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Carbon Trading Accounting in Enterprise Financial Management

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Abstract: By suggesting the enterprise environmental accounting information disclosure system, regular release of enterprise carbon emission information, enhance the enterprise's social responsibility and public awareness Therefore, as a responsible country, it is urgent for China to establish and improve the accounting system of carbon emission trading. Second, this study expects to summarize and summarize the advantages and limitations of various methods and models of carbon emission trading accounting, and put forward evaluation and improvement suggestions

1. Introduction

This paper aims to analyze and explore the development of the national carbon market, especially the carbon pricing mechanism, quota allocation, monitoring report, verification system and other key issues in the development process of the carbon market, so as to build a scientific and reasonable carbon accounting measurement and prediction model suitable for China's national conditions. Fourth, the calculation of carbon emissions is all companies and organizations to participate in carbon trading is very concerned about and need to master one of the key problems as soon as possible, the calculation method is scientific and accuracy is directly related to the enterprise economic benefits and the sustainable development of the carbon trading market in the future, become very important in carbon trading market data base and core support. This study is expected to provide a reference for the rational use and scientific measurement of carbon emissions and carbon trading at the government, industry, enterprise and implementation level.

2. Background Analysis

The concept of carbon emissions trading is derived from the 1960 s, American economist John dales in book pollution, property rights, price firstly puts forward the concept of "emissions trading", namely, to establish legal of pollutant emission right, it through the form of emissions permits, can like merchandise of trade to environmental resources. In 1997, more than 100 countries in the world signed the Kyoto Protocol on global warming, which stipulates the obligations of developed

countries to reduce emissions; Factors of the difference of their own conditions and at the same time, according to traders on the way to establish the three flexible mechanisms, namely the emission rights trading EmissionTrading CleanDevelopmentMechanism (ET), clean development mechanism (CDM) and joint implementation JointImplementation (J I). The establishment of effective mechanisms has led to the creation of an international carbon trading market, which can harness the power of the market to determine how and where greenhouse gas emissions can be reduced. When the Kyoto Protocol came into force in 2005, the right to emit carbon became an international commodity. As a developing country, China mainly participates in international carbon emission trading through CDM projects

As the global climate change problem continues to increase, it is of great importance to earnestly implement the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and other international treaties on climate change. China, the United States, Japan, the European Union and the United Kingdom, as major greenhouse gas emitting countries and regions, have formulated and implemented carbon emission standards in order to promote substantial progress in carbon emission standardization [1]. On July 16, 2021, the launch ceremony of China's carbon emission trading market was held simultaneously in Beijing, Shanghai and Wuhan, marking the launch of the much-anticipated national carbon emission trading market. China has also issued a series of guiding documents and policies to regulate the development of the industry and guide the orderly implementation of the carbon emission trading market, including China's National Plan to Address Climate Change and the 13th Five-Year Plan to Control Greenhouse Gas Emissions issued by The State Council [2]. The National Development and Reform Commission also issued "China 24 industries greenhouse gas accounting methods and the guide and the provincial greenhouse gas inventory compilation guidelines (trial)", "enterprise of greenhouse gas emissions report verification guidelines (try out)" and other relevant industry regulations, formed the national and provincial greenhouse gas metering method system, laid a policy and system for the national unified market foundation, It also provides guidance and basis for various activities of enterprises in the process of carbon emission. The implementation and development of these policies means that China will step into a new stage of reducing carbon emissions by market means [3].

3. Analyze the Status Quo of Carbon Emission Trading of Chinese Enterprises Based on SWOT Model

Based on SWOT model, this paper analyzes the current situation of carbon trading accounting of Chinese enterprises, and finds out the new phenomenon, new characteristics and new difficulties of carbon emission trading in the future.

3.1 Advantages of Carbon Emission Trading

First of all, macro policy factors have a positive impact on enterprises' carbon emission trading rights. In China, carbon emission trading is mainly promoted at the government level. Based on national execution, carbon emission trading can be effectively implemented. Secondly, some domestic large and medium-sized enterprises have certain carbon accounting ability, and can cultivate some professionals with the ability of environmental accounting and financial processing; Third, at 9:15 on July 16, 2021, the launch ceremony of the national carbon market was held in Beijing, Shanghai and Wuhan at the same time. The highly anticipated national carbon market officially started trading, and the first day of trading ended with the carbon price of 52.78 yuan /t. So far, the national carbon market the first trading only brought into power generation industry, these key emissions units unified with the greenhouse gas emissions, accounting method and report guidance power generation facilities (hereinafter referred to as the "accounting guidelines") and

"corporate greenhouse gas emissions report verification guidelines (trial) as carbon emissions and the third party inspection agencies inspection guide; Finally, the carbon trading operation and information exchange mechanism based on blockchain technology;

3.2 Disadvantages of Carbon Emission Trading

First of all, due to the impact of the economic situation and the global epidemic, currently China's small and medium-sized enterprises are generally facing greater economic pressure and survival pressure. For carbon emission trading projects, long-term benefits are obvious, while short-term costs are mainly reflected in the project, so it is not very positive. Secondly, up to now, only the power generation industry has been included in the national carbon market for the first time, while other industries are in wait-and-see and trial, with insufficient theory and experience. Finally, the accounting mechanism and method of carbon emission trading is a new field for many enterprises, and there are certain difficulties.

3.3 opportunities for Carbon Emission Trading

Free in carbon emissions trading market environment, market regulating means will gradually replace the functions of the government, the enterprise with carbon emission rights assets fully complete control and management, the carbon emission rights asset price is determined by market supply and demand, the market mechanism of competition by fully decision environment fair and the efficiency of resource allocation. After years of improvement, the carbon trading market has gradually become a mature market covering the whole world, with active trading and relatively stable price, and a relatively complete and feasible mechanism has gradually formed in stabilizing the price of carbon emission rights.

3.4 The Threat of Carbon Emission Trading

First of all, Ecological environment is complex, the carbon emission rights involves the various problem in the field of accounting, simple single accounting measurement model is not an ideal carbon emissions as the ecological environment of the value of assets that complexity problem, need to consider using a variety of measuring dimension as well as a variety of carbon emissions in a complicated environment accounting information quality characteristics, with emphasis on the enterprise and national energy-saving reduction The planning department provides accounting information useful for decision making. Secondly, the accounting environment of carbon emission right accounting measurement environment analysis has a far-reaching impact on accounting policy formulation, including social environment, natural environment, economic environment and other aspects, the development of accounting measurement environment is bound to change. The accounting environment of enterprise carbon emission right is mainly the arrangement of national green development strategy, which depends on various factors such as emission reduction pressure, national determination of emission reduction and national policy orientation. Carbon emission right accounting has great dependence on political environment and market environment.

4. The Construction of Carbon Emission and Trading System under the New Ecological Background

At present, the accounting treatment and measurement methods under the right of carbon emission trading of enterprises in China, and the comparison of different carbon emission and trading accounting methods. At present, China's enterprises mainly use carbon trading system

accounting methods -- carbon trading quota allocation (including industry baseline method and industry historical cost method); Reconstruction of enterprise carbon accounting system under ecological compensation system. Pricing mechanism and strategy in carbon trading. Evaluation mechanism of carbon asset value creation. Accounting method of carbon trading system -- carbon trading quota allocation (including industry baseline method and industry historical cost method); Carbon trading pricing mechanism and accounting treatment methods. In China, the carbon emission right trading market mainly distributes the carbon emission right through the state free initial allocation, and then trades the carbon emission right in the secondary market. Enterprises can confirm the cost of carbon emission right according to the actual price paid, and obtain the amount of carbon emission right. The carbon emission right is the right of the market subject to directly or indirectly discharge a certain amount of greenhouse gas into the environment in the normal process of production and operation. The trading object of carbon emission rights is the right to use such resources, while the state is the ultimate owner of carbon emission rights. The carbon emission rights owned by enterprises are only the environmental resources that can be used within the scope allowed by the state. Therefore, they can use or sell carbon emission rights at will during the validity period of carbon emission rights. The most basic concept of carbon emission right trading accounting is to identify carbon emission right as an asset, non-monetary assets, and the accounting of carbon emission right trading is around the accounting of non-monetary assets. At present, inventory, financial or intangible assets are generally considered as non-monetary assets. Under the premise that China's carbon trading market is not perfect, it is more appropriate to recognize carbon emission rights as intangible assets at present and even in a long period of time. On this basis, the initial confirmation and measurement of pollutant discharge right, the confirmation and deferment of pollutant discharge right, the confirmation and measurement of expenses and corresponding liabilities, the distribution, presentation and disclosure of pollutant discharge right cost, etc. After confirming that it is a non-monetary asset, the main measurement methods include historical cost of carbon emission right, market price and present value of future cash flow. According to the above analysis, if the carbon emission right is recognized as intangible asset, the fair value, if any, should be recorded in the account at the initial measurement, or replaced by the trading price of the same or similar asset in the secondary market. According to the fair value of the acquisition date, the enterprise should debit "intangible asset -- carbon emission right" and credit "deferred income -- government subsidy" for the carbon emission right distributed by the government without compensation. If the fair value cannot be obtained, the nominal amount shall be used for measurement. For carbon emission rights purchased by enterprises themselves, they should be recorded at the actual cost. The recorded value includes the purchase price, relevant taxes and fees, and all expenses directly attributable to bringing the carbon emission rights into the intended usable state. Specific accounting, debit "intangible assets -- carbon emission right" subject, credit "bank deposit" and other subjects.

In subsequent measurement, the enterprise does not amortize the carbon emission right because the value does not decrease with time. However, the deferred income shall be allocated periodically within the expected service life of the carbon emission right, and "deferred income -- government subsidy" shall be debited and "non-operating income" credited. During the period when the carbon emission right is held as intangible asset, the fluctuation of its value does not adjust the book value of intangible asset. At the same time, the obligation of the enterprise to discharge the corresponding greenhouse gas should be measured according to the fair value, debit "management expense -- carbon emission right" and credit "expected liability -- carbon emission right". At the end of the period, if the carbon emission right is impaired, the account of "asset impairment loss -- Carbon emission right impairment loss" will be debited and the account of "intangible asset impairment reserve" will be credited. The asset impairment has been determined and cannot be reversed. In the

case of paid transfer of carbon emission right, "bank deposit" and "intangible asset impairment reserve" shall be debited, "intangible asset -- carbon emission right" shall be credited, and the balance shall be debited by "non-operating expenditure -- loss from disposal of carbon emission right" or "non-operating income -- gain from disposal of carbon emission right".

5. Cost and Benefit Analysis of Carbon Trading Accounting

Carbon trading system and environmental performance measurement and analysis from different perspectives. Namely, the costs and benefits brought by enterprise carbon accounting; How to use modern big data and cloud computing tools to reduce the information cost and transaction cost of enterprise carbon trading. Modern intelligent means and tools such as big data and cloud computing can effectively reduce the information cost and transaction cost of carbon trading. For the purchased carbon emission rights, the initial measurement is made according to the actual cost, and it is reasonable and reliable to record the carbon emission rights at the actual cost. In the follow-up measurement, the economic value of intangible assets is transferred with the production of the product, while the actual value gradually decreases due to technology and other factors, so it should be amortized during the use period. However, the carbon emission right increases the value of enterprise products through its own consumption, and its actual value does not decrease with the passage of time. Therefore, the carbon emission right is not amortized in the subsequent measurement.

6. Establish a Mechanism for Identifying and Correcting Risk Points in Carbon Trading

In order to promote the smooth operation of carbon trading accounting and help enterprises realize corporate value and benefits, it is necessary to ensure the smooth operation of carbon trading by certain means and methods, and the effective internal control system is the key. This requires enterprises to identify various risk points in the process of carbon trading accounting, and establish a targeted correction mechanism according to the existence of risk points.

6.1 Risk Identification

The two major risks that enterprises may face in carbon emission trading are systematic risk and non-systematic risk. Systemic risk mainly refers to external risks that are not controlled by enterprises, including political risk, market risk, legal/compliance risk, etc. Non-systematic risks mainly refer to internal risks that can be controlled by enterprises, including business risks and financial risks, such as enterprise strategy risks, operational risks, transaction risks, project risks and reputation risks. The management should fully understand and recognize the risks of carbon emission reduction trading faced by the enterprise. It is essential to analyze GHG emissions from the perspective of the industry's overall value chain if weaknesses in the implementation of carbon emission trading and the response to climate change regulations and market changes are to be found in the process of enterprise risk identification. It is difficult and complex for an enterprise to effectively identify all risks. The main reason is that different members at different levels of the enterprise will consider some of the same risks from different perspectives. Generally, the management will have a group of risks related to operation management, and investors may consider some risks that may affect the income. These risks are not the same, and the treatment methods are not completely the same, so there will be some problems in preventing risks.

6.2 Deviation Correction Mechanism

Through risk identification, enterprises find adverse factors in the process of carbon emission trading, and control them from the system and operation, so as to reduce risks and resolve entanglements. Four problems should be paid attention to in the identification of carbon emission trading risk.

First, determine the emission method. The Greenhouse Gas Inventory Protocol - Corporate Accounting and Reporting Standard, jointly developed by the World Resources Institute and the World Business Council for Sustainable Development, is the common standard for measuring greenhouse gas emissions. The Protocol divides emissions into three main categories: direct emissions, indirect emissions from the purchase and use of heat, steam or electricity, and other indirect emissions from upstream and downstream sources of industry emissions.

Second, the method and skill of emission budget. Measuring greenhouse gases is a cumbersome process. The actual carbon emissions can be determined based on on-site monitoring, and the carbon emissions can also be estimated according to a scientific and unified method.

Third, information management system. After collecting information, storage and analysis of carbon emission information.

Fourth, the registration of carbon footprint. In order to facilitate the relevant national departments and industries to grasp the information of enterprise carbon emissions, it is suggested to establish a carbon registration mechanism for enterprises to record the information of enterprises' acquisition of carbon credits (indicators), actual emissions, trading volume and trading price.

Fifthly, the audit report of financial statements shall disclose the audit part of financial statements under carbon emission trading, highlight environmental risk factors, and understand the internal and external environment related to carbon emission trading from the inside and outside.

7. Carbon Trading Information Disclosure Mechanism of Enterprises

The establishment of carbon accounting performance evaluation and information disclosure mechanism is beneficial to enterprises to enhance the awareness of environmental protection, which is an important part of enterprise environmental accounting. Carbon emission rights of accounting information disclosure of carbon emissions is the main purpose of the disclosure of information to the information users provide effective carbon emissions trading accounting information, namely the information users provide financial information related to the carbon dioxide emissions, reflect its income and expenditure in environmental protection, as well as enterprises to fulfill social responsibility, to fully satisfy the information users to understand and to make a decision Needs. At present, there is no clear standard for carbon information disclosure in China, and there is also a lack of relevant research. In addition, carbon information is voluntarily disclosed by enterprises in China. Usually, enterprises with good social responsibility performance voluntarily disclose more information. In order to further meet the carbon information needs of information users in the decision-making process, the United States, The United Kingdom, France, Japan and Canada have formulated information disclosure requirements related to carbon emission rights. International organizations are also actively deal with, is relatively authoritative specification should be the carbon disclosure project (CarbonDisclosureProject, CDP), it is the world's largest, joint action on climate change of investors. The CDP includes four aspects: risks, opportunities, emission reduction targets and strategies arising from climate change, greenhouse gas emission reduction accounting, greenhouse gas emission reduction management, and climate change governance. Among them, greenhouse gas emission reduction accounting involves the preparation of carbon emission reduction accounting report, carbon accounting method selection, greenhouse gas emission reduction tonnage, etc., greenhouse gas emission reduction management involves emission right

trading, emission reduction projects, emission intensity, emission reduction planning, etc., climate change governance involves emission reduction responsibility, etc.

In order to achieve the above goals, disclosure of information must meet the needs of internal and external users together, should not only focus on a particular decision requirements of information users, the disclosure of all users associated with carbon emissions need decision useful information, impact on important matters and details, which is helpful to users of the information to make decisions. [17] Therefore, enterprises should add the accounting item of carbon emission rights on the basis of the original financial statements, list the carbon emission rights owned by enterprises in the balance sheet, and list the future environmental costs faced by enterprises in the income statement. At the same time, enterprises should disclose the types, valid periods, acquisition methods, acquisition costs, balance at the beginning and end of the period, changes and their causes, and excess or savings of major pollution emissions. In addition, enterprises should classify and disclose the carbon emission rights according to the initial allocation and the credits purchased in the trading market, and analyze the carbon emission trading situation of the disclosed enterprises by calculating various financial indicators and comparing with the standards stipulated by the state.

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9. Supervision and Evaluation Mechanism in Carbon Trading System

First, as the main body of the government, relevant national departments and agencies should play the role of supervision and evaluation, including the national Carbon trading management department, the National Development and Reform Commission, the National Energy Administration, the environment and supervision department, etc., which will be responsible for supervision and management of the effective operation of the carbon market. At the same time, the results of supervision are regularly distributed to the society, which plays an effective role in evaluation.

Second, other enterprises in the same industry can also supervise and evaluate each other. In particular, leading enterprises in various industries should play a leading role in effective leadership, take the initiative to apply and implement carbon trading accounting system, and carry out carbon trading according to national requirements.

Third, the public is also an indispensable backbone in the supervision and evaluation mechanism of carbon trading system. This is also a necessary link to accelerate the process of low-carbon development, but also the inevitable choice of the development of The Times.

Summary: Due to the particularity of the specific operation and measurement of carbon emission right trading, the accounting of carbon emission right should adjust and improve the current financial accounting theory when necessary, gradually improve the relevant supporting standards, and establish and improve the laws and regulations related to carbon emission right as soon as possible.

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