

# Analysis of the Current Situation of Carbon Accounting Information Disclosure and Study of the Problems

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## Abstract

Realizing carbon peak and carbon neutrality is a major strategic decision made by the Party Central Committee with Comrade Xi Jinping as the core. In recent years, the study of carbon accounting and carbon accounting information disclosure has also received more and more attention from all walks of life. Carbon accounting information is of great significance as a display of the results of carbon accounting work. In this context, this paper analyzes the current situation of carbon accounting information disclosure in China, analyzes the problems that have arisen, and puts forward relevant countermeasure suggestions for the problems analyzed. This paper expects that by combining the low-carbon economy with traditional accounting theory, as well as the study of carbon accounting disclosure, it will make certain specifications for carbon accounting disclosure and promote the development of China's low-carbon economy.

## Keywords

Carbon Accounting; Carbon Accounting Disclosure; Carbon Neutrality.

## 1. Introduction

Since entering the industrialized era, the greenhouse effect has been increasing and global climate problems have occurred frequently, so the government is taking strong measures to solve the problem of carbon emissions. At the 75th session of the United Nations General Assembly, General Secretary Xi Jinping explicitly proposed that China achieve the "dual carbon" goal of carbon peak and carbon neutrality. The 20th Party Congress proposed: "We should promote the construction of a beautiful China, synergistically promote carbon reduction, pollution reduction, green expansion and growth, and promote ecological priority, conservation, intensification, green and low-carbon development." On July 16, 2021, the National Carbon Emissions Trading Market will be officially launched. A series of China's policies show that the state attaches great importance to the "double carbon" goal, and in this context, it is more and more urgent and important to strengthen the research related to carbon accounting, enhance the accounting and disclosure of carbon accounting, and build a reasonable carbon accounting and disclosure system.

Although China popularized the concept of low-carbon environmental protection earlier, but for the carbon accounting related research began later, compared with the western developed countries is still not comprehensive and profound, especially at this stage for carbon accounting information disclosure research is in the initial development period, and still lack of systematic and comprehensive theoretical scale. Most of the existing literature focuses on carbon accounting theory system and other theories, and the research focuses on carbon accounting information disclosure methods, disclosure motives, and influencing factors in the disclosure process. There is a lack of data in recent years, especially after the "dual-carbon" goal was proposed, and there are fewer analyses for specific industries and enterprises, so it is inevitable that many difficulties will be encountered in the process of in-depth research and promotion of

carbon accounting information disclosure. For this reason, this paper chooses to study the disclosure of carbon accounting information.

## 2. Carbon Accounting

Carbon accounting was first studied abroad. Janek and Stewart (2008) first proposed the concept of carbon accounting, which marked a major milestone. It not only covers carbon emissions and carbon trading, but also involves carbon audits by external regulators and carbon reduction policies implemented by enterprises [1]. According to Jeanle Roux (2009), carbon accounting can help stakeholders and users of information to better understand the risks of carbon emissions, which can lead to the development of more effective strategies and demonstrate corporate social responsibility [2]. Delphine Gibassier (2020) points out that climate change is a complex societal issue, and therefore, in the future, it is important to take a fresh perspective to in-depth study of carbon accounting [3]. Tóth Árpád (2021) pointed out that since governments and institutions have not yet made a clear specification on the measurement standards of corporate CO<sub>2</sub> reporting and its related laws and regulations, the implementation of carbon accounting has been greatly restricted and cannot fully utilize its maximum benefits [4].

At the macro level, "carbon" accounting refers to the accounting of a company's daily carbon emissions by means of text, data, charts and other means; at the micro level, "carbon accounting" mainly refers to various types of information and indicators that can be reflected in the form of financial reports or "carbon emissions". From a micro point of view, "carbon accounting" mainly refers to various types of information and indicators that can be reflected in the form of financial reports or "carbon emissions". After systematic research and summarization, this paper defines carbon accounting as an emerging accounting discipline, which is built on the basis of traditional environmental accounting theory and relevant accounting standards, and measures the low-carbon measures taken by enterprises and their related carbon trading activities in a specific period of time in physical or monetary form.

## 3. Carbon Accounting Disclosure

### 3.1. Meaning and Principles of Carbon Accounting Disclosure

Carbon accounting information disclosure refers to the public disclosure of carbon accounting information generated by listed companies in their daily business activities through annual reports, sustainability reports, social responsibility reports and other reports to meet the information needs of carbon accounting information users.

Carbon accounting information includes two categories, financial information and non-financial information. The former records economic activities related to carbon trading, such as low-carbon greening expenditures, R&D inputs for low-carbon economy, environmental protection subsidies and tax incentives received by enterprises, as well as other related economic activities, in order to better manage carbon emissions and promote sustainable development. The latter is text-based and covers a richer and more diverse range of content. It mainly includes the low-carbon environmental strategies implemented in China, the effective environmental protection measures adopted and their feasibility of realization, as well as the challenges and opportunities faced in the process of achieving low-carbon goals.

The principles of carbon accounting disclosure should include four aspects.

First, the principle of combining tradition and innovation. Carbon accounting is a brand-new discipline, which not only needs to combine the theories of traditional accounting disclosure, but also needs to integrate the research results of multiple disciplines, such as management science and environmental science, in order to achieve better results. Carbon accounting in

China started late, we should actively explore and promote the innovation of carbon accounting disclosure system to meet the changing market demand.

Second, the principle of truthfulness and effectiveness. At present, China has not yet established a perfect carbon accounting information disclosure system, which provides enterprises with more autonomy, but also leads to the authenticity of carbon accounting information can not be effectively guaranteed. In order to better promote the development of low-carbon economy, carbon accounting information must take into account the effectiveness and authenticity, so as to better meet the needs of society.

Third, the principle of gradual progress. As an emerging discipline, carbon accounting has many shortcomings. In order to better understand carbon accounting information, we must adhere to the method of slow accumulation in the research process, rather than rushing to pursue speed. We should insist on keeping our feet on the ground and continuously deepening our research in order to find a theoretical basis that can effectively disclose carbon accounting information.

### **3.2. Approach and Content of Carbon Accounting Disclosures**

Carbon accounting information is the accounting information on carbon emission reduction and carbon emissions generated by enterprises in their daily economic activities, which is the most important part of the carbon accounting foundation, reflecting the financial position, operating results and cash flows of enterprises related to low-carbon activities, and enterprises disclose them so that expected users can learn better information about enterprises for decision-making.

#### **3.2.1. Carbon Accounting Disclosure.**

Carbon accounting disclosures can be categorized into on-balance sheet and off-balance sheet disclosures. On-balance sheet information is measured primarily through monetary measures, while off-balance sheet information is generally difficult to measure in monetary terms, although the measurement methods are not as simple as they could be.

The disclosure methods are different, but all of them can reflect the situation related to the enterprise's low-carbon activities and provide information users with the information they need. By adopting suitable disclosure methods, enterprises can improve the reliability, completeness and accuracy of carbon accounting information and reduce disclosure costs, while information users can better access the information, which is beneficial to both parties. At present, there are two main ways for enterprises to disclose carbon accounting information: supplementary explanatory reports in annual reports and independent environmental responsibility reports.

Supplementary note reporting in annual reports. The way of supplementary note shows that the disclosure of carbon accounting information itself is not the key content of enterprise disclosure, but only an auxiliary information, mainly the enterprise will disclose the carbon accounting information into the notes of the annual financial report, which is equivalent to publicizing through the annual report. This disclosure method is simple, concise and low-cost, but the completeness and reliability of the disclosed information is not high, and there may be cases in which only favorable information for the enterprise is disclosed while unfavorable information is concealed.

Stand-alone environmental responsibility report. This kind of disclosure is different from the supplementary explanation report of the annual report, which is independent of the enterprise's annual report and notes, and can reflect the enterprise's environmental accounting information to the public in a more comprehensive and centralized way. The completeness, accuracy and reliability of the disclosure content of this disclosure method are greatly improved, but the operation is complicated, the cost is high, and the enterprise needs

specialized personnel to be responsible for it, so the enterprise's willingness to disclose is not strong.

### **3.2.2. Content of Carbon Accounting Disclosure.**

Carbon accounting information disclosure integrates low-carbon economic factors into the six elements of traditional accounting, and the disclosure content mainly includes carbon assets, carbon liabilities, carbon owners' equity, carbon income, carbon expenses and carbon profits. Specific contents include: the strategic decision and development plan of the enterprise to realize the goal of "dual-carbon", the activities related to carbon emission in daily production and operation and their impacts, carbon emission reduction target and its realization, and so on. The quantitative treatment of the disclosure information through monetary measurement not only retains the traditional accounting treatment, but also discloses the accounting information related to carbon emission of the enterprise, which fully meets the requirements of the expected users of carbon accounting information and provides a strong support for their decision-making while firming up the enterprise to take the road of sustainable development.

## **4. Problems with Disclosure of Carbon Accounting Information**

Compared with foreign countries, China's carbon accounting is still in the development stage, and there are still many deficiencies in accounting, management and information disclosure, mainly including the following points:

### **4.1. The Relevant Laws and Regulations are Not Perfect.**

Compared with foreign countries, the development of carbon accounting in China is still in the initial stage, the construction of laws and regulations and the development of related research and practice are constrained by each other, the lack of theoretical research leads to the slow construction of laws, and the imperfection of laws and regulations prompts the theoretical research to have no basis, which is impossible to rely on, and the two sides are caught in a vicious circle. Of course, there are some government documents on carbon accounting information disclosure, but the terms of these documents are too broad, and it is difficult to implement them. At the same time, there is still a big gap in the regulation of carbon accounting disclosure, and the lack of relevant legal norms and specific standards makes enterprises disclose carbon accounting information in a more casual manner, and in the way of disclosure. The content and format are uneven and lack comparability, which does not facilitate comparison and application by prospective users of the information. For example, in terms of disclosure of carbon accounting information, disclosure in the notes to the financial statements will make the statements appear long and complex, and since the statements themselves have too much content and are highly specialized, it is often not easy to pay attention to them, making the information untimely and incomprehensible, which is not conducive to the use of carbon accounting information by the users of the information to make decisions.

### **4.2. The Enthusiasm for Carbon Accounting Information Disclosure is not High.**

In contrast, foreign countries have formed a unique relatively comprehensive, scientific, comparable and operable carbon accounting information disclosure processing method system, and through the practice of continuous testing and proving, but the development of carbon accounting in China is still in the embryonic stage, let alone the formation of the framework and the system, and the government is not strict on the regulation of carbon emissions, so the enthusiasm of enterprises for the disclosure of carbon accounting information is not high. Therefore, the enthusiasm of enterprises for carbon accounting information disclosure is not high. In addition to this reason, when enterprises disclose carbon accounting information, they need to obtain the qualification certificates related to carbon emission rights, and also hire professional carbon neutral certification organizations to measure carbon emissions, during

which it is easy to disclose the core secrets and technological innovations of the enterprises, which all need to be disclosed by the enterprises.

The cost is borne by the enterprise itself, which not only increases the running cost of the enterprise, but also has no obvious increase in profit, so the disclosure has not brought any benefit, and the non-disclosure has not brought any substantial harm, so the enterprise's willingness to disclose the carbon accounting information is not very strong. At the same time, about the specific carbon accounting information disclosure standards and rules are still relatively lack of, resulting in some enterprises may have the heart but not the ability to know where to disclose, how to disclose, disclose what the problem occurs, so the effectiveness and accuracy of information is greatly reduced.

#### **4.3. Lack of Compound Talents Related to Carbon Accounting.**

With the concept of "low carbon" gaining popularity and the rapid development of low carbon economy, it puts forward higher requirements for accounting information disclosure, and at the same time, it also puts forward more comprehensive requirements for enterprise financial personnel. 2021 March, China listed "carbon accounting" as a branch of the national occupational sequence of carbon emission administrator occupation, which fully reflects this point, that is, accounting personnel can set up relevant accounts according to the needs, carry out account processing, and make adjustments to the carbon emission administrator occupation. In March 2021, China listed "carbon accounting processing" as a branch of the national occupation sequence of carbon emission manager occupation, which fully reflects this point, that is, accountants can set up relevant accounts, carry out account processing, and present and disclose financial statements according to the needs. Carbon accounting belongs to the category of environmental accounting, which is an emerging branch of discipline derived from social development in the era of low carbon economy. Although it appeared late, it involves a number of fields, such as accounting, resources, management, economy, etc., and therefore has more stringent requirements for accounting practitioners, i.e., they have relevant interdisciplinary professional knowledge, and they have a good understanding of the national policies on the environment and resources, as well as carbon emission and management. However, at present, China's carbon accounting accounting, management and other related professionals are extremely lacking, and the existing personnel do not have a high level of business, data processing is also not good at, so the quality of corporate carbon accounting information disclosure is low, unable to meet the needs of the information users; at the same time, the lack of high-end composite talents training system in the carbon accounting industry, the lack of carbon accountant training framework system, and did not form a systematic selection criteria, these are greatly detrimental to China's accounting profession, which is not conducive to the development of the carbon accounting industry. At the same time, there is a lack of high-end composite talents training system in the carbon accounting industry, a lack of framework system for the training of carbon accountants, and a lack of systematic talent selection standard.

### **5. Suggestions for Improving Carbon Accounting Disclosure**

China's carbon accounting information disclosure is still a big problem, in order to solve these problems, build and improve the carbon accounting framework system, we can consider taking measures from the following aspects:

#### **5.1. Build a Complete Legal System Related to Carbon Accounting.**

With the continuous strengthening of people's awareness of low-carbon environmental protection, low-carbon economy has become a social development trend, at this time if there is no relevant laws and regulations to guide and constrain, it is very easy to produce economic



chaos. At present, China has a number of laws and regulations to regulate environmental issues, they involve the protection of the environment in many aspects. However, the degree of implementation of these regulations is very limited, the binding force and supervision of enterprises to play a role in nearly nothing, so most companies only do surface work, go through the form of simple disclosure of corporate carbon accounting information. Based on the above reasons, the national legislative department should introduce laws and regulations on carbon accounting disclosure as soon as possible, and the government needs to mandatorily require enterprises to standardize the disclosure of carbon accounting information, so as to facilitate more in-depth research by relevant professionals, and at the same time, enable enterprises to have a basis for disclosure of carbon accounting information and improve the quality of disclosure.

### **5.2. Enhancing Awareness of Carbon Accounting Disclosure by Enterprises.**

Since the initial development of carbon accounting, information disclosure has become an important part of it, but enterprises often choose not to disclose it for a variety of reasons, such as considerations of the company's reputation, the operation of the Cost increase concerns, etc. Based on the influence of traditional concepts, enterprise management believes that the disclosure of carbon emission-related activities will affect the public's impression of the enterprise, and this influence is often negative, very unfavorable to the development of the enterprise. At the same time, the disclosure of carbon accounting-related information will inevitably require the input of professional equipment and personnel, which will invariably increase the company's costs, which the company is not willing to see. But in fact, the effect achieved is just the opposite, in the process of disclosure of carbon accounting information, companies can reflect on their own problems in economic activities, so as to constantly adjust the corporate development strategy, which is conducive to the more scientific development of the enterprise itself; at the same time, sound and detailed disclosure of information will greatly enhance the stakeholders and the public's goodwill towards the enterprise, and the creation of such a positive image of the enterprise's future business development is also. At the same time, sound and detailed information disclosure will greatly enhance the goodwill of stakeholders and the public, and the creation of such a positive image will be extremely favorable to the future development of the enterprise's business. Therefore, enterprises should realize the importance of carbon accounting information disclosure, enhance environmental protection awareness, and develop a green economy in order to stand out in the fierce competition in the globalized market in the future.

### **5.3. Strengthening the Training of Composite Professionals.**

Carbon accounting and management will involve a number of disciplines, coupled with the rapid development of the low-carbon economy, the comprehensive quality of the enterprise's financial personnel put forward strict requirements, that is, not only have the basic knowledge of the traditional accounting.

In addition to the knowledge and familiarity with account processing, it is also necessary to master other interdisciplinary knowledge such as environmental science, low carbon economy theory, carbon emission management, etc., so as to combine the business of production and operation activities of enterprises with environmental protection and rational allocation of resources, and to understand their relationship, so as to improve their own business level and professionalism and promote the sustainable development of enterprises at the same time. Specifically, the state should determine the carbon accounting professional training system to form a framework system for systematic selection of talents; at the same time, in the continuing education of accounting practitioners, universities and colleges in the teaching process of the accounting profession can be added to the environmental science courses, or carbon accounting practitioners to conduct a comprehensive training, so that they can master the professional

methods of accounting business processing at the same time, to enhance the awareness of environmental protection, and can be proficient in dealing with the carbon accounting and Carry out account processing, which not only reduces the cost of enterprises' investment in the environment, but also meets their professional requirements for carbon accounting and disclosure personnel.

#### **5.4. Strengthening Publicity, Encouragement and Regulation.**

The government, as the main body of macro-management, should strengthen the guidance and publicity of carbon emissions, carbon accounting management and information disclosure of enterprises. It should make full use of various media, meetings and publicity platforms to set up typical cases and conduct relevant publicity and reports to deepen the carbon awareness of the whole population, so that more people can consciously participate in cleaner production and form an environment where the whole population can supervise and manage, thus facilitating the control and reduction of carbon emissions from the source. In addition, regional financial departments can organize carbon accounting competitions for the public to enhance financial personnel's understanding and mastery of carbon accounting knowledge, so as to facilitate the strengthening of carbon accounting accounting and management.

Strengthening publicity while moderately encouraging and regulating. The introduction of carbon standard management norms, carbon accounting guidelines, carbon accounting information disclosure provisions and other institutional norms, through the system to restrain the carbon behavior of enterprises, but also the basis for supervision by the regulatory authorities. Provide financial support and tax incentives to enterprises that strictly implement carbon standard management regulations and actively disclose carbon information. For example, the government can establish an enterprise carbon accounting information disclosure database to rank the carbon emissions, the degree of carbon accounting construction and carbon information disclosure of enterprises, and the top-ranked enterprises can be given certain preferential policies in government bidding projects, and at the same time, give certain tax concessions; and for enterprises that do not strictly implement the carbon standard management regulations, or falsify or fail to disclose carbon information, they can be given financial support and tax incentives; for enterprises that do not strictly implement the carbon standard management regulations, or falsify or fail to disclose carbon information, they can be given financial support.

Enterprises that disclose carbon information should be strictly penalized, and the Government can establish a carbon accounting file system, strengthen credit management, establish a carbon information "blacklist", and include enterprises that do not comply with carbon management norms in the list of non-compliant enterprises, increase the fines, and remove their names from the bidding of government procurement projects, in order to increase the cost of their violation of the law. Through publicity, encouragement, rewards and penalties, institutional supervision and other measures, enterprises have been encouraged to proactively disclose carbon information, strengthen carbon accounting and management, and realize their carbon management goals.

## **6. Conclusion**

In summary, with the development of social economy and environmental problems becoming more and more prominent, low-carbon economy and sustainable development have gradually taken root in people's hearts, which has put forward new requirements for carbon emissions trading market and carbon accounting, and the importance of information disclosure as an important part of carbon accounting is self-evident. However, the existing theoretical and empirical research on carbon accounting in China is relatively small, which puts forward

additional requirements on national policies, i.e., to build and improve laws and regulations as well as to improve the management of carbon accounting.

Supervision system, improve the awareness of corporate social responsibility and national attention to environmental protection, etc., and with the continuous implementation of these policies, China's low-carbon economic model of carbon accounting will be the smooth and rapid development, and then realize the win-win situation of economic and environmental benefits.

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