

# Basic Principles of Legal Regulation of Energy Efficiency under the Dual Carbon Goal

Daoping Shao\*

School of law, Anhui University of Finance and Economics, Bengbu, Anhui 233030, China

\*yunda521@163.com

## Abstract

**Improving energy efficiency is one of the important ways to achieve the dual carbon goal. The realization of the double carbon goal needs to be guaranteed by laws and policies. The basic principles of legal regulation of energy efficiency under the dual carbon goal are fundamental norms that have universal guiding significance for legal regulation of energy efficiency, and are of great significance to promote the realization of the dual carbon goal. Based on the reality of realizing the double carbon goal and coping with climate change, the principles of coordinated development of environment, economy and energy, the combination of government regulation and market mechanism, public participation and clean and efficient utilization of energy should be determined as the basic principles of legal regulation of energy efficiency under the double carbon goal.**

## Keywords

**Carbon Neutralization; Carbon Peak; Energy Efficiency.**

## 1. Introduction

At present, the climate change situation is becoming increasingly serious, and gradually reducing greenhouse gas emissions and achieving carbon neutrality have become common concerns of all countries [1]. As a responsible big country in the world, China announced in September 2020 that it would strive to achieve carbon peak by 2030 and carbon neutrality by 2060 [2]. Both theory and practice have proved that improving energy efficiency is an important way to achieve the dual carbon goal. In October 2020, the proposal of the CPC Central Committee on formulating the 14th five year plan for national economic and social development and the long-term goals for the year 2035 proposed to promote the clean, low-carbon, safe and efficient use of energy and comprehensively improve the efficiency of resource utilization [3]. In December 2020, the white paper "China's energy development in the new era" proposed: "vigorously promote the clean and efficient use of fossil energy and improve the energy efficiency level in key areas." [4] In October, 2021, China's policies and actions to cope with climate change proposed that in order to vigorously promote carbon peak and carbon neutrality, China will integrate the dual carbon goal into the overall economic and social development path of ecological priority, green and low carbon [5]. On October 18, 2021, the national development and Reform Commission and other departments jointly issued several opinions on strict energy efficiency constraints and promoting energy conservation and carbon reduction in key areas, which proposed: "scientifically determine the energy efficiency level and other policies and measures to provide strong support for achieving the carbon peak goal on schedule." [6] It can be seen that under the circumstances that China's coal based energy consumption structure is difficult to change in the short term, the overall level of energy efficiency is not high, and there is great potential for energy efficiency improvement, improving energy efficiency is an important way to achieve the double carbon goal. Improving energy efficiency can not only reduce energy consumption, but also reduce the total amount of carbon

dioxide emissions, and finally promote the realization of the dual carbon goal. The realization of the double carbon goal needs to be guaranteed by laws and policies. The basic principles of the legal regulation of energy efficiency under the dual carbon goal are fundamental norms that have universal guiding significance for the legal regulation of energy efficiency. Based on the reality of realizing the double carbon goal and coping with climate change, we should take the principles of coordinated development of environment, economy and energy, the combination of government regulation and market mechanism, public participation and clean and efficient utilization of energy as the basic principles of legal regulation of energy efficiency under the double carbon goal.

## **2. Principle of Coordinated Development of Environment, Economy and Energy**

### **2.1. Connotation of "Principle of Coordinated Development of Environment, Economy and Energy"**

In the process of social and economic development, human beings have destroyed the original natural ecological environment and produced a lot of waste while promoting social and economic development through the development and utilization of energy. It can be seen that energy as an important medium and carrier connecting the three, while providing energy for social and economic development, the energy supply system discharges carbon dioxide and other wastes generated in the exploitation, processing, utilization and conversion of traditional fossil energy such as coal, oil and natural gas into the environmental system, causing environmental problems such as climate change. Therefore, the relationship between environmental pollution, economic development and energy consumption needs to be coordinated. The principle of coordinated development of environment, economy and energy, as an important medium and carrier connecting the three, while providing energy for social and economic development, the energy supply system discharges carbon dioxide and other wastes generated in the exploitation, processing, utilization and conversion of traditional fossil energy such as coal, oil and natural gas into the environmental system, causing environmental problems such as climate change. Therefore, the relationship between environmental pollution, economic development and energy consumption needs to be coordinated. The principle of coordinated development of environment, economy and energy, also known as the 3E coordinated development principle, refers to that when formulating various systems and measures for legal regulation of energy efficiency under the dual carbon goal, it is necessary to comprehensively consider the possible social costs and benefits of environment, economy and energy, so as to promote environmental protection, economic development and energy security. Its essence is to require people to pursue economic growth while minimizing the adverse impact on the environment through the efficient and rational use of energy, so as to achieve a win-win situation among the three. The principles can be understood from the following aspects:

Firstly, we comprehensively consider the social costs and benefits of environment, economy and energy. When formulating and implementing various systems and measures of legal regulation of energy efficiency under the dual carbon goal, we should consider the possible environmental, economic and energy costs. We should not unilaterally emphasize the ecological and environmental benefits of improving energy efficiency under the dual carbon goal, but ignore the economic benefits and social costs, resulting in adverse effects on economic and social development; nor can we just consider the immediate economic benefits and social costs and ignore the environmental costs and adverse impacts caused by the use of traditional fossil energy, which will lead to the deterioration of the problem of climate change. In the legal regulation of energy efficiency under the dual carbon goal, the unification of environmental

benefits, economic benefits and social benefits is achieved through the comprehensive consideration of the relationship among environment, economy and energy. Only the systems and measures that can realize the "three in one" legal regulation of energy efficiency can more effectively cope with climate change and promote carbon neutrality as soon as possible. Secondly, promote the coordinated development of the environment, economy and energy. The various systems and measures of legal regulation of energy efficiency under the dual carbon goal should comprehensively consider the social costs and benefits of the environment, economy and energy, and its purpose is to promote the coordinated development of environment, economy and energy. Climate change is not only an environmental issue, but also an issue of economic and social development. Although various systems and measures of legal regulation of energy efficiency under the dual carbon goal directly aim at energy efficiency and indirectly at climate change, it may bring economic and social impacts. We should not hinder the development of economy and society because we want to achieve the double carbon goal and deal with climate change. Instead, we should take the realization of carbon neutrality goal and effectively deal with climate change as an opportunity to promote the government, enterprises and society to minimize carbon emissions and promote the transformation of economic development to a low-carbon model. Therefore, in the process of achieving the goal of carbon neutrality and coping with climate change, achieving the unity and maximization of environmental benefits, economic benefits and social benefits can ultimately achieve the coordinated development of environment, economy and energy.

## **2.2. The Necessity of Establishing the "Principle of Coordinated Development of Environment, Economy and Energy"**

The excessive emission of greenhouse gases represented by carbon dioxide and the resulting climate change directly reflects the disharmony between man and nature [7]. In order to promote the realization of the dual carbon goal, the principle of coordinated development of the environment, economy and energy is established as the basic principle of legal regulation of energy efficiency under the dual carbon goal. The reasons are as follows:

Firstly, the extensive mode of economic development and the traditional mode of energy consumption are the main causes of climate change. Over the years, China's extensive economic development mode and traditional energy consumption mode have increased the concentration of greenhouse gases in the atmosphere, further intensifying the disastrous impact of climate change on mankind. Therefore, the most fundamental measure to deal with climate change and achieve the dual carbon goal is to reduce greenhouse gas emissions, that is, to change the mode of economic development and energy consumption, pursue the coordinated development of environment, economy and energy, and achieve a win-win situation of environmental protection, economic development and energy security.

Secondly, to achieve the double carbon goal, we must emphasize the unity of environmental benefits, economic benefits and social benefits in the process of energy exploitation, processing, utilization and conversion, so as to achieve a win-win situation among environmental protection, economic development and energy security. Therefore, we must correctly handle the relationship between economic development, environmental protection and energy security, and correctly handle the contradiction between current interests and long-term interests in economic development. This can not only improve energy efficiency, but also reduce the emissions of greenhouse gases such as carbon dioxide, not only improve economic benefits, but also reduce the adverse impact of greenhouse gases and their wastes on the environment caused by the use of traditional fossil energy, so as to promote the sustainable development of economy and society.

Thirdly, energy is an indispensable material resource to promote the sustainable development of the economy and society, but if environmental security cannot be guaranteed in the

development and utilization of energy, economic development and energy sustainability will have no significance. Obviously, the sustainable development of economy and energy requires that the social costs and benefits of environment, economy and energy should be comprehensively considered in the formulation and implementation of various systems and measures, so as to promote the coordinated development of environment, economy and energy. The systems and measures of legal regulation of energy efficiency under the dual carbon goal are based on the theory of sustainable development and meet the requirements of coordinated development of environment, economy and energy, while the principle of coordinated development of environment, economy and energy meets the fundamental requirements of realizing the dual carbon goal and coping with climate change.

Therefore, in order to achieve the dual carbon goal as soon as possible and pursue the win-win situation of environmental protection, economic development and energy security, it is necessary and feasible to establish the coordinated development of the environment, economy and energy as the basic principle of legal regulation of energy efficiency under the dual carbon goal.

### **3. The Principle of Combining Government Regulation with Market Mechanism**

#### **3.1. The Connotation of "The Principle of Combining Government Regulation with Market Mechanism"**

Government regulation refers to the activities that specific government administrative agencies directly intervene and control the behaviors of enterprises and energy consumers that affect others and society in accordance with the authorization of the law in order to achieve the double carbon goal, maintain the efficient and fair use of energy resources, and correct market failures. Its characteristics are as follows: first, the purpose of government regulation is to achieve the double carbon goal and effectively deal with climate change. In the legal regulation of energy efficiency, through government regulation, we can correct market failure, improve energy efficiency, reduce greenhouse gas emissions, and maintain the stability of the climate system. Secondly, the main body of government regulation is the government institutions that enjoy economic and social management functions in the legal regulation of energy efficiency. Thirdly, the object of government regulation is the behavior that affects others or society, such as pricing, pollution discharge and energy consumption behavior. Finally, the means of regulation is that the government regulatory agencies regulate and control the development, utilization and protection of energy based on legal rules and standards, including standards, labeling, taxation, administrative punishment and adjudication.

The market mechanism is the realization mechanism of giving play to the leading force of market allocation of resources in the operation of the market. The market mechanism adjusts the changes of the market supply-demand relationship through the fluctuation of the market price of energy resources, so that different market players can compete through the law of survival of the fittest in this process, so as to achieve the optimal allocation of resources and promote the free flow of production factors. In the legal regulation of energy efficiency, through the market mechanism, the use of price means to optimize the allocation of energy resources, so that energy flows to the places where it is most needed, and realize the efficient use of energy. Based on the understanding of the relationship between market mechanism and government regulation, the principle of combining government regulation and market mechanism means that in order to achieve the double carbon goal and effectively respond to climate change, we should not only give full play to the role of market mechanism in the legal regulation of energy efficiency, but also carry out government regulation to overcome market failure in the field of

energy efficiency, so as to effectively improve energy efficiency and reduce greenhouse gas emissions.

### **3.2. The Necessity of Establishing "The Principle of Combining Government Regulation with Market Mechanism"**

At present, to promote the realization of the double carbon goal and ensure the improvement of energy efficiency, we should not only give full play to the role of market mechanism, but also play the role of government regulation. The main reasons for establishing the principle of combining government regulation with market mechanism as the basic principle of legal regulation of energy efficiency under the dual carbon goal are as follows:

Firstly, under the condition of market economy, the market is the leading force in the allocation of energy resources. "The market determines the allocation of resources is the general law of the market economy, and the essence of the market economy is the economy in which the market determines the allocation of resources." [8] This essential feature of market economy determines that the legal regulation of energy efficiency under the dual carbon goal must reflect the economic law and play the role of the market. However, the current effective energy efficiency market system in China is not complete enough to fully mobilize the enthusiasm of market players to improve energy efficiency. The operability of existing energy efficiency management methods, such as finance, taxation and finance, is not enough, resulting in low enthusiasm of enterprises and the public to improve energy efficiency. There are also some important energy efficiency market-oriented systems and measures that are not fully applied, such as the contract energy management system, voluntary energy conservation agreements, etc. Therefore, the legal regulation of energy efficiency must marketize the means or modes of regulation according to the market law, so as to make use of the efficiency of market resource allocation to improve the utilization efficiency of energy products, and encourage market players to actively take different ways to improve energy efficiency.

Secondly, there is market failure in the field of energy efficiency in China, which requires the government to use administrative power to adjust. With the further development of the market economy, the phenomenon of "market failure" in the field of energy efficiency is gradually exposed, such as negative economic externalities, public goods, information bias, monopoly and so on. The purpose of government regulation in the field of energy efficiency is to achieve the double carbon goal, effectively respond to climate change, maintain the efficient and fair use of energy resources, and correct market failure. Through specific government administrative organs, according to the authorization of the law, direct intervention and control of the behavior of enterprises, the public and other administrative counterparts.

Thirdly, China's energy prices are basically set by the government, and the role of market mechanism is difficult to play. The implementation of government pricing on energy prices makes it difficult to achieve the purpose of relying on price means to guide market players to make efficient use of energy resources, which makes it difficult for the market to adjust the allocation of energy resources through price means. "Theory and practice have proved that allocating resources through the market is the most efficient form." [8] Therefore, we should give full play to the leading force of the market in determining the allocation of energy resources, so that energy prices can truly reflect the market supply and demand relationship of energy, the degree of energy scarcity, and the actual value of energy, so as to correct the lack of government regulation in the field of energy prices.

Therefore, the legal regulation of energy efficiency under the dual carbon goal should not only give full play to the role of market mechanism, make use of the efficiency of market resource allocation to improve energy efficiency and reduce greenhouse gas emissions, but also carry out government regulation to overcome market failure in the field of energy efficiency, solve or

alleviate the problems of negative economic externalities, public goods, information bias, monopoly and so on.

## 4. Principle of Public Participation

### 4.1. The Connotation of the Principle of Public Participation

The principle of public participation in the field of environment, also known as the principle of environmental democracy, is that citizens have the right to participate in all activities related to environmental interests through corresponding procedures or channels, so as to ensure that it conforms to the public interest [9]. This principle embodies the democratic and legal requirements of modern environmental law most intensively [10]. In the field of environmental protection, public participation is an important way to effectively make up for the lack of government regulation and market mechanism. For environmental problems, government failure and market failure often occur, and the public is the direct stakeholders of environmental problems, they can make the most direct and rapid response to environmental problems. We can understand the principle of public participation in the legal regulation of energy efficiency under the dual carbon goal from the following two aspects:

Firstly, we encourage the public to actively participate in activities to improve energy efficiency in energy production and consumption. Because the emergence of environmental problems is the result of human long-term production and life, the solution of environmental problems also requires human joint efforts, which is our unavoidable responsibility. In order to achieve the goal of carbon neutrality and effectively respond to climate change, the principle of public participation requires the public to actively participate in various activities to improve energy efficiency, and promote the efficient use of energy through energy conservation, selection of energy-efficient products and other behaviors.

Secondly, the public can actively participate in the relevant decisions of the government and enterprises to improve energy efficiency through certain ways and procedures. Agenda 21 emphasizes that "one of the basic prerequisites for achieving sustainable development is the broad participation of the public in decision-making" [11]. Therefore, an important aspect of public participation in the legal regulation of energy efficiency is to influence the decision-making of the government and enterprises, so that they can make decisions that are conducive to improving energy efficiency, achieving the double carbon goal, coping with climate change and sustainable economic and social development.

### 4.2. The Necessity of Establishing the Principle of "Public Participation"

The principle of public participation is one of the important principles of environmental law. Both international legal documents and Chinese legislation have fully affirmed the principle of public participation. The principle of public participation should also be established in the legal regulation of energy efficiency under the dual carbon goal. The main reasons are as follows:

First of all, environmental democracy is the basic requirement of the environmental rule of law, and the principle of public participation is the substantive expression of environmental democracy. The concept of democracy requires that the public with relevant interests have the right to participate in public decisions-making. Democracy is an essential link in the process of rule of law, and the principle of public participation is the guarantee for the realization of environmental democracy. In the legal regulation of energy efficiency, public participation is not only the confirmation of the right of public participation, but also the guarantee of the realization of its rights. Therefore, in a democratic country ruled by law, individuals living in it have the right to participate in the public decision-making of environmental affairs on the premise of the right to know information. Democracy and the rule of law are both sides of the legal system. Establishing the principle of public participation in the legal regulation of energy efficiency is conducive to the rationalization and legitimacy of government decision-making,

and is conducive to the public safeguarding their legitimate rights and interests. At the same time, in the legal regulation of energy efficiency, public participation can effectively promote the improvement of energy efficiency. It can be seen that the principle of public participation should be one of the important principles of legal regulation of energy efficiency under the dual carbon goal.

Secondly, the principle of public participation is the basic requirement of realizing environmental justice. What environmental justice requires is the fair distribution of environmental interests, the guarantee of fair exchange order and the correction of unequal relations between different interest subjects. Under the "elite legislation" system, the interests of the public as energy consumers and other vulnerable groups are difficult to be fully reflected and expressed in the distribution of energy resources, it is difficult to achieve equal exchange, and it is difficult to get timely and effective correction when their rights are infringed. Therefore, only by establishing the principle of public participation and making the public, including energy consumers and other vulnerable groups, participate in the decision-making of legal regulation of energy efficiency, and the value requirements of substantive justice pursued by environmental law be realized.

Finally, the public's active participation in improving energy efficiency can promote the realization of the dual carbon goal. On the one hand, the exhaust gas produced by energy consumption in production and life is the cause of man-made climate change. As the main source of greenhouse gas emissions, the public has the responsibility to actively participate in the improvement of energy efficiency and reduce the negative impact of man-made climate change. On the other hand, natural disasters caused by climate change will directly affect the safety of human life and property, and this impact is universal, and it is difficult for anyone to avoid. Therefore, to improve energy efficiency and reduce greenhouse gas emissions, we must start with all kinds of subjects that have impact and are affected, and give full play to the positive role of all kinds of subjects. Public participation naturally becomes an indispensable aspect. Therefore, in order to achieve environmental democracy and environmental justice, it is necessary and feasible to establish the principle of public participation as the basic principle of legal regulation of energy efficiency under the dual carbon goal.

## **5. Principles of Clean and Efficient Utilization of Energy**

### **5.1. Connotation of "Principle of Clean and Efficient Utilization of Energy"**

Improving energy efficiency is the core of the principle of clean and efficient utilization of energy. Clean and efficient utilization of energy is to maximize the benefits of energy resources. In fact, clean and efficient utilization of energy can also be expressed as "energy conservation and emission reduction, energy conservation and consumption reduction, energy conservation and efficiency increase, and comprehensive utilization". The principle of clean and efficient utilization of energy in the legal regulation of energy efficiency under the dual carbon goal should include the following aspects: first, we should pay special attention to injecting the concept of rational consumption of energy into energy utilization to make the goal of energy efficiency clearer. Secondly, the principle of clean and efficient utilization of energy inevitably requires energy conservation and consumption reduction, energy conservation and efficiency increase, that is, in industrial production and other energy activities, we should pay attention to energy conservation, improve energy efficiency, and produce more economic and social benefits with the same energy consumption; Thirdly, comprehensive utilization requires producers to improve the comprehensive utilization rate of three wastes (waste solid, waste liquid and waste gas), and actively implement cleaner production closely around the goals of energy conservation, consumption reduction, pollution reduction and efficiency increase. Finally, we should also pay attention to the development of energy efficiency technology, which

not only helps to reduce energy consumption and improve energy efficiency, but also helps to ensure energy security, alleviate environmental problems caused by the process of energy development and utilization to a certain extent, and promote the sustainable development of a positive society.

Therefore, the principle of clean and efficient utilization of energy is to use necessary economic and technological means to eliminate unnecessary energy waste and improve energy utilization efficiency in the process of energy exploitation, processing, utilization and conversion, on the basis of considering the limitation of energy resources, so as to realize the sustainable development of economy and society.

## **5.2. The Necessity of Establishing the "Principle of Clean and Efficient Utilization of Energy"**

With the continuous increase of greenhouse gas emissions, the climate change situation is becoming more and more serious. Clean and efficient use of energy has become one of the effective means to alleviate the global climate change problem. In China, the legal regulation of energy efficiency under the dual carbon goal should establish the principle of clean and efficient utilization of energy. The main reasons are as follows:

Firstly, at this stage, China's economy will still maintain medium to high growth, and the demand for energy resources will further increase. Judging from the current energy production and consumption structure in China, domestic energy reserves are difficult to meet the current and long-term development needs. In particular, at present, the proportion of energy consumption in the field of construction and transportation in China is rising, the ways of energy consumption are more diverse, the load characteristics are more decentralized and flexible, and it is increasingly difficult to efficiently meet diversified energy needs [12]. In addition, China's urbanization will accelerate in the future, and the population will gather in more central cities, which will promote the increase of regional energy demand, which will lead to the increase of energy demand. Therefore, we must improve energy efficiency and promote the clean and efficient use of energy resources.

Secondly, low energy efficiency and the low proportion of clean energy in the energy structure are one of the main reasons for China's insufficient energy supply and serious environmental pollution. Although China's "carbon peak action plan before 2030" proposes that the proportion of non fossil energy consumption will reach about 25% by 2030 [13], China's energy consumption structure is still dominated by fossil energy such as coal, oil and natural gas, resulting in a large number of pollutants in the development and utilization of fossil energy, which will lead to serious environmental pollution problems such as air pollution and water pollution. Clean and efficient use of energy can not only effectively alleviate the reality of a large number of greenhouse gas emissions, but also reduce the serious environmental pollution caused by non clean energy. Through cleaner production, reduce greenhouse gas emissions, so as to achieve the double carbon goal and effectively deal with climate change and environmental pollution.

Thirdly, low energy efficiency is also the main reason for the increase in greenhouse gas emissions in China. In order to achieve the double carbon goal and effectively deal with climate change, we must reduce greenhouse gas emissions mainly caused by the use of fossil energy. For a long time, the use of energy resources in China's economic development has adopted the method of "high energy consumption, high pollution and high emissions". Through the clean and efficient use of energy, the threat of greenhouse gases generated in the use of fossil energy to the climate system can be effectively reduced, so as to effectively cope with climate change, so as to achieve the harmonious coexistence of economic development and the natural environment. It can be seen that China needs to further improve the existing energy efficiency



and increase the capacity of unit energy, so as to reduce energy consumption and promote the green development of economy and society.

Therefore, based on the needs of China's economic development, in order to achieve the dual carbon goal, effectively respond to climate change, and improve energy efficiency, it is essential and feasible to establish the principle of clean and efficient energy utilization as the basic principle of legal regulation of energy efficiency under the dual carbon goal.

## 6. Conclusion

At present, carbon peak and carbon neutralization have been incorporated into China's major national strategies and the overall layout of ecological civilization construction. The realization of the double carbon goal requires not only the implementation of policies, but also the protection of laws. The principle of coordinated development of environment, economy and energy, the principle of combining government regulation with market mechanism, the principle of public participation, and the principle of clean and efficient utilization of energy are established as the basic principles of legal regulation of energy efficiency under the dual carbon goal, which is of great significance for improving energy efficiency, reducing the total amount of carbon dioxide emissions, and finally promoting the realization of the dual carbon goal.

## Acknowledgments

This work is supported by Anhui philosophy and social science planning project, "Research on the construction of energy efficiency legal system under the background of haze control" (AHSKYG2017D113).

## References

- [1] Zhao Jun, Meng Linghao. Construction and improvement of China's carbon emission trading rule system - based on the perspective of the interaction between international and domestic rule of law [J]. Journal of Hubei University (Philosophy and social sciences), 2021, (9): 120-131.
- [2] Xi Jinping. Speech at the general debate of the 75th United Nations General Assembly [N]. People's daily, September 23, 2020 (3).
- [3] The Fifth Plenary Session of the ninth Central Committee of the Communist Party of China on October 29, 2002 Suggestions of the Central Committee of the Communist Party of China on formulating the 14th five year plan for national economic and social development and the long-term goals for the year 2013 [N]. People's daily, November 4, 2020 (1).
- [4] Information Office of the State Council of the people's Republic of China China's energy development in the new era [N]. People's daily, 2020-12-22 (10).
- [5] Information Office of the State Council of the people's Republic of China China's policies and actions to cope with climate change [N]. People's daily, October 28, 2021 (14).
- [6] National Development and Reform Commission and others: "several opinions on strict energy efficiency constraints and promoting energy conservation and carbon reduction in key areas" [EB/OL]. 2021-10-26.
- [7] Wang Jiang. On the legal framework of carbon peak and carbon neutralization action [J]. Oriental Law, 2021, (5): 122-134.
- [8] Zhang Wenxian. Jurisprudence [M]. Beijing: Higher Education Press, 2018:383.
- [9] Wang Jin. Environmental law [M]. Beijing: Peking University Press, 2006:175.
- [10] Zhou Ke. Environmental law [M]. Beijing: Renmin University of China Press, 2008:41.
- [11] United Nations Conference on environment and development Agenda 21 [M]. Translated by national environmental protection administration Beijing: China Environmental Science Press, 1994:249.

- [12] Institute of resources and environmental policy, development research center of the State Council Progress report on China's energy revolution (2020) [M]. Beijing: Petroleum Industry Press, 2020:16-17.
- [13] State Council Carbon peak action plan by 2030 [N]. People's daily, 2021-10-27 (7).
- [14] Chen Ying. China's plan for global response to climate change and China's contribution [J] Contemporary world, 2021, (5):4-9.