Economics, Law and Policy
ISSN 2576-2060 (Print) ISSN 2576-2052 (Online)
Vol. 8, No. 2, 2025
www.scholink.org/ojs/index.php/elp

Original Paper

Research on the Rule of Law Construction of the Operating Mechanism of China's Energy Market Access System Under the "Dual Carbon" Goal

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Received: June 6, 2025 Accepted: June 19, 2025 Online Published: June 20, 2025

doi:10.22158/elp.v8n2p64 URL: http://dx.doi.org/10.22158/elp.v8n2p64

Abstract

The energy market access system refers to the conditions that energy enterprises need to meet when entering the market. Under the "dual carbon" goals, China's energy is gradually transitioning towards low-carbonization, and the promulgation of the Energy Law provides a basic guiding path for energy market access. However, at present, China's energy market access system is confronted with problems such as insufficient legal support, unclear division of responsibilities, and unsmooth incentive mechanisms. To adapt to the requirements of the "dual carbon" goals, it is necessary to start from the perspective of the rule of law and build a modern energy market system that is unified, open, and orderly in competition. This requires us to clarify the guiding ideology and basic principles of the energy market access system, including promoting the low-carbon transformation and sustainable development of energy, ensuring the fairness and transparency of the market, and taking into account multiple dimensions such as energy security, energy efficiency, clean and low-carbon, and energy justice. By improving the market access process, strengthening market supervision, and standardizing market exit procedures, we can stimulate market vitality, promote technological innovation and industrial upgrading, and establish a more complete and efficient operation mechanism for the energy market access system, providing a solid legal guarantee for achieving the "dual carbon" goals, ensuring national energy security, and promoting the sustainable development of the economy and society.

Keywords

The "dual carbon" goals, energy market access, operation mechanism, legal system construction

1. Introduction

As global climate change intensifies, the necessity and urgency of addressing climate change have increasingly become a global consensus, requiring countries to work together to reduce emissions. The vision of the "dual carbon" goal has become an important guide for achieving harmonious coexistence between man and nature in the modernization process in the coming period.

The improvement of the energy access system can promote the optimization of the energy structure, reduce the proportion of fossil energy, and increase the utilization of clean and renewable energy. It is of great significance for ensuring energy security and sustainable development, and achieving the "dual carbon" goal. However, the current legal system of energy market access in China is insufficient, which cannot provide effective reference for energy market access in various industries. This has led to significant differences in energy utilization and access standards among various industries, which not only affects fair competition in the energy market, but also increases the compliance costs of enterprises. The unclear division of responsibilities in the energy regulation process makes it difficult for law enforcement personnel to grasp the scale in the implementation process, leading to low regulatory efficiency and disputes, which affect market order and public interests. The poor incentive mechanism makes the enterprises lack the motivation in energy technology innovation and transformation, and the traditional energy mode with high energy consumption and high emissions is difficult to be effectively replaced, which hinders the realization of the "dual carbon" goal.

In view of this, it is necessary to clarify the internal relationship between the energy market access system and the "dual carbon" goal, build a market-driven mechanism for the low-carbon transformation of the energy structure, and form an energy access system framework that meets the "dual carbon" goal by analyzing the functional requirements of the energy market access system at different stages of access, regulation, and exit, as well as the coordination between the energy supply side and demand side.

2. The Purpose and Functions of the Energy Market Access System under the "Dual Carbon" Goal

2.1 The Energy Market Access System Responds To the "Dual Carbon" Goal

The energy market access system refers to the process by which collectives and individuals, other than the state, acquire rights to explore, develop, and utilize energy resources through the energy industry market access mechanism. By conducting basic extraction and reasonable processing, they obtain ownership of energy products (Zheng, J. N., 2014, pp. 121-123). The "dual carbon" goal refers to China's commitment to achieving carbon peak by 2030 and striving for carbon neutrality by 2060. The realization of this goal hinges on the low-carbon transformation of the energy structure, and the energy market access system plays a crucial role in this transformation process.

There is an intrinsic connection between the energy market access system and the "dual carbon" goal. The key to achieving the "dual carbon" goal lies in the low-carbon transformation of the energy structure, which requires market mechanisms as the driving force. The energy market access system

serves as a crucial normative core for the operation of these market mechanisms. The low-carbon transformation of the energy structure necessitates the establishment of specialized market mechanisms to regulate governance models and potential market risks during the transformation process. A well-developed energy market access system acts as an important constraint mechanism and regulatory tool to maintain market order stability and risk prevention.

Article 8 of the Energy Law stipulates that the state shall establish and improve the energy standard system to ensure energy security and green low-carbon transformation, promote the development of new energy technologies, industries, and business models, laying a theoretical foundation for the reform direction of the energy market access system. From a market perspective, it is necessary to establish and improve the energy market standard system under the premise of ensuring energy security, formulate unified standards and norms for energy entities entering the market to adapt to the development of the new energy industry and the optimization of the energy structure. The "Opinions on Improving the Market Access System" points out the need to refine the market access system, thoroughly dismantle market access barriers, and include the new energy industry as a new area in the optimization of the market access environment (The General Office of the CPC Central Committee and the General Office of the State Council issued the "Opinions on Improving the Market Access System", 2024, p. 24). It is evident that the current basic direction of China's energy development is low-carbon development with new energy as the mainstay. The energy market is in a phase where new energy is gradually replacing traditional energy, necessitating a transition from fossil fuels to clean energy as the primary source, achieving green and low-carbon transformation and development (Zhang, G. Y., 2009, pp. 5-9). Since the transition from traditional to new energy is a long-term process, the coexistence of traditional and new energy will undoubtedly require the strict implementation of the traditional energy market access system while also formulating and improving the new energy market access system.

2.2 The Functions of the Energy Market Access System under the "Dual Carbon" Goal

The market access system is an institutional arrangement through which the government utilizes market mechanisms to conduct macroeconomic regulation and control of market behaviors. Its characteristics are embodied in the values and functions of "positive protection" and "anti-competition" (Zheng, J. N., 2011, pp. 123-131, p. 160). The "positive protection" function refers to the role of energy market access in protecting the interests of market entities, maintaining market order, and promoting the low-carbon transformation and sustainable development of energy. The "anti-competition" function refers to the restrictive role of energy market access in preventing unqualified entities from entering the market and participating in competition, which could otherwise lead to the deterioration of the market environment.

The "positive protection" function of the energy market access system is reflected in its ability to protect the competitive interests of entities already in the market by setting barriers. Through establishing unified access thresholds and technical standards, the energy market access system prevents market failures and unfair competition, ensuring that market entities conduct transactions in a

fair and transparent environment and promoting the optimal adjustment of the energy consumption structure (Jiang, S. L., & Chen, L. X., 2024, pp. 189-202). It also provides opportunities for new energy enterprises to enter the market. By introducing new energy sources, reliance on traditional energy can be reduced, carbon emissions lowered, and the low-carbon transformation of energy achieved. It leverages market mechanisms to revitalize energy development and utilization activities, supporting the implementation of the "dual carbon" goal in the energy sector (Zhang, Z. T., & Zhang, Y. D., 2024, pp. 142-149).

To a certain extent, the market access system also possesses an "anti-competition" function. It sets thresholds to restrict the entry of unqualified enterprises, ensuring that only entities meeting certain standards and conditions can enter the market and participate in competition. The new energy market has broad market prospects and significant competitiveness. If unqualified market entities are unable to provide high-quality products or services, or resort to unfair competition means to enter the market, they will undoubtedly squeeze the space of the new energy market, thereby hindering the development of the energy market. As part of the legal construction of the energy market under the "dual carbon" goal, it is necessary to collaboratively promote the construction of a modern energy market. By establishing a market mechanism that relies on open, fair, and orderly competition to promote "energy conservation, pollution reduction, and carbon emission reduction", and enhance the level of energy services, it is therefore essential to utilize the "anti-competition" function of the energy market access system to clear obstacles for the development of new energy (Yang, X. J., 2022, pp. 55-65).

3. The Rule Outline of the Energy Market Access System

3.1 The Operation Mechanism of the Energy Market Access System

The energy market access system is an important part of the market economy law, which stipulates the conditions and procedures for natural persons and legal persons to enter the market to engage in business activities. The whole process of the operation of the energy market access system includes three parts: pre-access, in-process supervision, and post-exit.

In the access link, the law stipulates the conditions that energy market subjects need to meet to enter the market, that is, they have independent legal personality, meet the national and local environmental protection standards, and meet the corresponding technical conditions, so as to ensure that enterprises can stably and safely provide energy services. The formulation of standards refers to formulating unified and standardized industry standards for different types of energy enterprises to promote the rational allocation, safe supply, and structural optimization of energy elements. Standards are the baseline for energy enterprises to provide energy products, requiring energy enterprises to provide energy products that meet the standard requirements, and at the same time, cooperate with the negative list system to restrict the entry of enterprises that do not meet the requirements, so as to improve the efficiency of pre-access qualification review (Luo, L. W., & Ma, Y. Q., 2023, pp. 85-96). After meeting the legal and standard provisions, enterprises that want to enter the market must also obtain a

license issued by the energy competent authority after review. For energy enterprises that meet the access requirements, a license is issued before they can enter the market (Zheng, J. N., 2012, pp. 133-138).

In the supervision link, it is mainly the continuous supervision and management of the business behavior of market subjects after they have entered the market. The main purpose of in-process supervision is to ensure that market subjects continue to meet the access conditions and operate in accordance with the law. According to the different specific contents of supervision, supervision can be roughly divided into two categories: economic supervision and social supervision (Zhang, Z. M., 2018, pp. 82-91). Economic supervision includes the inspection and supervision of the information authenticity, behavior legality, price rationality, of energy market subjects, focusing on establishing and maintaining the credit system of the energy market. For enterprises with good credit, certain policy preferences or market opportunities are given, while for enterprises with poor credit, they may face more strict supervision, and in severe cases, may face the punishment of market exit. Social supervision emphasizes risk management, requiring the government to strengthen monitoring and early warning mechanisms to deal with risks brought by market supply and demand fluctuations and price changes, which is mainly realized through random inspections, credit grading and classification.

In the exit link, first, when market subjects decide to stop operating due to poor management, business transformation, market changes, etc., market subjects will orderly handle their assets, debts, and employee relations in accordance with relevant laws, regulations, and market rules to ensure the legality and stability of the exit process. Active exit is not only conducive to the rational allocation of resources of market subjects themselves but also can provide opportunities for other potential market entrants, promoting dynamic competition and survival of the fittest in the market. Second, when market subjects violate relevant laws, regulations, or market rules in the course of operation, their behavior may have a negative impact on the fair competition of the market. In order to maintain market order and consumer rights and interests, the regulatory authorities have the right to require these unqualified market subjects to make corrections or even force them to exit the market.

3.2 The Legal Provisions of China's Energy Market Access System

Energy issues are related to the country's economic development, social stability, and security. For energy production enterprises to enter the market, the state always imposes appropriate restrictions on their channels (Li, X. H., 2011). As far as China is concerned, the market access of the energy field is strictly restricted, both at the legal level and at the policy level.

At the legal level, China has formulated a series of single laws for the energy industry to regulate the market access license of the energy market. In order to ensure the healthy and orderly development of the energy market, energy enterprises must obtain the approval of the energy competent authority in accordance with the law before carrying out relevant business, which is mainly realized by implementing the business license system. The energy competent authority will issue corresponding licenses to operators in key energy fields such as petroleum, natural gas, coal, and electricity in

accordance with relevant laws and regulations. In this process, the competent authority will strictly review the business qualifications, technical conditions, safety standards, and other aspects of the applying enterprises to ensure that only qualified enterprises can obtain the access qualification. In China's current energy single laws, many laws have made clear provisions on the market access license of the energy market. For example, the Coal Law and the Electric Power Law and other laws have elaborated on the market access conditions, procedures, and regulatory requirements for specific fields such as coal mining and power production. These provisions not only constitute a legal right and qualification granted by the energy management organ to the management counterpart (i.e., energy enterprises) but also constitute an important means for the management organ to effectively restrict and supervise the energy market subjects.

At the policy level, for a long period in the past, China adopted a development model dominated by public ownership for a series of strategically significant specific industries such as petroleum, natural gas, and electricity, out of the consideration of maintaining national security, protecting public interests, and ensuring the stable supply of key resources, and strictly restricted private capital from entering the relevant markets to prevent potential market fluctuations and risks and ensure national energy security and people's livelihood needs. With the rapid development of the global economy and the increasing trend of privatization in the energy field, China's policy orientation has begun to change, gradually relaxing the restrictions on private capital investment in the energy field, and encouraging and standardizing the orderly entry of private capital into the market through a series of reform measures. In order to ensure the smooth and orderly transformation process, the government has successively introduced a series of targeted policies and regulations to elaborate on the access conditions, operation specifications, and exit mechanisms of private capital in various energy industries. Taking the power industry as an example, the formulation of rules and regulations such as the Basic Rules for Medium and Long-Term Electricity Trading and the Trial Basic Rules for Electricity Spot Market not only provides a legal framework for the trading behavior of the electricity market but also specially sets up chapters on access and exit to ensure the legitimate rights and interests of market participants and maintain the fair competition and healthy development of the market.

4. The Legal Construction Deficiencies of China's Energy Market Access System under the "Double Carbon" Goal

Driven by the "Double Carbon" goal, China's energy pays attention to the low-carbon transformation to promote the institutional arrangement of high-quality energy development. In the market access, it is necessary to implement the needs of the "Double Carbon" goal for the low-carbon transformation and high-quality development of energy and form a perfect institutional system to adapt to the needs of energy transformation. However, China's energy market access system still has a series of restrictive factors, and it is urgent to break the unfavorable factors restricting the high-quality development of energy from the level of overall layout and mechanism system.

4.1 Insufficient Legal Support for the Energy Market Access System

First, the "Double Carbon" goal emphasizes the low-carbon transformation and development of China's energy structure. Under the guidance of this grand goal, the access system of the energy market urgently needs to adapt to and promote the green low-carbon transformation of the energy industry. However, at present, China has insufficient constraints on the low-carbon transformation of traditional energy, and there is no special law to clearly regulate and guide this transformation process. Although single legislations such as the Coal Law and the Electric Power Law have established a license system for energy market access and made a series of provisions on the conditions that energy enterprises need to meet to produce energy products, these provisions mainly focus on the initial access conditions of enterprises, and lack specific and detailed legal provisions on the low-carbon transformation, energy-saving and emission-reduction technology innovation, and exit mechanism of enterprises in the operation process. This leads to the fact that in practice, energy enterprises often ignore the long-term strategy of low-carbon transformation while pursuing economic benefits and lack sufficient motivation and pressure to implement energy-saving and emission-reduction measures. At the same time, although regulations and policies such as the Coal Industry Policy and the Basic Rules for Medium and Long-Term Electricity Trading have made certain provisions on the access and exit of the energy market, these documents mainly exist in the form of administrative regulations or policies, with relatively low legislative levels and insufficient authority, so it is difficult to form a strong legal constraint on the behavior of energy enterprises. In addition, these regulations and policies often focus on short-term market regulation and administrative management and lack the strategic planning and legal guarantee for the long-term low-carbon development of the energy industry.

Second, although provinces (cities) have formulated management regulations for the energy market access of their administrative regions, such as Jiangsu Province, Gansu Province, and Chongqing Municipality, which have stipulated the access and exit system of the power industry, and the national energy competent authority has also issued management measures on the access and exit of power sales companies and natural gas pipeline facility shippers, they have all been invalid, and the new access and exit system has not been established. Moreover, the energy industry is now undergoing a low-carbon transformation, and the traditional energy market access mechanism is not suitable for the requirements of green low-carbon. It is necessary to carry out low-carbon transformation of high-energy-consuming industries, and the provisions in the previous management measures need to be combined with the needs of low-carbon transformation to achieve the function of carbon reduction. The low-carbon energy market is in a stage of rapid development, and new business models and technological innovations are emerging in an endless stream. However, the existing market access system is often too rigid to adapt to these new changes. For example, some legal provisions on the approval and filing processes of low-carbon energy projects are too cumbersome, leading to many difficulties for enterprises in the process of project promotion. This rigid system design not only reduces the investment efficiency of enterprises but also may inhibit the innovation motivation of enterprises,

which is not conducive to the long-term development of the low-carbon energy market.

4.2 Inadequate Division of Responsibilities in the Energy Market Access System

First, at the government management level, the management functions of China's energy market access are dispersed among multiple departments, including energy authorities, environmental protection departments, safety supervision departments, and others. This multi-headed management has led to overlapping functions, resulting in fragmented policies, high coordination costs, and low management efficiency. For example, in terms of regulatory coordination, there is an issue where energy market regulatory agencies and antitrust enforcement agencies fail to effectively regulate enterprises in regulated industries that engage in acts prohibited by antitrust laws (Jiang, S., 2014, pp. 95-105). Due to the lack of clear authority demarcation, the approval process for energy market access is complex and opaque, leading to problems such as multiple approvals and insufficient law enforcement. This decentralized management model not only increases the burden on enterprises but also causes unfair competition and administrative monopolies in the energy market.

Second, at the market operation level, there are phenomena of unclear access thresholds and imperfect exit mechanisms. In the energy market access system, the entry thresholds for enterprises often lack clear and unified standards. This leads to situations where some enterprises may be excluded due to unstated conditions, while others may blindly enter the market due to inaccurate understanding of access requirements. The ambiguity of market access thresholds also gives rise to disorderly and excessive competition. Some enterprises may adopt unfair means such as low-price competition and malicious competition to gain market share, thereby harming the overall market interests and legitimate rights of consumers. When energy enterprises exit the market, they often lack a sound exit mechanism, making it difficult for enterprises that cannot sustain operations due to poor management, backward technology, or other reasons to withdraw smoothly. This not only wastes market resources but also negatively impacts market order.

4.3 Inefficient Incentive Mechanism in the Energy Market Access System

First, from the perspective of economic incentives, the energy market access system lacks sufficient legal guarantees to provide effective economic incentives. Although China has introduced a series of laws and regulations to promote low-carbon economic development, such as the Energy Conservation Law, Renewable Energy Law, and Circular Economy Promotion Law, these laws still have obvious deficiencies in incentive mechanisms. The specific implementation rules for preferential policies such as tax reductions and subsidies are vague, making it difficult for enterprises to actually enjoy these benefits in practice. This legal ambiguity not only weakens the effect of economic incentives but also reduces enterprises' willingness to invest in the low-carbon energy sector, thereby hindering the healthy development of the low-carbon energy market. The low-carbon transformation of the energy structure is a huge and lengthy systematic project. The inherent costs of energy development and utilization constrained by resource endowments, as well as compensation costs arising from differences in transformation capabilities, have increased the challenges faced by the low-carbon energy market

access system (Zhang, Z. M., & Zhang, Q., 2024, pp. 198-211). For regions or enterprises with weak transformation capabilities, the lack of effective compensation and incentive mechanisms may lead to difficulties due to high transformation costs, thus impeding the low-carbon process of the entire energy market.

Second, from the perspective of technological incentives, the low-carbon transformation of the energy market access system also lacks sufficient legal guarantees to provide effective technological incentives. In the process of energy low-carbon transformation, technological innovation is the key driving force for market development. However, the existing market access system has obvious shortcomings in technological innovation. On the one hand, due to insufficient legal protection for intellectual property rights, enterprises' innovative achievements in technological research and development are prone to being copied or imitated, reducing their enthusiasm for technological innovation. On the other hand, the existing market access system lacks guidance and support for technological innovation, causing enterprises to face numerous difficulties in funding, talent, and other aspects during technological research and development. This insufficient technological incentive not only limits the rapid development of low-carbon energy technologies but also affects the competitiveness and innovation capability of the entire industry.

5. Legal Guarantee for the Access System of China's Energy Market under the "Dual Carbon" Goals

5.1 Guiding Ideology of the Rule of Law for the Energy Market Access System

The world is currently in a critical historical period of transition from traditional fossil energy to clean energy. Clean energy sources represented by wind energy, solar energy, biomass energy, and green hydrogen will not only change the production - consumption structure of energy but also reshape the energy - technology power of countries and their interdependent relationships (Li, X. L., & Liu, X. N., 2023, pp. 70-95, pp. 157-158). Every step of the development of China's energy industry has been accompanied by changes in the energy industry, providing a powerful impetus for the development of China's economy and society. Against the background of green transformation, the energy industry will also develop in a more diversified and cleaner direction (Lu, Q. X., Wang, L., & Wu, L., 2023).

The energy market access system needs to achieve effective competition through market mechanisms and ensure the fairness, transparency, and predictability of the market through legal means. With the reform of China's energy market, restrictions on the energy industry have been gradually relaxed, allowing more diverse market players to pour into the energy market to provide energy products, and the energy supply has shifted from extreme shortage to diversification. In this transformation process, the energy market access system not only needs to ensure that new and old enterprises can compete fairly under the same rules but also promote enterprises to achieve technological innovation and industrial upgrading and improve energy efficiency and sustainability. The strengthening of the rule of law, such as clearly defining property rights, strengthening anti - monopoly supervision, and improving

the information disclosure system, provides a clear legal framework for market participants, enhances investors' confidence, and helps the energy market move steadily in a more open, efficient, and green direction, injecting strong impetus into the economic and social development.

5.2 Basic Principles Followed by the Energy Market Access System

The legal guarantee of the energy market access system aims to ensure the fairness, transparency, and predictability of the market, taking into account the multi - dimensional principles of energy security, energy efficiency, clean - low - carbon, and energy justice.

The energy security principle requires screening out enterprises with safe production and stable supply capabilities to prevent energy supply disruptions or safety accidents caused by insufficient enterprise qualifications. The new energy security strategy of "four revolutions and one cooperation" - promoting the energy consumption revolution, supply revolution, technological revolution, and institutional revolution, as well as strengthening international cooperation in an all - round way - points out the direction and provides the fundamental guidance for energy development in the new era. Under the guidance of the energy security strategy, China's energy market sets a series of clear, specific, and strict standards to ensure that all economic entities intending to enter the market have the necessary technological advancement, sufficient financial support, and efficient management capabilities in the production or provision of energy - related products and services. A solid barrier is built at the standard level, which greatly reduces the risk of production safety accidents that may be caused by sub - standard technology or management chaos and ensures the stability and safety of the energy market.

The energy efficiency principle requires encouraging technological innovation and efficiency improvement, allowing high - efficiency and energy - saving energy technologies and products to enter the market, and promoting the transformation and upgrading of the energy industry. Improving energy efficiency is the key to achieving green - low - carbon development, and it is necessary to focus on strengthening the support for energy - saving technologies and the construction of the demand - side management system. In the demand - side management, policies such as finance, taxation, and price should be fully utilized to strengthen the management of energy and electricity consumption and promote the improvement of energy - use efficiency (Yu, W. X., 2022, pp. 44-51). In terms of emphasizing energy efficiency, the government participates in the whole process of the operation of the energy market access system. By setting clear market access conditions and standards, energy enterprises with sufficient strength and technical level are screened out to enter the market, thus avoiding disorderly competition and resource waste and ensuring that energy enterprises in the market can continuously provide high - efficiency and stable energy products and services.

The clean - low - carbon principle requires encouraging the research, development, and application of clean energy and low - carbon technologies, restricting the entry of high - pollution and high - energy - consumption energy projects into the market, and promoting the optimization of the energy structure and the sustainable development of the environment. The clean - low - carbon principle encompasses "green priority" and reflects the internal logic of the integrated development of the environment and the

economy, that is, to achieve green - low - carbon development under the premise of "ecological priority" (Feng, S., 2024, pp. 67-75, pp. 210-211). This means that it is necessary to take ecological practical rationality as the approach, reflect the legal value of ecological priority, and construct a sound energy market access system. The new logic of energy legal control under the "dual carbon" goals determines that a series of clear, complete, and predictable low - carbon principles should be established and integrated into the specific energy regulation system to solve the coordination mechanism between energy security and low - carbon energy and prevent the conflict of interests with the traditional energy legal rules (Zhang, Q., & Zhang, Z. M., 2023, pp. 51-63).

The energy justice principle requires ensuring the equal status and fair competition opportunities of all market entities in the energy market, preventing market monopolies and unfair competition behaviors, and ensuring the fairness and transparency of the energy market. The energy market access system ensures that all types of market entities can enter the market fairly by setting a unified market access threshold, thereby breaking monopolies and promoting market competition. By establishing a unified national energy trading market and a market - based price formation mechanism, the energy market access system improves the transparency of the market, making the energy price better reflect the real market value. The energy law also emphasizes the importance of energy - inclusive services, aiming to provide equal, affordable, and reliable energy services for everyone.

5.3 Construction of the Legal Guarantee for the Operation Mechanism of the Energy Market Access System

5.3.1 Market Access Link

The market access link serves as the foundation for the rule of law in the energy market. It determines which enterprises and products can enter the market, as well as the conditions and standards for entry, and is a crucial link to ensure market order and risk prevention. Currently, China does not have a unified law governing energy market access. The realization of the "Double Carbon" goal has put forward higher requirements for the energy market access system, making it urgent to formulate a comprehensive law specifying market access for each energy industry, which can regulate the access system from two aspects: traditional energy and new energy, and establish differentiated market access standards. At the level of access standards, the access conditions of the electricity market can serve as a benchmark for formulating market access standards for each energy industry. Energy supply enterprises need to have valid licenses, meet environmental protection, safety and other requirements, have a certain installed capacity and regulation capacity, and establish a sound metering and settlement system. Energy sales companies need to obtain energy sales business qualifications, have stable sources of funds and professional operation teams, and establish a perfect customer service system. Energy users are divided into different categories according to the amount of energy used. Large users need to have a certain energy management ability and credit rating, while small users can participate in the market through collective means. At the specific implementation level, it is necessary to implement classified policies for traditional industries and new energy industries. For traditional energy projects, it

is necessary to strengthen environmental protection, energy efficiency and other requirements to promote their transformation and upgrading; for clean energy projects, the access threshold can be appropriately reduced to encourage their rapid development.

The traditional energy industry needs to adapt to the requirements of low-carbon transformation and establish an efficient market access system to ensure the balanced development between clean energy use and energy supply. While guiding traditional energy enterprises to gradually reduce carbon emissions, it encourages and ensures the steady growth of clean energy, thus promoting the low-carbon transformation of the energy system from the source. The limited marketization of the traditional energy law regulation model shows that only by using energy marketization to break natural monopolies and encourage competition and openness can China's energy law operate in an orderly manner in building a market mechanism that conforms to national conditions and energy economic laws (Ma, J. J., & Gong, X. Q., 2007, pp. 147-155). Vigorously promoting the public-private partnership (PPP) model, guiding and supporting social capital to provide energy products, and participating in the low-carbon transformation of energy are paths to use the market's own adjustment mechanism. The establishment and improvement of the carbon emission trading system is a model for incentivizing enterprises to reduce emissions through market mechanisms. Through the development orientation of green and low carbon, sharing energy transformation experience, and ensuring that China's energy low-carbon transformation path is stable and far-reaching.

For the new energy field, it shoulders the important mission of leading the energy revolution and accelerating the realization of the "Double Carbon" goal. To this end, it is necessary to break the original access barriers and attract many enterprises to enter the market with a more open and inclusive attitude to provide a variety of clean and low-carbon energy products. This can not only stimulate market vitality, promote technological innovation and industrial upgrading, but also effectively respond to the urgent needs of the "Double Carbon" goal and promote the fundamental change of energy production and consumption patterns. The breakthrough progress of subversive technologies, the rapid decline rate of technical costs, and the energy market choices under the strong guidance of the "Double Carbon" goal will all profoundly affect China's medium - and long-term energy investment layout and the vigorous development of new business forms. These variables make the development path of the new energy field complex and changeable (Ji, Q., Sun, X. L., & Ma, Y. R., 2024, pp. 80-98, p. 244). It is particularly important to build and improve the incentive mechanism in the new energy field. The incentive system can be established in the form of legislation, and a variety of means such as tax reduction and exemption, loan support, price preferential treatment, and financial subsidies can be comprehensively used to actively advocate and steadily promote the participation of enterprises and individuals (Wang, F. B., 2011, pp. 90-99). The British government's model of simplifying the access and management requirements for energy storage and demand response equipment, allowing demand response providers to transfer asset equipment, and obtaining superimposed benefits from the capacity market and auxiliary service market maximizes the protection of the interests of energy market entities,

which can provide experience for China's incentive policies for new energy access to the market.

5.3.2 Market Supervision Link

Market supervision is an important means to ensure fair competition in the energy market and maintain market order. In terms of market supervision, the Energy Law emphasizes the establishment of an energy market system with multiple subjects, unified openness, orderly competition, and effective supervision, standardizing market order according to law, and equally protecting the legitimate rights and interests of various market entities. In order to achieve effective supervision, it is necessary to establish a market supervision system from two levels of economic supervision and social supervision to form a modern energy supervision system.

The primary task of setting economic supervision is to clarify its functional positioning to ensure the healthy operation of the market mechanism and the construction of a fair competition environment. In the energy market, the primary function of supervision should focus on maintaining market order, protecting consumer rights and interests, and promoting sustainable development. The key to effectively regulating the problems caused by unclear market access thresholds and imperfect exit mechanisms for energy enterprises in the supervision link lies in establishing a sound regulatory framework and clear policy guidance. For the disorderly and excessive competition caused by unclear market access thresholds, referring to the American energy storage model, it is required that each energy industry independent operator (RTOs and ISOs) establish relevant market models and rules, including technical parameters, scale requirements for participating in the market, and qualifications, so that energy supply enterprises can participate in all energy markets operated by RTOs/ISOs. Increase the supervision and punishment of low-price competition, malicious competition and other behaviors, and maintain market order and protect consumer rights and interests through fines, market ban and other means. For the lack of exit mechanism of energy enterprises, it is necessary to build a set of perfect exit procedures and policy support systems. This includes setting up special funds to provide financial assistance and transformation guidance for enterprises that need to exit due to poor management or backward technology; formulating clear exit procedures and timetables to ensure that enterprises can exit the market in an orderly and efficient manner and reduce the impact on market order. In addition, an information sharing platform should be established to promptly release enterprise exit information to facilitate market participants to adjust strategies and optimize resource allocation.

The core of social supervision in the energy market is to effectively manage risks and ensure market stability and safety. To achieve this goal, it is very important to strengthen the monitoring and early warning mechanism, which requires close cooperation and clear division of labor between cross-departments. First of all, the scope of responsibilities of each regulatory department should be clarified. The complexity of the energy market requires that a clear division of responsibilities must be established between different government departments. The energy competent department should be responsible for the formulation of energy policies and the overall supervision of the market, the environmental protection department should focus on the environmental impact assessment and

supervision in the process of energy development and use, and the safety supervision department should ensure the safe operation of energy facilities. Through a clear division of responsibilities, each department can focus more on its work and avoid regulatory blind spots. Secondly, it is necessary to establish a cross-departmental cooperation mechanism. Set up cross-departmental coordination agencies or joint meeting systems, hold regular meetings, share and analyze energy market monitoring data and risk early warning information, and jointly discuss response measures. This mechanism helps to break down departmental barriers, promote information sharing, and improve regulatory efficiency. All departments should strengthen communication in cooperation, jointly formulate regulatory policies, and ensure the consistency and coordination of policies. Finally, it is necessary to strengthen the construction of monitoring and early warning systems. Using modern information technology, integrate the data resources of various departments, and establish a unified energy market supervision information platform. The platform should have the functions of real-time monitoring, data analysis, risk early warning, etc., to provide strong support for cross-departmental cooperation, and facilitate each department to find market anomalies in a timely manner, jointly assess risks, quickly formulate and implement response measures, and effectively prevent energy market risks.

5.3.3 Market Exit Link

The legalization of the energy market access system is the key to ensuring the healthy and orderly development of the energy field. The market exit link in its institutional system construction is also important, and it is designed to ensure the dynamic balance of the market and the optimal allocation of resources through standardized procedures. The construction of this exit system needs to start from two core dimensions: active exit caused by poor management and passive exit caused by non-compliance with regulatory requirements, taking into account the convenience and efficiency of active exit and the strict supervision of passive exit. Through detailed legal provisions, clear procedural arrangements, and perfect interest protection mechanisms, it ensures the continuous and healthy development of the energy market and promotes the transformation, upgrading and sustainable development of the energy industry.

In terms of active exit, it mainly targets energy enterprises that are unsustainable due to fierce market competition, poor management, backward technology, or continuous decline in economic benefits. In order to encourage and standardize the orderly exit of such enterprises, a simple exit procedure should be applied. The information such as the intention to apply for simple cancellation registration and the commitment of all investors should be actively announced to the society through the “Simple Cancellation Announcement” column of the National Enterprise Credit Information Publicity System. Through fast liquidation processes, debt restructuring guidance, and employee resettlement assistance, the exit process is ensured to proceed smoothly and market shocks are reduced. The simple procedure does not mean that the exit of energy enterprises is not supervised by the energy competent department. In the exit process, they still need to follow the relevant energy management system. After being reviewed and approved by the energy competent department and the government, when the market exit

of the enterprise involves the responsibility of the enterprise's statutory quota system, it is necessary to realize the stable transfer of the responsibility of the statutory quota system under the supervision of the government, ensure the safety needs of China's energy strategy, realize the survival of the fittest, and ensure the efficient supply of energy (Shi, J. C., & Li, C. G., 2009, pp. 18-23). However, the simple exit procedure is not applicable to all enterprises. For example, enterprises involved in complex creditor-debtor relationships or with serious illegal acts may not be able to apply for this procedure. Therefore, from the perspective of government regulation, the exit of energy enterprises should also have restrictive conditions, and when a series of chain reactions are caused after the exit, a perfect interest protection mechanism should be established to alleviate the negative impact of the exit enterprises on the social economy.

For energy enterprises that are ordered to exit due to violations of environmental protection standards, safety production regulations, market manipulation behaviors, or other regulatory requirements, the exit mechanism needs to be more strict and punitive. For energy enterprises that are ordered to exit due to violations of laws and regulations, their legal responsibilities shall be investigated in accordance with the relevant provisions of the Administrative License Law, including punishment for illegal acts and administrative sanctions for responsible personnel, etc. An information disclosure and blacklist system should also be established to increase the cost of violations and form an effective deterrent. In order to prevent the occurrence of market monopoly or unfair competition behaviors, the regulatory agency also needs to closely monitor the asset disposal process of the exiting enterprise to ensure that it does not carry out asset transfer or market manipulation at the cost of harming public interests when exiting. If an energy enterprise is ordered to exit due to violations of laws and regulations and cannot continue to operate, involving the liquidation of creditor-debtor relationships, asset disposal and other matters, referring to the relevant provisions of the Bankruptcy Law, the bankruptcy liquidation procedure can be initiated to fairly liquidate its creditor-debtor relationships and ensure that the interests of creditors are maximized. For enterprises that are forced to exit due to public interests such as public safety, industrial regulation, regional development, technical standards, and environmental protection, the government should provide necessary transformation support, such as financial subsidies, technical guidance, etc., to help them smoothly transition to new fields or new business forms that meet the requirements of new policies, so as to achieve the smooth transition of the market and the effective reuse of resources and ensure compliance with administrative supervision requirements.

6. Conclusion

The energy market access system plays a vital role in promoting the low-carbon transformation of the energy structure and achieving the "Double Carbon" goal. It is not only related to the healthy development of the energy industry but also a key legal tool to achieve energy security, efficiency, clean low carbon, and energy justice. With the acceleration of the global energy transition, China's energy market access system needs to be in line with international standards and reflect the urgent

needs of domestic energy structure adjustment.

The problems existing in China's current energy market access system restrict the healthy development of the energy market and hinder the low-carbon transformation of the energy industry. Therefore, it is particularly urgent to build a more perfect and efficient energy market access legal system. In order to meet the requirements of the "Double Carbon" goal, the legal construction of China's energy market access system should follow the guiding ideology of promoting the low-carbon transformation and sustainable development of energy and adhere to the basic principles of energy security, efficiency, clean low carbon, and energy justice. On this basis, a institutional system including market access, market supervision, and market exit should be constructed to ensure fair competition and healthy development of the energy market. By improving the energy market access system, promote the technological innovation and industrial upgrading of the energy industry, improve energy efficiency and sustainability, and ensure energy security and market order. This is not only conducive to achieving the "Double Carbon" goal but also the only way to promote the high-quality development of China's energy industry. The legal construction of China's energy market access system is a systematic project, which requires the joint efforts of policy makers, energy enterprises, and all sectors of society. Under the guidance of the "Double Carbon" goal, through continuous institutional innovation and legal improvement, it will contribute Chinese wisdom and Chinese solutions to the realization of the green, low-carbon, and sustainable development of China's energy industry and even the global energy transition.

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