

Discussion on the Construction of Enterprise Carbon Emission Organization Management System

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Abstract:

Under the tide of sustainable development of global low-carbon economy, carbon emission reduction has become one of the important strategic objectives of various countries. In this context, enterprises have a great responsibility and mission for the development of low carbon, and need to establish a complete set of carbon emission enterprise organization management system. After introducing the relevant concepts of carbon emissions, carbon trading, carbon assets and carbon inventory, this paper constructs the basic system framework of enterprise carbon emissions management through the research on enterprise carbon emissions management system, develops the corresponding management process, and finally puts forward several suggestions for enterprise carbon emissions management. I hope it can provide some reference for the establishment of the carbon emission management system of enterprises, so as to achieve the sustainable development of low-carbon economy.

Keywords:

Human Resource Management, Enterprise Organization System, Carbon Emissions, Carbon Trading

1. Introduction

With the global warming, extreme climate appears frequently, and the greenhouse effect becomes more and more intense, seeking an efficient and low-carbon sustainable economic development mode has become a hot spot in the world economic development. The international community has gradually reached consensus on reducing greenhouse gas emissions. The United Nations Framework Convention on Climate Change was adopted by the United Nations Conference on Environment and Development in 1992; The 1997 Kyoto Protocol further stipulates the emission reduction obligations of developed countries; The Copenhagen Protocol in December 2009 is another landmark global climate agreement after the Kyoto Protocol. The international climate politics has been reshuffled, and China has also stepped into the ranks of “shared responsibility” for carbon emission reduction [1].

At present, China is the country with the largest greenhouse gas emissions, and its total emissions accounted for 22.3% of the global greenhouse gas emissions in 2010, so it is facing huge international public pressure to reduce emissions. Our government has also raised low-carbon development to an important strategic height. At the 2009 Copenhagen Climate Change Conference, China promised the world that by 2020, the carbon dioxide emissions per unit of GDP would be 40-45% lower than that in 2005; The 12th Five Year Plan for Controlling Greenhouse Gas Emissions (GF [2011] No. 41) issued by the State Council in 2012 stipulates that the carbon dioxide emissions per unit of GDP in 2015 will be 17% lower than that in 2010 [2]. It is the first time that the intensity of carbon dioxide emissions has been determined as a binding indicator, clarifying the future direction of low-carbon development. Subsequently, the State Council issued a series of policies to promote energy conservation and emission reduction, and made significant achievements. However, China's economy is in a stage of rapid development. With the accelerated urbanization process, resource shortage and lack of effective control of pollutant emissions, there is still a long way to go from the low-carbon economic development model.

For domestic enterprises, especially in the power, chemical, cement, steel, flat glass, nonferrous metals (electrolytic aluminum and magnesium smelting) and other industries with high energy consumption and high emissions, the arrival of the low-carbon era not only brings unprecedented impact on their traditional economic model, but also gives enterprises new responsibilities and missions [3]. With the gradual establishment and improvement of the domestic carbon emission trading market, carbon emissions will become one of the objectives of the total amount control of enterprises, and carbon emissions will also become a commodity and a special asset of enterprises. Therefore, it is imperative for enterprises to establish low-carbon awareness, combine their own carbon assets, build a sound low-carbon management system and develop low-carbon economy.

2. Basic Concept of Carbon Emission Management System

Carbon emission right refers to the right to allow each country, region, province, city or enterprise to emit a certain amount of carbon dioxide into the atmosphere through a certain distribution method under the condition that the total global carbon emissions are certain. In terms of manifestation, the carbon emission right can be expressed as the amount of carbon emission allowed in the carbon emission license or the number of tons of carbon dioxide that can be emitted in a certain period. The basic characteristics of carbon emission rights are scarcity, compulsion, exclusiveness and tradability [4].

Carbon trading refers to the trading of carbon dioxide emission rights as a commodity. The basic principle of carbon trading is that one party of the contract obtains the greenhouse gas emission reduction amount by paying the other party, and the buyer can use the purchased emission reduction amount to mitigate the greenhouse effect so as to achieve its emission reduction goal [5]. The trading market is called the carbon market. According to different trading principles, carbon trading can be divided into quota trading and project trading. Quota trading is based on the "total volume control and trading" system, which refers to a kind of trading and trade in which the allocation quota of emission reduction is transferred between trading subjects. The carbon project manager plans the total carbon emissions of the country (region) in a certain period, and distributes them to each participant after division. When the total emissions of participants exceed the upper limit, they need to purchase

emission permits from other enterprises. Project trading is to obtain greenhouse gas emission reduction quota through cooperation of emission reduction projects.

The basis of carbon emission trading theory is emission rights. When carbon emissions are linked with finance and finance, this right can be regarded as a valuable property right, and then evolved into a special form of asset - carbon assets [7]. Carbon assets are all tangible and intangible assets embodied or hidden in an object with value attributes that may be applicable to storage, circulation or wealth transformation in the field of low-carbon economy [6]. Carbon assets include not only today's assets, but also future assets; It includes not only the assets of the Clean Development Mechanism (CDM) project, but also all the value-added generated by the implementation of the low-carbon strategy on a year-on-year and link by link basis. The financial characteristics of carbon assets are additional products obtained by an enterprise, not loans, but assets that can be sold, and at the same time, they can be reserved; Due to the marketization of the carbon market, the price of carbon assets is volatile. Due to the limitation of total emissions, the carbon price is rising year by year in the long run.

Carbon inventory refers to the calculation of greenhouse gases directly or indirectly emitted by each link in the operation and production activities of an enterprise in a certain period of time in accordance with a series of standard methods and principles. The greenhouse gas protocol or ISO14064 greenhouse gas certification standard is more commonly used internationally. The former is jointly developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), including two related but independent standards - enterprise accounting and reporting standards and project quantification standards; The latter is developed by the International Standardization Institute (ISO) and aims to provide a set of tools for the monitoring, quantification and reduction of greenhouse gas emissions.

3. Construction of Enterprise Carbon Emission Organization Management System Framework

3.1. Analysis of internal and external environment of the organization

To build a reasonable organization and management system, it is necessary to first analyze the internal and external environment of the enterprise, including the economic environment of enterprise operation, local government policies, and the basic situation of the enterprise's human resources inventory. For example, the common enterprise environment analysis method is SWOT: strengths, weaknesses, opportunities and threats. Through the analysis of the external environment and internal conditions of the enterprise, it is clear that the enterprise can take advantage of opportunities and possible risks, and combine these opportunities and risks with the advantages and disadvantages of the enterprise to form the basic strategy of the enterprise's organizational management system, and then formulate the enterprise's business plan.

3.2. Organization and responsibility design of carbon emission management

The enterprise's carbon emission management organization is the executive body of the enterprise's carbon emission reduction and carbon asset management, which can effectively implement the enterprise's low-carbon strategy and achieve the

enterprise's low-carbon goals; The operation and management of carbon emissions and carbon assets is a highly specialized work, involving carbon emissions accounting, carbon assets management and trading and other professional and technical work. Therefore, to achieve centralized and effective management of enterprise carbon assets, it is necessary to establish a professional unified management organization for enterprise carbon assets and carbon emissions. We will coordinate low-carbon development, establish a work leading group and a subordinate enterprise carbon emission management and implementation agency, and establish a top-down departmental coordination mechanism and feedback mechanism. Clear division of labor, clear rights and responsibilities, and coordination are the key to ensure the efficient operation of the carbon emission management system. The post setting and personnel arrangement of the organization shall be determined, and the corresponding responsibilities and authorities shall be clarified. Its responsibilities mainly include: studying and formulating carbon management related systems and development strategies; Strengthen external communication and actively communicate with relevant government departments to obtain more quotas; Carry out enterprise carbon inventory pilot and census management, formulate enterprise quota allocation plan, and study carbon asset management mode; Actively promote the trading of enterprises' carbon emission rights and closely follow the progress of international and domestic carbon trading markets; Establish and maintain the enterprise carbon management information system.

3.3. Develop internal control management system related to carbon emission management

The enterprise's internal control management system is the basic guarantee of the enterprise's carbon management system. The enterprise should study and analyze the development situation of the international carbon market and the relevant policies of the domestic carbon trading mechanism, track the progress of the domestic carbon trading pilot, and on this basis, formulate carbon management strategies, rules and regulations consistent with the enterprise's own development. For some super large enterprises, we should prepare carbon emission management plans, find out the family background, uniformly plan and deploy the management of carbon assets and carbon emissions trading within the enterprise, and formulate low-carbon strategy implementation system, carbon emissions monitoring system, supervision system, carbon assets property rights system, carbon emissions trading reward and punishment system and a series of management methods. For example, the Assessment and Evaluation Method for Low Carbon Development of Enterprises, the Enterprise Carbon Assets Statistics and Reporting System and the Carbon Assets Trading Management Method, and in the process of practice, explore the development of low carbon technology standards and research carbon emission reduction methods. In a word, the construction of corporate carbon emission management strategy, rules and regulations system is a process from overall to partial, from rough lines to detailed, which is not an overnight process, and needs to be gradually improved in the process of low-carbon operation and management.

3.4. Carbon assets financial management system

First, carbon asset accounts should be established. In order to clearly calculate the stock and flow of enterprise carbon assets, a secondary account of "carbon assets" should be set up under the general ledger account of "environmental assets" of

traditional environmental accounting. For the economic business of enterprises trading certified emission reductions generated by clean development projects, a detailed classified account of “carbon dioxide emission rights” can be set up on the basis of the secondary account of “carbon assets”. The debit records the increase of carbon dioxide emission rights, the credit records the decrease of carbon dioxide emission rights, and the ending debit balance represents the existing amount of carbon dioxide emission rights of enterprises; Second, establish carbon liability accounts. Enterprises should set up a secondary account of “carbon liabilities” under the general ledger account of “environmental liabilities”, and can conduct detailed accounting according to the source and type of liabilities, such as “low-carbon financial liabilities”, “carbon dioxide emission tax payable”, etc. It is used to reflect the changes in the fair value of low carbon financial liabilities undertaken by enterprises and the carbon tax paid to the country due to greenhouse gas emissions; Third, prepare the carbon balance sheet. Improve the traditional balance sheet, calculate and measure the economic benefits or obligations formed by transactions or events related to carbon assets, and internalize them, that is, form a “carbon balance sheet” aimed at strengthening the carbon asset management of enterprises; Finally, build the enterprise carbon budget accounting system. In 2009, the UK first began to implement the “carbon budget” financial budget. Similarly, we can build internal financial carbon budget accounting based on the principle of financial budget accounting management, making it an important tool for carbon emission management. Scientific application of relevant technologies and methods, through the collection, sorting, calculation and analysis of carbon data in the process of economic activities at all levels within the enterprise, to measure, evaluate and forecast economic activities, predict the amount of carbon emissions of the enterprise, and determine the carbon emission reduction target of the enterprise, so as to improve the use efficiency of carbon assets of the enterprise and achieve the purpose of increasing income and saving expenditure.

3.5. Carbon emission information management platform

To achieve the carbon emission reduction target of the enterprise and decompose the emission reduction indicators to each production and operation link of the enterprise, the key is to master the current situation of carbon emission reduction of the enterprise. Therefore, it is necessary to collect and count the carbon emissions of enterprises, establish a carbon emissions data management system and information platform, and update the database in real time according to the emissions. The method of data acquisition can adopt online automatic monitoring system or manual input. The carbon emission information management platform mainly includes the following functions: data collection, statistical analysis, query function, emission level evaluation and identification, prediction and early warning function, decision support and transaction management. In particular, large group enterprises involve different industries. The carbon assets and carbon emissions information management system is conducive to the process, standardization and unification of enterprise carbon accounting and reporting, so as to achieve efficient operation and management [8]. After mastering the current situation of carbon emissions within the enterprise, first form a small trading system of carbon emissions within the enterprise, uniformly allocate quotas and CERs within the enterprise, and try to balance internal demand and supply; They can also appropriately participate in external market transactions, buy certain quota reserves when the market price is low, and sell some excess quotas when the market price is high, so as to reduce the overall carbon emission cost and even obtain additional profits.

3.6. Support service system

The support service system of carbon emission management system includes professional consulting institutions, third-party verification institutions, carbon emission management IT information system support institutions, expert consulting and professional training services. Enterprise carbon inventory is a key step in carbon emission management. In the process of carbon inventory, an effective mechanism for quantifying, monitoring and reporting greenhouse gases is established to reduce enterprise greenhouse gas emissions. According to the requirements of Carbon Emission Trading Management Measures, Greenhouse Gas Emission Accounting and Reporting Guidelines and Greenhouse Gas Verification and Reporting Process Requirements of the pilot trading market of “two provinces and five cities” (Beijing, Tianjin, Shanghai, Shenzhen, Chongqing, Guangdong and Hubei), the trading pilot enterprises included in the pilot area must participate in trading and submit greenhouse gas emission reports and verification reports. Professional consulting institutions can be entrusted to assist in the monitoring and accounting of greenhouse gases and the preparation of reports. Finally, a third-party verification institution will verify the greenhouse gas emission report and issue the verification report. For enterprises participating in the voluntary emission reduction trading mechanism outside the pilot area, they also need the support of institutions such as carbon emission accounting, reporting and accounting services. In addition, the establishment of enterprise carbon emission management information system also requires professional IT software support, carbon management personnel training services, expert consultation and decision support.

3.7. Supervision and management mechanism

A sound supervision and management mechanism is an important guarantee for the effective implementation of carbon emission management. Supervise the implementation of the enterprise's low carbon strategy, laws and regulations, and fairly and reasonably determine the total amount of carbon emissions and the initial allocation of carbon emission rights of each department within the enterprise; Supervise the total carbon emissions of each production and operation link and the compliance of emission reduction [9]; In addition, it is necessary to supervise the internal or external carbon trading process of the enterprise to maintain the order of the carbon trading market and prevent illegal trading; Gradually establish a reward and punishment system, and formulate a reasonable reward and punishment quota to stimulate and promote enterprises, encourage enterprises to adopt advanced low-carbon emission reduction technologies and measures, and actively achieve carbon emission reduction goals.

4. Conclusions and Recommendations

To sum up, under the development of international low-carbon economy, with the gradual establishment and improvement of domestic carbon emission management system and carbon emission trading market, it is imperative for enterprises to build their own carbon emission management system [10]. The framework of the enterprise's own carbon emission management system includes the policy and regulation system, carbon emission management organization, carbon asset financial management system, carbon emission information management platform, support service system and supervision and management mechanism. The basic process of enterprise carbon emission management is: carbon emission monitoring → statistical

analysis report → third-party verification report → unified carbon emission management platform → voluntary emission reduction or carbon trading.

For enterprises lacking carbon emission management at present, especially large enterprises with high energy consumption and high emissions, the following suggestions are put forward: improve the corresponding management methods of enterprises' carbon emissions as soon as possible and establish a carbon emission management system, find out the family background, start the preparation of carbon emission reduction plans, and formulate a strategy suitable for enterprises' own low-carbon development; Closely follow up the quota allocation plan of the pilot areas of the "two provinces and five cities" carbon market and the country, actively communicate with the relevant competent departments, and strive to obtain more quotas; The historical emission data of enterprises is the basis for determining the total carbon emissions of the country. In order to avoid "loss" and "passivity" in the process of determining and allocating the total carbon quota, the carbon inventory pilot and census work of enterprises' related industries should be started as soon as possible, especially in the pilot areas, so as to grasp the initiative and voice of the carbon trading market; Establish an IT information platform for carbon assets and carbon trading management as soon as possible to facilitate management; It is suggested that enterprises should strengthen the popularization of relevant policies of international and domestic carbon markets, and the training of carbon accounting technology and management personnel.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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