

Research on Carbon Emission Accounting Information Disclosure of Steel Industry under the Background of Carbon Peak

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Abstract

During the two sessions in 2022, "carbon peak" and "carbon neutrality" were written into the government's work report for the first time, and became a hot topic of discussion among people in related industries. "Peak carbon" refers to China's commitment not to increase its carbon dioxide emissions until 2030, thus peaking and then tapering off. "Carbon neutrality" means that enterprises and individuals measure the total amount of carbon dioxide emissions generated in a certain period of time, so as to offset carbon dioxide emissions through afforestation, energy conservation and emission reduction, and achieve zero carbon dioxide emissions. Simply put, peak carbon refers to the reduction in carbon emissions after a point in time; Carbon neutrality means that the carbon dioxide produced can be "produced and sold on its own". There are many reasons for global warming, the most important of which is excessive greenhouse gas emissions. Global warming affects every aspect of people's life. Under the way of negotiation among countries, we advocate the reduction of greenhouse gas emissions, from which Our country put forward the goal of carbon peak and carbon neutrality.

Keywords

Carbon Peak Steel Industry; Carbon Emissions Accounting; Information Disclosure.

1. Introduction

Under the policy of carbon peak and carbon neutrality, the iron and steel industry is increasingly focusing on carbon emission control. China's secondary industry is developing rapidly, resulting in an accelerated rise in carbon emissions, but China's oil and gas resources are relatively scarce.

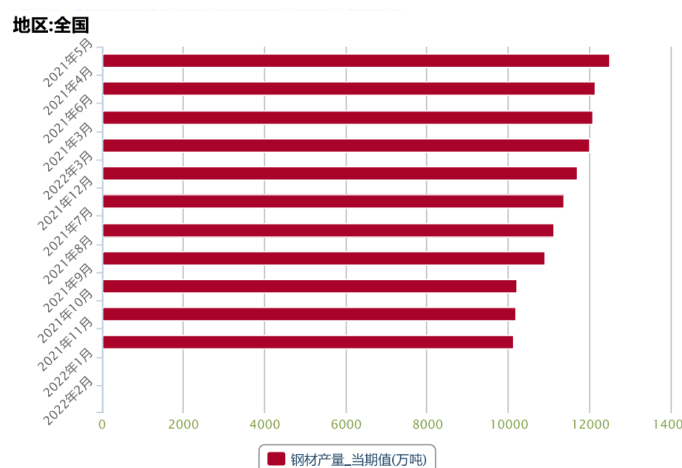


Figure 1. Carbon emissions are increasing year by year

Under the research of carbon emission information disclosure of steel industry under the background of carbon peak, due to different industrial systems in various countries, there is no clear specification for this at present. Therefore, this research is based on the research results of scholars on carbon emission information disclosure in the academic world, combined with the current era background, and based on the steel industry. Put forward suggestions to the company to establish and improve the information disclosure of carbon emissions.

2. The Iron and Steel Industry has a Lot of Carbon Emissions, and There is Still a Long Way to go to Reach Carbon Peak and Carbon Neutrality

The production process of iron and steel enterprise process requires a lot of coal and water resources, mineral resources in water resources is the industry leader on the application of mineral resources, at the same time, the iron and steel enterprises is also more polluted industry, because in the process of iron and steel production will discharge a large amount of carbon dioxide, carbon dioxide as a greenhouse gas caused great harm to air quality. Therefore, the steel industry as a leading industry in carbon emissions, it is facing the carbon emission problem can not be underestimated. According to the calculation of the consulting department, the carbon emissions of the iron and steel industry account for about 15% of the total emissions, and the main material of the iron and steel industry steel output of more than 10 million tons per period, so the iron and steel industry has become a carbon peak, carbon neutrality process of the key transformation object. From the data shows that the steel output of the steel industry is more than 10 million tons per year, while in the long-term and continuous combustion and casting process, the carbon cycle is difficult, resulting in a large number of carbon dioxide emissions. It seems that the international pressure of steel industry is larger. Due to industrial revolution launched earlier abroad at the same time, the carbon market has a long history, the scholars of environment accounting, clean energy and so on various aspects of accounting, and accounting information disclosure in the iron and steel industries more perfect and diversification, and China's reform and opening-up, the second industry rapid development, all kinds of heavy industry is in rapid development, resulting in carbon dioxide emissions is also growing. In 2009, China initially proposed the goal of carbon peak 2030 and carbon neutral 2060. It will be written into the government work report for the first time during the two sessions in 2022. Due to the short period of time, the steel industry will have to make a lot of efforts to reach the carbon peak within the specified time.

3. There are Many Problems in the Accounting Information Disclosure of Carbon Emissions in the Steel Industry

The problem is how to make the correct and appropriate accounting information disclosure for the iron and steel industry of its own carbon emissions, now there are many problems in China's iron and steel industry carbon emissions accounting information disclosure: the enthusiasm of the iron and steel industry for green accounting cost information disclosure is not strong, lack of certain initiative; Steel industry data confusion, disclosure form is not standard; The lack of environmental accounting personnel, personnel and knowledge can not meet the requirements of the industry on environmental accounting information disclosure; The information disclosure system of environmental cost is not perfect and the system guarantee mechanism is missing. There are some problems in the accounting treatment of carbon emission trading at present.

3.1. Metal Smelting Industry Lacks Initiative to Disclose Environmental Cost Information

The lack of interest driving factors in environmental information disclosure leads to the lack of motivation in environmental information disclosure. Management has to pursue short-term profit maximization. In the short term, the metal smelting industry deliberately ignores the disclosure of environmental cost information for a certain profit. However, from a long-term perspective, the benefits of environmental accounting information disclosure for enterprises may be far greater than the costs, but most enterprises pay more attention to the immediate practical benefits. Managers and accounting personnel lack environmental awareness, accounting personnel are not skilled in environmental accounting, related measurement and confirmation operations, and the corresponding training system is not sound, which will lead to the lack of initiative in environmental information disclosure.

3.2. The Data of the Iron and Steel Industry is Chaotic and the Form of Disclosure is not Standardized

Enterprises that disclose environmental information have many problems in the process of disclosure. When sorting out and analyzing data related to environmental protection, they often focus on one aspect, such as sulfur dioxide emissions. The goal is to collate data from only one aspect, while the collection of other environmental data tends to be formalized.

In recent years, China has repeatedly emphasized Low-carbon economy in sustainable development, which makes some high-carbon enterprises adjust their production strategies to reduce carbon emissions. The concept of "carbon peak and carbon neutrality" has led high-carbon enterprises to focus only on Low-carbon goals, ignoring other environmental data and focusing only on the carbon emissions of their own industries. This confusion of data makes the environmental information provided by environmental accounting invalid and it is difficult to extract useful data from the information. At present, the relevant enterprise environmental accounting documents include the "Document on the Six Elements of accounting Information regulation" proposed in 2007 and 2008, but these documents only put forward the content of environmental information, and did not regulate the specific content of environmental information accounting, resulting in various forms of environmental accounting information disclosure in various industries. The lack of environmental information data disclosure system standards makes it difficult for information users to get effective information about the relevant environment from the statement information disclosed by enterprises in China's big environment, and it is even more difficult to combine the current situation of enterprise environmental protection and relevant environmental information. As the effectiveness of enterprise environmental accounting information decreases, it will not be able to provide reference information for the users of accounting information, and the research on enterprise environmental information will not be able to carry out.

3.3. The Lack of Environmental Accounting Personnel, Personnel and Knowledge can not Meet the Requirements of the Industry on Environmental Accounting Information Disclosure

In the process of enterprise environmental accounting information disclosure, environmental accounting personnel play a crucial role in information disclosure. However, the majority of enterprises in China do not have obvious cognition and demand for corporate environmental accounting, and even the financial personnel in enterprises also lack the basic literacy related to environmental accounting. Some enterprises attach less importance to the environment. The reason for this is that enterprises themselves do not pay attention to environmental problems, and corporate financial personnel ignore environmental accounting information, which directly affects the disclosure of enterprise environmental accounting information and the use

of this information by relevant personnel. Environmental accounting not only includes accounting, but also has a profound connection with economics, management and other disciplines, which means that environmental accounting has higher requirements on the professional quality and comprehensive ability of financial personnel. Therefore, the first problem that enterprises need to solve is to train environmental accounting talents, and the society attaches less importance to environmental accounting talents, which can not meet the needs of the current society.

3.4. Imperfect System and Guarantee of Environmental Cost Information Disclosure

Environmental accounting exists in all enterprises, but there are also many differences compared with financial accounting in normal operation of enterprises. The ignorance and ignorance of environmental accounting lead to the current environmental information disclosure of enterprises cannot meet the needs of normative environmental accounting. In the aspect of environmental accounting, our country has not made a complete and clear standard form, the existing requirements are not sufficient, not standard, inaccurate and other problems. The lack of environmental accounting information disclosure system also leads to more and less problems in the disclosure of enterprise environmental accounting information, which can not promote enterprises to effectively disclose environmental accounting information.

3.5. There are Problems in the Accounting Treatment of Carbon Emission Trading

Although the current accounting standards for the iron and steel industry have different accounting treatment for various carbon emission rights, in general, the current accounting treatment method is relatively simple, and there is no obvious distinction can not fully reflect the nature of economic activities.

3.5.1. The Carbon Emission Rights Allocated by Government Departments have not been Initially Measured

The current accounting standards has been clear about the government to limit carbon emissions credits, because in our country in recent years did not establish a national unified carbon emissions trading market, accounting treatment is not in line with the principle of cost effectiveness, and the purpose of setting up carbon credits is not preferential policies, but the excessive emission of carbon dioxide to punish, In addition, it is considered that the carbon emission rights issued by the government for free do not meet the recognition conditions of assets, so they are not recognized as assets. Meanwhile, if the free allocation of carbon emission credits is recognized as assets and liabilities by enterprises at the same time, it will lead to the false increase or decrease of accounting profits.

But based on the current accounting standards in the definition and recognition criteria for assets, and the purpose of the free distribution of carbon credits, I think the government should free distribution of carbon credits was identified as a new basic standard, first of all, assets refer to enterprises formed of past transactions or events, are owned or controlled by the enterprise, is expected to bring economic benefits to the enterprise resources, Assets are expected to bring economic benefits to the enterprise; Assets shall be resources owned or controlled by the enterprise; Assets are formed from past transactions or events of the business. First of all, the government allocates the amount of carbon emissions of enterprises for free.

This behavior can be regarded as the estimation of carbon emissions by enterprises according to monthly or annual output, to apply to relevant departments for approval, thus forming a resource of enterprises and an asset formed by past events of enterprises. Secondly, the carbon emission quota obtained by an enterprise from the government is a kind of behavior that can

be controlled by the enterprise. The enterprise can restrict whether other subjects use this resource or not, and it has absolute control over this resource and is not restricted by any subject. Third, as an established resource, carbon credits can be used by enterprises to fulfill their obligations related to carbon emissions, thus avoiding punishment by government regulatory authorities. To some extent, carbon credits can be regarded as a short-term economic inflow.

Based on the above discussion, I believe that the carbon emission amount allocated by the government for free conforms to the definition of assets in China's accounting standards. According to the accounting standards for enterprises in China, the items recognized as assets should meet the following two conditions based on satisfying the definition of assets: (1) the economic benefits related to assets are likely to flow into the enterprise; (2) The value of assets can be measured reliably. The economic benefits associated with carbon credits are likely to flow to companies, as discussed earlier. At the same time, China's carbon emission trading market has preliminarily equipped with fair value measurement conditions, so asset value can be measured reliably. Therefore, it is unreasonable not to recognize it as an asset in the current accounting standards. Because, the amount of carbon emissions conforms to the definition and recognition conditions of enterprise assets, without accounting treatment for measurement is not in accordance with accounting standards. At the same time, limiting the amount of carbon emission can limit the emission of carbon dioxide by enterprises to a certain extent, so as to achieve the purpose of emission reduction. However, if it is not included in the assets, as a non-business business of enterprises, enterprises will inflate their assets and make inappropriate accounting decisions.

3.5.2. Carbon Liabilities are not Recognized When Excess Carbon Emissions Occur

According to accounting standards, liabilities refer to the past transactions or events of the enterprise, which are expected to lead to the outflow of economic benefits from the current obligations of the enterprise. When a company emits more carbon than it is allowed to, it will be obliged to buy carbon emissions in the market to make up for the excess. At this point, it is expected to bring about the outflow of enterprise economic benefits. Items recognized as liabilities in accordance with accounting standards, in addition to meeting the basic definition, but also meet two conditions at the same time, (1) the economic benefits related to the obligation is likely to flow out of the enterprise; (2) The amount of future outflow of economic benefits can be measured reliably. According to the excess carbon emissions and market price, the economic benefits generated by the corresponding excessive emissions can be measured reliably. Therefore, enterprises should recognize carbon liabilities when excess carbon emissions occur, and the fair value of the excess can be recognized according to accounting standards.

3.5.3. All Relevant Profits and Losses are Included in Non-operating Income and Expenditure

Under current accounting standards, all gains and losses arising from transactions or events related to a company's carbon emission rights are included in Non-operating income and expenditure. Enterprises apply and submit for approval according to their actual situation of carbon emissions. However, some enterprises often fail to reach the limit, so the remaining emission quota will be sold in the market to earn profits at a higher price. In this case, the amount of carbon emission in this part should actually be measured as "trading financial assets", and the current profit and loss should be adjusted according to the change of its fair value at the end of the period, and the difference should be recorded into the current profit and loss when selling. However, the current accounting standards will be generated in this case of income directly into the "Non-operating income" items, cannot fully reflect the economic essence of assets.

To achieve carbon peak and carbon neutrality is a major strategic decision made by the CPC Central Committee considering the overall situation at home and abroad. Achieving carbon peak and carbon neutrality is a broad and profound change, which is an inherent requirement and inevitable choice for promoting high-quality development. Energy consumption in the industrial sector accounts for about 65% of China's total energy consumption and is one of the main areas for energy conservation and carbon reduction. Developing green and Low-carbon industries will bring new growth space, new impetus for innovation and new development opportunities to the industrial economy. Green and Low-carbon development leaves much to be done and many areas to explore. Adhere to the system concept, handle the development and emission reduction, the whole and local, long-term goals and short-term goals, the relationship between government and market, overall consideration to keep basic stability, the proportion of manufacturing industry chain supply chain security, reasonable to meet consumer demand, the scientific refinement goal task, safe and orderly promote green low carbon industrial transformation.

4. Main Work

4.1. Strengthen Top-level Policy Design

As promulgated by the State Council based on action plans for carbon peak 2030 years ago, the implementation of the construction industry to the comprehensive development of carbon peak, peak carbon action plan and key industries in the field of industrial distribution and practice, focus on building materials, non-ferrous metals, steel and other industries, in combination with the practical characteristics of industry, divisions, classification to the implementation of the policy, a series of special policies, We will promote the scientific and orderly development of industrial carbon peak plans.

4.2. Promote In-depth Adjustment of the Industrial Structure in an Orderly Manner

We will deepen supply-side structural reform in key industries and actively build an industrial structure conducive to emission reduction. we will strictly implement the policy of replacing production capacity in cement, steel, electrolytic aluminum and other industries to the end, resolutely stop the blind development of projects with high energy consumption, high emissions, and low returns, and focus on strictly controlling the scale of energy consumption in steel and other key industries.

4.3. Construction Promote the Transformation of the Manufacturing Industry to Green and Low-carbon

We will release a green and Low-carbon upgrade directory to guide key industries in green and Low-carbon upgrading, and promote digital transformation and Low-carbon process design innovation in key industries and sectors. We will implement the plan for conserving and comprehensively utilizing industrial resources, and strengthen special oversight and inspection and processing services for energy conservation. We will accelerate the development of green data centers, play a leading role of role models, and build public service platforms for key industries to reach carbon peak.

4.4. Build a Supply System of Green and Low-carbon Products

We will improve the green design system, constantly strengthen green product design, and establish and develop a number of green product design demonstration enterprises. Increase the supply of solar energy, wind power and other energy-saving generators and other equipment, implement the special action of innovation and development of intelligent solar energy industry, the good wind power equipment industry chain. We will revise and improve

the vehicle fuel consumption system and the comprehensive management system for new-energy vehicles, increase the promotion and application of new-energy vehicles, speed up the certification of green design products, and launch a campaign to distribute green building materials to rural areas. By strengthening the supply system of green and Low-carbon products, the carbon peak in energy, transportation, urban and rural development will be promoted.

5. The Results

In order to achieve the core goal of reaching carbon peak by 2030, China can establish relevant compulsory measures when necessary, which can be divided into institutional and policy provisions to gradually promote the control of carbon dioxide emissions, clearly put forward the main implementation approaches and policy suggestions, and at the same time introduce relevant accounting information disclosure policies. So that enterprises in the control of the amount of energy application on the basis of appropriate accounting information disclosure, and can set up the relevant indicators, in order to organize the statistical data; Micro needs each iron and steel enterprises to actively cooperate with the government's work, overall management of carbon dioxide emissions in the industry, make appropriate and reasonable accounting information disclosure, so as to promote the high-quality development of China's iron and steel industry, promote the overall green transformation of economic and social development, achieve the goal of carbon peak.

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References

- [1] Jun Li, PhD dissertation of University of Science and Technology of China, 2017. The Impact of individual transportation carbon emission trading mechanism on carbon emission reduction in the transportation sector.
- [2] Huang Hui, Master thesis, Shanghai University of Finance and Economics. FDI and carbon emission peaking paths in China: 1995-2035.
- [3] Zheng Ying, Wu Jie, Fan Tianzheng, CERTIFIED Public Accountants, China - Discussion on accounting treatment of Enterprise Carbon Emission Rights under the Background of Carbon neutralization, 2021.
- [4] Friends of Accounting Wang Xiaoyan; Wang Yu - Research on accounting Treatment of carbon Emission Trading. 2014.
- [5] Eversen Bio - "Afforestation plays an Important role in many ways to achieve carbon neutrality and carbon peak".
- [6] Web page - "What does carbon neutrality mean? Reduce carbon Emission pollution to the Environment - Stock City hot topics".