

# Research on confirmation and measurement of Carbon Emission Rights

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**Abstract:** *This paper first analyzes the research background of accounting for carbon emission rights and the research status at home and abroad, and outlines the concept of carbon emission rights and three theoretical foundations, namely, sustainable development theory, environmental accounting theory, and stakeholder theory. Secondly, respectively from the four main viewpoints of assets recognized as inventories, inventories, intangible assets, transactional financial assets and new assets, the accounting confirmation of carbon emission rights is explored, from the aspects of measurement attribute selection, initial measurement and subsequent measurement. Carbon emission rights accounting measurement; Finally, a brief analysis of the problems of carbon emission rights information disclosure and recommendations.*

**Keywords:** *Carbon emission rights, Accounting confirmation, Accounting measurement, Information disclosure*

## 1. Introduction

With the strengthening of scientific and technological strength and the rapid development of market economy, manufacturing, fuel, construction and other industry continuously emit a large amount of pollution gases containing carbon, nitrogen and sulfur into the air during the production and operation process, and the concentrations of carbon dioxide, nitrogen and sulfur in the air are constantly rising, which makes human beings be placed in a large greenhouse with rapidly rising temperature. Greenhouse effect will seriously destroy the balance of the natural environment, and may be accompanied by natural disasters such as land desertification, melting glaciers, sea level rise, earthquakes, etc., which will not only do great harm to industrial and agricultural construction, but also threaten people's lives safety at any time. According to the Global Climate Report released by Climate Group, the temperature from 2015 to 2018 is the highest in the past four years., the global average temperature is higher than the pre-industrial level, the heat in the upper ocean reaches the highest point in history, and the global average sea level rises by 3.7 mm from 2017 to 2018, which is a record high. Ocean acidification is more serious than in previous years, indicating that global warming has caused serious damage and threat to the global land and ocean. In this context, in order to establish a sustainable ecological environment, all countries in the world are actively implementing energy-saving and emission-reduction strategies, and the important task is to control carbon emissions.

China attaches great importance to the severe situation of rising temperature, and controls the emission of carbon-containing gases through clever trading of carbon emission rights and other economic means. At present, China has initially established carbon emissions trading pilots projects in seven first-tier cities including Beijing and Shanghai, which is in the preliminary exploration stage, and has not yet formed a unified trading standards and perfect market monitoring and supervision system. Carbon emission trading units often have uncertain problems such as confusion in accounting, lack of uniform standards, difficulty in comparing accounting data, distortion of accounting information, etc. To solve these practical problems, it is necessary to have strict standards and appropriate methods, and to restrain them from the source. Therefore, the study of carbon emission accounting has theoretical and practical significance, which can not only reduces greenhouse gas emissions to achieve the low-carbon goal of protecting the atmosphere, but also promotes its timely and effective realization of economic value in the trading market while stabilizing market development, and also provides basic suggestions for improving the accounting standards of carbon emission rights and unifying trading rules in the future.

## 2. Research status at home and abroad

Nowadays, under the shadow of greenhouse effect, the research on carbon emission rights accounting has been widely concerned by scholars from all over the world. As early as 1968, the American economist Dales put forward the concept of emission trading, arguing that there should be a legal right to control the emission of pollutants. He believed that environmental resources can be bought and sold in the market as commodities, and their use value and value can be used to achieve the goal of mutual benefit and win-win. As soon as this point of view came out, many scholars agreed. Subsequently, in order to reduce the emission of greenhouse gases such as carbon dioxide, sulfur dioxide and nitrogen waste gas, the carbon emission rights came into being through the way of emission trading.

Foreign scholars are in a leading position in the accounting of carbon emission rights, and most scholars think that it is truly an assets. However, foreign scholars hold different views on what kind of assets the carbon emission rights belong to. The main viewpoints are inventory (Mort Dittenhofer, 1955), intangible assets (IASB, 2004) and financial assets (Adams, 1992; Fiona, 2002) and New Asset (ANC, 2012; ECRAAG, 2013). In addition, in the research and exploration of foreign scholars, they found that when the carbon emission rights is recorded as an asset, the accompanying initial measurement and subsequent accounting will change. In the information disclosure of carbon emission rights, Stephen (2008), an American scholar, suggested to improve the accounting system of carbon emission rights, and disclose the data and information of "carbon emission" in the report on the basis of establishing effective and legitimate accounting standards. Elizabeth (2009), a British scholar, collected data on information disclosure of carbon emission rights of some enterprises by means of sending a letter of investigation. The analysis found that most of the units surveyed indicated that they did not obtain carbon emission-related information in time or even from within enterprises, which indicated that enterprises had not fully and effectively explored and managed the information disclosure of carbon emission rights, which made the authenticity of the information lacking.

After studying abroad for a long time, China slowly began this research. Some scholars believe that the confirmation and calculation standards of carbon emission right accounting are different. At present, there are the following viewpoints: Wang Kaiyuan (2017) analyzed the current situation of large greenhouse gas emissions of Chinese enterprises, and learned that there is no uniform standard for accounting treatment of carbon emission rights, and the accounting methods of carbon emission rights of various emission units are also different. Therefore, he said that the use path of carbon emission rights has different influences on its accounting, and suggested that when an enterprise meets its own production and operation needs for its own use or is used for other aspects of its own use, it can be accounted for and confirmed by intangible assets, and when the enterprise uses the surplus after use for sale or exchange transfer, it can be accounted for and confirmed by transactional financial assets. Marco (2017) proposed that carbon emission rights should be classified into one category separately and defined as new assets, which can be measured by fair value which can reflect the essence of economy; Yan Huahong et al. (2016) had a new insights. They put forward that the carbon emission right sold from the trading market is a trading behavior, and its price is easy to obtain, which can be confirmed by financial assets; Yuan Zhikun (2018) analyzed the current situation of accounting disclosure of carbon emission rights in China, and found that the effectiveness and practicality of carbon emission information were low, and there was no unified information disclosure system.

## 3. Related concepts and theoretical basis

### 3.1 Related concepts

#### 3.1.1 Carbon emission rights

Carbon emission right originates from emission rights, which refers to the right to allow emission enterprises to emit greenhouse gases into the atmosphere within the specified limits. It has the following features: Scarcity. The quantity of pollutants discharged by sewage enterprises in China is limited. However, in real life, the amount of pollutants discharged by sewage enterprises in a certain period of time often can not meet the needs of enterprises, so it is rare. This is not physical. Carbon emission rights is an invisible and intangible right, but enterprises can use them in exchange for another kind of gain, which is regarded as value exchange. Trading ability and profitability. With the carbon emission right granted by the state, within a limited amount, the greenhouse gases such as industrial waste gas produced by enterprises in the process of production and operation can be freely discharged into the atmosphere, resulting in economic benefits, and the remaining emission rights can be bought and sold in the trading

market, thus gaining certain profits, which is also profitable. It is mandatory. According to the United Nations Framework Convention on Climate Change, it is necessary to limit and control the carbon emissions of each country.

### ***3.1.2 Trading of carbon emission rights***

In 1997, Kyoto Protocol proposed that carbon emissions trading is to generate carbon dioxide emissions as exchangeable commodities, and both parties could take what they need, which was a kind of trading between those with excess demand and those with insufficient demand. In other words, if the state gives you a quota of 50,000 tons of carbon dioxide, you can only emit 50,000 tons. If you need to discharge 60,000 tons, you will need to spend money to buy an extra 10,000 tons. Meanwhile, enterprises can spend money to buy the emission rights, and the government can also use it for environmental protection. Otherwise, it can only try to save energy and reduce emissions so that the emissions do not exceed 50,000 tons.

Clever use of carbon emissions trading is an economic strategy for countries to reduce pollution, save resources, improve energy efficiency and promote enterprise transformation. Based on the carbon emissions trading mechanism, it can help enterprises pay more attention to the information related to carbon emissions trading, and urge them to assume environmental responsibility, thus completing the low-carbon economy and low-carbon production tasks set by the state and promoting the social and economic transformation.

## ***3.2 The theoretical basis***

### ***3.2.1 The theory of sustainable development***

The theory of sustainable development refers to "meeting the needs of contemporary people without threatening the survival and development of future generations". In today's world, the development of many countries is not in harmony with the natural environment, which leads to a series of serious consequences such as ignoring the coexistence of themselves and the environment and neglecting the importance of sustainability. For example, resources are exhausted, the ecological environment is destroyed, etc. Under these excessive pollution conditions, enterprises can no longer consume environmental resources recklessly, and the earth and human beings must live in harmony and develop in a balanced way. Protecting the environment is also the mission of enterprises and people. Everyone should consciously shoulder the responsibility of saving energy and taking care of nature. Therefore, for the balanced development and sustainable development of environmental resources and economic benefits, the implementation of carbon emission trading can effectively improve the environmental quality and alleviate climate change.

### ***3.2.2 Environmental accounting theory***

In the past economic activities, people always exploited environmental resources without considering the consequences, which accelerated the depletion of resources, destroyed the natural and primitive development conditions, and affected people's quality of life and economic development. Therefore, it is extremely important to effectively measure the value of environmental resources. Based on the theory of environmental resources value, carbon emission right accounting measures the environmental resources such as carbon emission right scientifically, reasonably and practically, which not only reasonably supervises and manages the quality of carbon emission rights in China, but also plays an active and effective role in realizing comprehensive, coordinated and sustainable development.

### ***3.2.3 Stakeholder theory***

Any enterprise has stakeholders who share risks and benefits, and supervise and restrain each other. They will face new opportunities together, accept all kinds of challenges, and constantly affect their own progress and development. The main participants in the carbon market include the government, emission control enterprises, emission reduction enterprises, middlemen and third-party certification bodies that inspect the emission control enterprises. Their interests influence each other, involving a wide range of processes. Therefore, while fully considering and meeting the needs of stakeholders (subject and object), enterprises should adhere to the principle of maximizing the interests of all parties, formulate reasonable strategies and norms, consciously and actively reduce carbon dioxide emissions, and timely and accurately disclose relevant transaction information.

#### **4. Accounting confirmation of Carbon Emission rights**

##### ***4.1 Conditions for recognition as assets***

Accounting standards for enterprises stipulate that assets must meet the conditions of past event or activity, be directly owned or controlled by the enterprise, be expected to bring economic benefits to the enterprise, and be able to reliably measure its value and cost. Based on the comparative analysis of the above conditions, this paper argues that carbon emission rights can be regarded as assets. The reasons are as follows: firstly, the source of carbon emission rights is that the government distributes it to enterprises free of charge within the limit of environment through the long-term development level and business demand of enterprises; Second, the enterprise's own needs are not met, or its own surplus occurs, and it buys and sells on the carbon market. No matter how you get it, you can see that the moment when you get it has already happened. Secondly, no matter how the carbon emission rights are obtained, it can be said that it belongs to the enterprise. At the same time, the enterprise also has the physical conditions to own or control the resource, and can freely decide its purpose and whether it can be used for sale or transfer; Third, environmental resources are not inexhaustible. We should respect the tolerance of nature. Therefore, under the control of the state, the carbon dioxide emission of every enterprise has a certain limit, especially the enterprises with high output and high consumption, such as electric power, steel, energy and chemical. Usually, the carbon emission quota allocated by the state is far from meeting its own needs, and the development of production is likely to be restricted, and the scale of the industry can not be expanded. Therefore, carbon emission rights can be regarded as an activity that can bring profits to enterprises, and it needs to pay its specific price just like buying goods and other assets. It can also be regarded as the source of funds that may flow into the expected income in the future, and has strong economic entity intention. Finally, although there is no mature and stable trading market for carbon emission rights at home and abroad, when enterprises calculate carbon emission rights, they can not only calculate according to the historical cost price at the time of acquiring the rights, but also calculate according to the corresponding payment price when actually occurring. In this way, the cost can be easily obtained, and can be reliably calculated and measured.

##### ***4.2 How to confirm the carbon emission rights***

As an asset, carbon emission rights have been unanimously recognized by domestic and foreign research experts. However, different scholars have preliminarily defined which asset type it is, and have not yet reached a consensus. At present, there are several viewpoints as follows.

###### ***4.2.1 Identified as inventory***

There are several reasons why carbon emission rights can be identified as inventory: First, its definition is similar to the concept and characteristics of inventory; Secondly, it can be traded as a product, which meets the requirement of flowing in the market. The tradability of carbon emission rights indicates that its cost and value (quantity and amount) can be measured reliably. However, there are some problems in recognizing the carbon emission right as inventory: First, the state grants carbon emission quota to the company, that is, it must be discharged into the atmosphere to meet the carbon dioxide demand of the production and operation of the enterprise, and at the same time protect the natural environment and stabilize the operation and development of the enterprise, instead of holding it for the purpose and selling it for profit; Second, inventory is tangible and belongs to a kind of asset with physical status, while carbon emission rights, like rights, do not exist in the form of commodities, but are invisible. In addition, unlike inventory, carbon emission rights do not belong to materials that need to be used, nor to products that enterprises need to produce in order to obtain economic sources.

###### ***4.2.2 Identified as intangible assets***

The reason why carbon emission rights can be embodied as intangible assets is mainly determined by the following factors: First, it comes from the government's free quota and has no physical form; Second, the sources of obtaining carbon emission rights include free allocation by the government and purchase in the carbon trading market, both of which show that they can be used, sold and transferred directly by enterprises, and are fully identifiable. Third, it is not specially used for sale, and it has the characteristics of long life. In addition, China's carbon emissions trading market is still in the early growth stage, which is not easy to be converted into monetary funds, and the economic benefits that can be brought to enterprises during the holding period are uncertain, which is in line with the non-monetary assets conditions. However, there are still some problems: First, intangible assets need to be amortized cumulatively, but carbon emission rights may change with the changes of the market, and its value will

not change with time. Secondly, intangible assets are a kind of privilege, for example, the patent rights are protected by the state, and the main purpose of the enterprise is to obtain profits in the course of operation to meet the development needs, while the carbon emission rights are specially designed to reduce environmental pollution and accomplish the task of reducing carbon and protecting the environment.

#### ***4.2.3 Recognized as a transactional financial asset***

The reasons why carbon emission rights can be recognized as trading financial assets are as follows: non-monetary assets without physical status; Scarcity; It can be used as a kind of actual rights and interests, and it is tradable; Profit from the difference can be obtained by selling; In the process of holding carbon emissions, there may be innovative changes, and the demand for carbon emissions will be reduced, and the resulting surplus can be sold in the market, which probably meets the purpose of recent sales holding. However, there are also some problems: first, the main purpose of holding carbon emission rights is not to sell in the near future, and whether the remaining situation will arise depends on the production and use of enterprises; Second, carbon emission rights are mandatory requirements for enterprises to participate in energy conservation and emission reduction plans, while financial assets are generated according to the contract agreement; Third, the development of China's carbon emissions trading market is temporarily unstable, and the value of financial assets may not be effectively realized, which is not conducive to carbon liquidity trading.

#### ***4.2.4 Identified as a new asset***

According to the literature analysis, firstly, the carbon emission rights has no physical status, and is not a product or material needed for the daily production activities of enterprises, so it cannot be recognized as inventory; Second, if special rights are not taken as the basis, the value of carbon emission rights will not change. Under such circumstances, it is unreasonable to recognize it as a financial asset. It can also be seen that it cannot form a creditor-debtor relationship with financial contracts between two enterprises. Third, it cannot be amortized like intangible assets. Therefore, some scholars suggest that carbon emission rights should be regarded as a new special asset category, belonging to new assets and establishing a special management and accounting control system.

According to the analysis of the above experts and scholars' viewpoints, no matter which of the above four kinds of assets the carbon emission rights are classified into, there are some advantages and disadvantages, which can not correctly and truly reflect the existence value of carbon emission rights. However, they can lay a foundation for future research, and the confirmation category of carbon emission rights completely affects its preliminary measurement and subsequent measurement. After consulting the literature, this paper holds that the carbon emission quota is issued by the government to every enterprise, and the enterprises can trade according to their own production needs and development status, and its initial calculation and measurement method changes with the change of sources. What is obtained from the government's free distribution, without any cost, should be recognized as "free carbon emission rights"; Buying from the carbon trading market should be regarded as a privilege and recognized as "intangible assets"; For those carbon emission rights which are distributed by the government free of charge and appear in the use process, when they are sold in the market, they almost satisfy the recent sales and obtain the difference income, which should be recognized as "transactional financial assets". However, it is still to be inspected and standardized in practice to accurately identify the carbon emission rights with different access paths and use purposes.

## **5. Accounting measurement of carbon emission rights**

### ***5.1 The choice of measurement attributes.***

How to choose the measurement attribute will directly affect the entry value, subsequent transactions and report disclosure of accounting information. When the carbon emission rights comes from the exchange trading activities in the market, it can obtain accurate, legal and reliable original vouchers, and the price can be measured reliably. Therefore, it is more appropriate to calculate and measure it by historical cost. From the point of view of free distribution from the government, the historical cost is not used, but the fair value measurement is used, because the enterprise cannot obtain evidence to determine the price when the government allocates, and there is no cost when it is deposited into the enterprise. It has no reliable source of cost and price, which is almost equal to zero. If it is used for trading in the future, the basis of income and cost cannot match.

### ***5.2 The initial measurement of carbon emission rights***

The accounting basis of the initial accounting measurement of carbon emission rights from different paths of enterprises is also different. The free carbon emission rights granted by the government means that the enterprise can use it, but it does not mean that it is owned by the enterprise, but it is equivalent to receiving a non-monetary government subsidy without repayment. Accounting standards have detailed instructions, if government subsidies do not exist in the form of monetary funds, they shall be measured and calculated by fair value in accounting. If there is no relevant basis, the fair value cannot be determined, so as to give it an amount to be measured and reflected on the account, so as to prevent the loss of assets due to the leakage of records. However, no matter which measurement attribute is adopted, the subsidy can be counted as the borrower of "free carbon emission rights-government subsidy", and the cost or loss allocated by compensation and used in future time will be recognized as "deferred revenue".

When the carbon emissions required by normal production and operation activities exceed the government allocation, in order to avoid the tragic result of stopping operation, enterprises usually choose to purchase the amount of carbon emissions from the market. The outsourcing price depends on whether there is a clear pricing on the trading day: if not, it will be calculated at the fair market price on the trading day or the pricing agreed by both parties, and will be included in the subject of "Intangible Assets-Carbon Emission rights"; On the contrary, if there is a definite pricing, it will be directly based on it as the initial measurement value of accounting.

### ***5.3 Subsequent measurement of carbon emission rights***

The free carbon emission rights granted by the government have different ways of use, which can be used for production or trading. In the process of use, it should be distributed first, and the carbon emission rights used to satisfy production and operation can be credited to the debit of "intangible assets-carbon emission rights" and registered with the lender of "free carbon emission rights-government subsidy". The remaining quota determined to be used for buying and selling other than meeting its own production and operation shall be credited to the debit of "trading financial assets-carbon emission rights" and recorded in the credit of "free carbon emission rights-government subsidy".

In the process of using carbon emission rights by enterprises, long-term use often occurs, so it is necessary to amortize the carbon emission rights used in production according to the sources obtained. In the process of amortization, if the market price of carbon emission rights fluctuates constantly, which makes it impossible to recover, it may be considered to make provision for impairment. This is because in the production and operation activities, enterprises emit carbon dioxide gas into the air, which means that enterprises need to calculate relevant expenses when they use carbon emission rights, and carry out reasonable amortization treatment on those already used. With the frequent changes in the market environment, the instability of the market has caused the transaction price to be in a period of constant fluctuation. When the fair market price of carbon emission rights is higher or lower than the net book value, it is necessary to adjust the book differences and record the changes in fair value. If an enterprise wants to sell the excess carbon emission rights on the market, it should handle the accounting according to the following process: First, in the course of subsequent transactions, it should be credited to the debit of "bank deposits" according to the actual transaction amount, and to the credit of "transactional financial assets" according to the original cost obtained; Secondly, the difference between the cost and the sales price should be included in the "investment income"; Finally, the differences in the fair value of carbon emission rights that change with the changes of the market need to be carried over to the subject of "investment income".

To sum up, with the increase of varieties and ways of trading carbon emission rights, it is extremely important to accurately and reasonably calculate the trading market on the premise of stable operation. Therefore, accelerating the pace of practice and improving the research efficiency are an important guarantee for improving the accounting system of carbon emission rights, unifying and standardizing, and promoting the development of market transactions.

## **6. Analysis of information disclosure of carbon emission rights**

In the world, while developing economy, reducing environmental pollution and ensuring green nature are important issues that should be solved in the new century. China is a big developing country, which is in the stage of vigorous reform and change in science and technology manufacturing, energy consumption, etc. It may be a country with large carbon emissions in the future, which means that the

state and the government bear heavier responsibilities in protecting the environment and low-carbon economy. Enterprises and the government should accurately and appropriately disclose carbon emission information, which can help users of information fully understand the business and financial situation of enterprises according to the actual emission situation, and guide them to make correct and reasonable decisions

Nowadays, China has a positive and serious attitude in monitoring carbon dioxide emissions and coping with climate change, and puts forward the integration strategy of energy saving and emission reduction and low-carbon economy, which promotes the development of carbon emission accounting information disclosure. However, due to the late start of carbon emission accounting research in China, there are still some problems: the availability and practical value of carbon emission information is very low; Asymmetry of information acquisition; The main body of emission is not active enough, and the awareness of disclosure is weak; For those enterprises that need to emit a large amount of polluting gases and obtain scale gains, they should evade the regulations as much as possible; The system is imperfect, the trading rules are not uniform, there are more descriptive theoretical information, but the precise quantitative information of data is lacking. Therefore, in order to solve these practical problems, China should strengthen the supervision and pay more attention to the information disclosure of carbon emission rights, hoping that China will further improve the information disclosure of carbon emission rights.

According to the above analysis, this paper puts forward the following suggestions: carbon emissions trading information should be strictly evaluated and reviewed, and the requirement of social responsibility should be continuously strengthened; Encourage enterprises to attach importance to information from the inside to meet the demand target of carbon emission information users for accurate, complete and effective information; The government should strengthen the detailed investigation of the historical emissions of energy-consuming enterprises, understand the fuel consumption clearly, and then set a lower amount than the historical emissions quota of enterprises according to the results of the inventory check, so as to encourage them to voluntarily reduce emissions; Accelerate the research process of China's carbon emissions trading accounting system and accounting methods, and gradually form a set of carbon emissions accounting information disclosure standards that are suitable for China's development goals; The report can reflect a lot of useful information and data, and a series of detailed subjects of carbon emission rights acquisition and trading can be added under the existing subjects; It is not only necessary to display the data and information in the report, but also to explain in the notes, which may include the targets and effects of energy conservation and emission reduction, the sources and ways of use, accounting confirmation and measurement methods, the credentials of the enterprise for sale or purchase, the enterprise's responsibility for environmental protection, the government's requirements for the carbon emissions of the enterprise and the rewards and punishments stipulated in the emission regulations, etc.

## 7. Conclusion

With the gradual transformation of sustainable development into China's current management philosophy, it has become an inevitable trend to promote the healthy development of social economy by increasing the asset accounting of natural resources. Nowadays, the greenhouse effect has not only caused bad damage to the ecosystem, but also had a very serious impact on people's living environment. "Reducing the emission of carbon dioxide" has become an important topic that has attracted worldwide attention. At present, many countries use the economic means of carbon emission trading to reduce greenhouse gas emissions, and China is no exception. However, it is still in the initial exploration stage, and the trading pilot is expanding constantly. There is no unified standard and consistent trading guidelines to account for carbon emissions. Moreover, the biggest beneficiaries of carbon trading are actually the people. After the development of carbon trading, enterprises will work harder to save energy and reduce emissions. In dealing with environmental problems, with the joint efforts of enterprises and the state, the environment will naturally get better and better, and the low-carbon economy will also vigorously develop.

In this paper, combined with the relevant theoretical basic knowledge, firstly, the current mainstream views on asset identification of carbon emission rights are discussed, and then the initial measurement is made from the sources of carbon emission rights, and the subsequent accounting of carbon emission rights is carried out from two economic purposes: production and use, trading and trading. Then, it is found that there are some problems in China's carbon emission information disclosure, such as imperfect system, inconsistent trading rules, asymmetric access to information, lack of initiative of emission

subjects and weak awareness of disclosure, and some basic suggestions are put forward. Therefore, I hope that we can speed up the improvement of carbon emission accounting system and promote the stable development of market transactions, and at the same time strengthen the rational use and protection of environmental resources, and promote the sustainable development of economy. Although China lacks an effective and sound carbon trading market operation mechanism, it has not yet established a unified and standardized accounting system. However, I believe that through the promotion of national laws, guidelines and policies, and the continuous research and analysis of the economic value and measurement methods of carbon emission rights by later scholars, the problems and development obstacles in the transaction process can be effectively solved, and the relevant accounting system will quickly become comprehensive and sound. On this basis, it provides information support for improving the waste of resources and air pollution in China and realizing air purification, so as to gradually realize the goal of low-carbon economic development and environmental protection in China.

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