results in exploration, development, and production, which reflects China's technological strength and competitive advantage in the field of energy, and also provides a strong scientific and technological support for Chinese-style modernization.

To sum up, Shaanxi's oil and gas industry plays a multi-faceted role in promoting Chinese-style modernization, including its contribution to energy security and its positive impact on the economy, science technology, and culture.

3.2. Influence of Chinese Modernization on the Shaanxi Oil and Gas Industry

The influence of Chinese modernization on the Shaanxi oil and gas industry is reflected in many aspects, including policy guidance and technological innovation.

In terms of policy guidance, the Chinese government has been committed to promoting the reform and development of the energy industry, providing clear policy direction and support for the oil and gas industry. This means a more sta-

ble market environment and better development opportunities for Shaanxi's oil and gas industry. For example, the government may encourage Shaanxi's oil and gas industry to increase technological innovation, improve mining efficiency and production efficiency, and further promote industrial upgrading and transformation through the formulation of relevant policies and plans.

In terms of technological innovation, with the rapid development of China's science and technology, Shaanxi's oil and gas industry has also been strongly supported by technology. The application of new mining technology, production processes, and equipment has improved the efficiency and quality of oil and gas production, reduced production costs, and enhanced the competitiveness of the Shaanxi oil and gas industry. At the same time, with the application of intelligent technology, the production and management level of the Shaanxi oil and gas industry has also been significantly improved, and better meet the market demand.

In addition, Chinese modernization also emphasizes the concept of green development and promotes the development and utilization of clean energy. This encourages Shaanxi's oil and gas industry to pay more attention to environmental protection and sustainable development in the development process, actively explore the green and low-carbon development path, and achieve a win-win situation of economic and environmental benefits.

In general, Chinese-style modernization has brought more opportunities and challenges for the development of the Shaanxi oil and gas industry. In the face of these opportunities and challenges, the Shaanxi oil and gas industry needs to constantly innovate and progress to adapt to the changes in market demand and the guidance of national policies and make greater contributions to achieving high-quality development.

4. Value Implication of Shaanxi Oil and Gas Industry History

4.1. Economic Value

The economic value mainly involves the contribution to the economy of Shaanxi and China. Shaanxi Province has made remarkable achievements in oil and gas production in 2023. Especially in natural gas, Shaanxi oil and gas enterprises in the year of natural gas exploration and development investment reached 25.7 billion yuan, new natural gas production capacity of 8.07 billion cubic meters, natural gas output reached 32.8 billion cubic meters, an increase of 2.1 billion cubic meters over last year, accounting for more than one-fifth of the national increase. This data shows that Shaanxi Province has made important breakthroughs in increasing natural gas storage and production, providing a strong guarantee for national energy security. In terms of crude oil production, although the specific figures may vary slightly depending on different sources, according to reliable information, Shaanxi Province's crude oil production has also maintained stable growth. In 2023, Shaanxi's crude oil production reached 24.898 million tons, providing important energy support for the local and national economy.

The development of Shaanxi's oil and gas industry not only directly promotes economic growth, but also drives the development of related industries. Oil and gas exploration, mining, processing, transportation, and other links need a lot of equipment, technology, and human support, which undoubtedly provides business opportunities for enterprises in the relevant industry chain. For example, the development of leading enterprises such as Yanchang Petroleum Group has stimulated the development of a series of supporting industries in surrounding areas, forming an industrial cluster effect.

It also has created a large number of employment opportunities for the society. From direct oil and gas extraction and processing positions to indirect equipment manufacturing, logistics, and transportation positions, all provide a stable source of income for residents. This not only improves the living standards of residents but also helps maintain social stability. Shaanxi's oil and gas industry is constantly pursuing technological innovation and industrial upgrading in the process of development. With the progress of science and technology, oil and gas exploration and exploitation technology has been continuously improved, making the development of oil and gas resources more efficient and environmentally friendly. This technological innovation not only enhances the competitiveness of Shaanxi's oil and gas industry but also provides a driving force for the technological progress and industrial upgrading of the entire energy industry.

4.2. Social Value

Shaanxi's oil and gas industry has created a large number of employment opportunities for the society, spanning from exploration, and exploitation to processing, sales, and other links, which require a significant amount of labor participation. This not only alleviates the local employment pressure but also raises the income level of residents, thus promoting social stability and harmonious development.

The development of the Shaanxi oil and gas industry has also promoted the training of professional talents. To meet the needs of the development of the industry, universities, and scientific research institutions in Shaanxi have set up related majors and courses, and transported a large number of professionals for the oil and gas industry. These talents not only provide intellectual support for the development of Shaanxi's oil and gas industry but also make important contributions to the country's energy industry.

The history and culture of Shaanxi's oil and gas industry have also become an important local cultural heritage. From the founding of Yanchang Petroleum Group to the present, the development course of the Shaanxi oil and gas industry is full of struggle and innovative spirit. This spirit has not only inspired generations of oil and gas workers but has also become an important part of Shaanxi's industrial culture.

4.3. Technical Value

The Shaanxi oil and gas industry has made remarkable breakthroughs in exploration and development technology. For example, through the introduction of advanced exploration equipment and methods, several new oil and gas fields were successfully discovered. In the exploration and exploitation of shale oil, discoveries have also been made, such as Yanchang Oil Group's shale oil well in the Wuqi area of Yan 'an has reached more than 100 tons per day. These technological breakthroughs not only improve the exploration efficiency of oil and gas resources but also provide strong support for the subsequent development and utilization. For example, through the development of new oil and gas processing technology, the conversion efficiency of oil and gas and the added value of products have been improved. At the same time, it also actively explores the comprehensive utilization of oil and gas resources, such as oil and gas co-production, CCUS technology, etc., to further enhance the utilization value of oil and gas resources.

With the development of intelligent technology, the Shaanxi oil and gas industry has also begun to introduce these technologies to improve production efficiency and management levels. For example, through the application of advanced technologies such as the Internet of Things and big data, real-time monitoring and optimization of oil and gas production processes are realized. This not only improves production efficiency but also reduces production costs, injecting new impetus into the sustainable development of the oil and gas industry.

In terms of environmental protection and sustainable development, the Shaanxi oil and gas industry has also carried out active technological exploration. For example, it has developed and applied wastewater treatment technology and waste gas recovery technology in the process of oil and gas exploitation to reduce environmental pollution. At the same time, it also actively explores green mining technology to reduce the damage to the natural environment and achieve the harmonious development of the oil and gas industry and the ecological environment.

To sum up, the Shaanxi oil and gas industry has made remarkable achievements in promoting technological progress and innovation. These technological breakthroughs and innovations not only improve the efficiency of exploration, development, conversion, and utilization of oil and gas resources but also provide strong support for the sustainable development of the industry.

4.4. Cultural Value

Embodies the achievements and spirit of socialist modernization with Chinese characteristics, such as the embodiment of hard work, independent innovation, and other spirits.

The development of Shaanxi's oil and gas industry has always carried the spirit of hard work. From the early days of exploration and development to today's efficient production, each generation of oil and gas workers has put in a tre-

mendous amount of hard work and sweat. They stuck to their posts in the harsh natural environment, overcame many difficulties, and made great contributions to the country's energy industry. This spirit of "Working diligently and striving for innovation" is not only an important driving force for socialist modernization with Chinese characteristics but also one of the cores of Shaanxi's oil and gas industry culture.

Independent innovation is another important cultural feature of the development of the Shaanxi oil and gas industry. In the process of long-term practice, it continues to explore and innovate and has made a series of major technological breakthroughs. For example, exploration and development, oil and gas processing, intelligent management, and other aspects have shown the results of independent innovation. This innovative spirit not only improves production efficiency but also reduces costs and enhances the competitiveness of the industry. More importantly, it embodies the pursuit and advocacy of scientific and technological innovation in the socialist modernization construction with Chinese characteristics. In Shaanxi's oil and gas industry, teamwork and collectivism are also important components of its cultural values. Oil and gas exploration, development, and production processes require close cooperation between multiple departments and teams. This spirit of teamwork not only improves work efficiency but also enhances the cohesion and combat effectiveness of the team. At the same time, it also reflects the collectivism and cooperative spirit emphasized in the socialist modernization drive with Chinese characteristics.

The Shaanxi oil and gas industry in the process of development, always bears in mind social responsibility and responsibility. It not only provides a stable energy supply for the country but also actively participates in social welfare undertakings and makes positive contributions to local economic and social development. This sense of social responsibility and responsibility is also one of the important values emphasized in the socialist modernization drive with Chinese characteristics.

5. Conclusion

The history of Shaanxi's oil and gas industry carries profound historical value, especially the completion of Yan-1 Well, which marks the beginning of China's modern oil industry and established the foundation position of Shaanxi in the oil industry. In terms of technology and innovation, Shaanxi's oil and gas industry has accumulated rich experience, especially in exploration, exploitation, and processing technology has made significant breakthroughs, such as the success of Yanchang petroleum technology reform and the establishment of shale gas production areas, leading the country's oil and gas industry technology forward. Shaanxi's oil and gas industry has formed a huge scale, and Changqing Oilfield and Yanchang Petroleum and other enterprises rank in the forefront of the country. They not only provide solid support for Shaanxi's economy but also play a key role in national energy security, showing its far-reaching historical

and practical significance. Shaanxi's oil and gas industry plays a significant role in Chinese-style modernization for ensuring energy security and meeting economic and social needs, promoting industrial upgrading and transformation, promoting the efficient use of resources, and the extension of industrial chains. We will implement the concept of green development, lead the low-carbon transition, increase investment in green electricity, and address climate change. Its steady development and innovative practice have set a model for China's energy security and sustainable development and are an important force in the process of modernization.

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Conflicts of Interest

The author declares no conflicts of interest.

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