Green Development and the Construction of Accounting Standards for Carbon Emission Trading in China

JingWen Zhao[1,*], JunPing Cui[2]
* Corresponding author: 578395891@qq.com

[1]Teaching assistant in Tianjin University of Finance and Economics Pearl River College, Xiangrui Street, Jingjin New Town, Baodi District in Tianjin, China
[2]Professor in Tianjin University of Finance and Economics Pearl River College, Xiangrui Street, Jingjin New Town, Baodi District in Tianjin, China

Abstract. Green development is an economic growth and social development mode aiming at efficiency, harmony and sustainability. Carbon emission trading is an important driving force for green development. During the 14th five year plan, China will accelerate the construction of the national carbon emission trading market. Based on the summary of the current situation of China's carbon emission trading system and the current construction of accounting standards for carbon emission trading, this paper finds the improvement space in the mode of carbon emission trading and accounting treatment in China by data analysis and comparing with foreign systems and standards, and puts forward some policy suggestions.

Keywords-Green Development; the Construction of Accounting Standards; Carbon Emission Trading; Data Analysis

1. INTRODUCTION

The theme of this article is the construction of carbon emission trading accounting standards and green development in China. Based on summarizing the current status of China's carbon emission trading system and the construction of carbon emission trading accounting standards, we will find China's carbon emissions through data analysis and comparison with foreign systems and standards. There is room for improvement in the trading model and accounting treatment, and some policy recommendations are put forward. Improving the carbon emission trading system and the construction of accounting standards is conducive to the establishment of a green and low-carbon circular development economic system in China.

1.1 The comprehensive green transformation of economic and social development

Nowadays, the pursuit of efficiency, harmony and sustainability in the development of economy and society has become an important trend in the world. In September 22, 2020, President Xi Jinping made a statement at the general debate of the seventy-fifth UN General Assembly, saying: under the guidance of the new development concept, China will pursue high quality development under the premise of promoting the comprehensive green transformation of the economic and social development, and make two commitments to the world. First, the carbon dioxide emissions will reach the peak value before 2030, and two is to strive for carbon

ICEMME 2022, November 18-20, Nanjing, People's Republic of China

DOI 10.4108/eai.18-11-2022.2326747

neutralization before 2060. China will make its own efforts to achieve the commitments of "carbon peak" and "carbon neutralization", and contribute to global response to climate change.

According to table1, as a developing country, China is aiming to reduce its carbon emissions by 60-65% by 2030, a higher target than many developed countries, and will face the challenge of how to balance development and environmental protection in the future. Since the 13th five year plan, China's green industry has been developing continuously, and its energy structure has been optimized continuously. Some achievements and new progress have been made in the prevention and control of pollution and ecological protection. Although it has made gratifying achievements in green development, compared with the increasing demand of people for a better ecological environment, the existing achievements are not enough, and green development and ecological civilization construction still have a long way to go. In the period of the 14th five year plan, China should establish and improve the green and low-carbon circular development economic system, firmly believe in taking a better green development road, and only promoting the green transformation of the whole economy and society is the key to solve the ecological problems of China's resources and environment.

TABLE 1. CARBON EMISSION REDUCTION AND CARBON NEUTRALITY COMMITMENT TARGETS OF VARIOUS COUNTRIES AND REGIONS.

Countries and regions	Carbon reduction target (by 2030)	Carbon neutral target date
China	60%-65%	2060
Denmark	70%	2050
Germany	55%	2050
Mexico	50%	2050
United Kingdom	40%	2050
Korea	37%	2050
Austria	36%	2050
Canada	30%	2050
Australia	26%-28%	2050
Japan	26%	2050
India	33%-35%	-

Source: Wind

1.2 Carbon emission trading promotes green development

1) Construction of carbon emission trading market

It is an important task for China to accelerate the construction of a national carbon emission trading market during the 14th five year plan.

The concept of carbon emission trading derives from the concept of "emission right transaction" proposed by American economist Dales in 1968 ([1]). That is, the right to emissions of pollutants is rationalized by legislation and the issuance of emission license, so that environmental resources can be circulated on the market like commodities for sale. This is a significant and effective environmental economic policy in the market economy. To put the commercialization of greenhouse gases represented by carbon dioxide into the market, allowing

different enterprises to trade and sell is the carbon emission trading. The pricing of greenhouse gas emissions has made the emission right a scarce resource, and the high emission industry has to transform and reduce emissions. The development of carbon emission trading is an important driving force for green development and an important grasp for promoting economic transformation and upgrading. The trading system and trading market of carbon emission right are indispensable ([2]). From the perspective of enterprises, the balance of emission line generated after technological innovation can also benefit them ([3]).

On June 18th, 2013, the pilot carbon emission trading pilot was launched in Shenzhen, China. Shenzhen Energy Group Co., Ltd. sold to Guangdong CNPC International Co., Ltd. and Hanneng Holding Group Co., Ltd. each 10000 tons of carbon emission quota, which is the first order in China's carbon emission trading market, marking the opening of China's carbon emission trading. For nearly ten years, China's carbon emission trading has made progress in the legislative construction and practical operation.

2) Legislation construction of carbon emission trading

The legislation construction of carbon emission trading in China is "from bottom to top" and "from local to central".

The national development and Reform Commission issued the notice of the general office of the national development and Reform Commission on the pilot work of carbon emission trading on October 29, 2011, which marks the first step in establishing the carbon emission mechanism in the way of local pilot.

On February 1, 2021, the national level made clear provisions on the construction of the national carbon trading market, and required the implementation of the working mechanism of "central planning, provincial overall responsibility, and city and county implementation". The Ministry regulations on the management of carbon emission right trading (Trial Implementation) were promulgated and officially implemented.

2. ACCOUNTING TREATMENT OF CARBON EMISSION TRADING IN CHINA

Key emission enterprises that carry out carbon emission trading business in accordance with the Interim Measures for the administration of carbon emission right trading shall follow the accounting law of the people's Republic of China and the accounting standards for enterprises, and shall conduct accounting treatment for the trading business of carbon emission rights ([4-6]).

Where key emission enterprises obtain carbon emission quotas through purchase, they shall recognize the carbon emission quotas obtained on the purchase date as assets of carbon emission rights and measure them according to cost. If key emission enterprises obtain carbon emission quotas free of charge through the government free distribution, they shall not be subject to accounting treatment.

Key emission enterprises shall set up the subject of "1489 carbon emission right assets" to account for the carbon emission quotas obtained through purchase.

According to the Interim Provisions on accounting treatment of carbon emission right trading, the specific accounting treatment is as follows.

2.1 Accounting treatment of carbon emission right purchased

If a key emission enterprise purchases a carbon emission quota, it shall debit the subject of "carbon emission right assets" according to the actual payment or payable price (including transaction handling fee and other taxes) on the purchase date, and credit the subjects of "bank deposit" and "other payables".

If a key emission enterprise obtains a carbon emission quota free of charge, it shall not be subject to accounting treatment.

2.2 Accounting treatment of carbon emission right

If key emission enterprises perform the performance (fulfill their emission reduction obligations) of the purchased carbon emission quotas, they shall debit the "non operating expenditure" subject according to the book balance of the used quotas and credit the title of "carbon emission right assets".

If the key emission enterprises perform the contract with the carbon emission quotas obtained free of charge, they shall not be subject to accounting treatment.

2.3 The accounting treatment of the sale of carbon emission right

When selling carbon emission quotas, key emission enterprises shall, according to the different sources of quotas, conduct accounting treatment according to the following conditions:

For the carbon emission quota purchased by key emission enterprises, the accounts such as "bank deposit", "other receivables" shall be debited according to the actual received or receivable price on the sale date (excluding relevant taxes such as transaction fees) and the "carbon emission right assets" subject shall be credited according to the book balance of the sales quota, and the balance shall be based on the difference, Credit the "non operating income" account or debit the "non operating expenditure" account.

If the key emission enterprises sell the carbon emission quota obtained free of charge, they shall debit the subjects of "bank deposit", "other receivables" and credit the "non operating income" subject according to the actual received or receivable price on the sale date (excluding the transaction fees and other related taxes).

2.4 The accounting treatment of cancellation of carbon emission right

If the key emission enterprises voluntarily cancel the carbon emission quotas purchased, they shall debit the "non operating expenses" subject according to the book balance of the cancellation quota and credit the title of "carbon emission right assets".

If the key emission enterprises voluntarily cancel the carbon emission quotas obtained free of charge, they shall not be subject to accounting treatment.

2.5 Presentation and disclosure of financial statements

The debit balance of the "carbon emission asset" account is shown in the item "other current assets" in the balance sheet. Key emission enterprises shall disclose other information.

3. The Enlightenment of EU Emission Trading System to China

At present, there are 21 carbon emission trading systems in operation worldwide, covering 10% of the total global carbon emissions. Among them, EU emissions trading system (hereinafter referred to as "EU ETS") is the largest carbon emission trading market in the world, and also the greenhouse gas emission reduction mechanism with the largest emission scale, the best liquidity and the strongest influence in the world, covering all EU Member States and Iceland, Lichtenstein and Norway. From the more mature and perfect trading rules of EU ETS, we can refer to the future development of China's carbon emission trading market.

According to fig1, China's carbon trading volume from 2013 to 2020 showed a fluctuating trend of first increasing, then decreasing and then increasing. In 2017, China's carbon trading volume was the largest, Carbon dioxide equivalent 49,003,100 tonnes, while in 2020, 43,400,900 tonnes were Carbon dioxide equivalent, up 40.85% year on year. However, there is still potential for carbon trading in China.

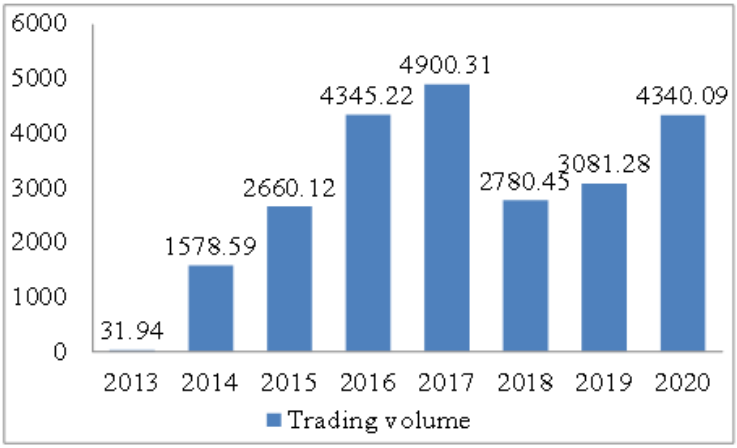

Figure 1. 2013-2020 China's carbon trading market carbon trading volume (unit: ten thousand tons).

3.1 Core mechanism should be total amount control and trading

According to the industry set the corresponding overall ceiling of greenhouse gas emissions, enterprises included in the emission limit list can get a certain amount of free quota, or get the quota by auction. If the actual emission exceeds the quota, the enterprises have to purchase or participate in the auction to obtain the additional quota, otherwise they will incur administrative punishment or even criminal punishment.

3.2 The proportion of free quota and paid quota should be adjusted according to different industries and stages

Since its opening up, EU ETS has been divided into four stages: the first stage is from 2005 to 2007, the second stage is from 2008 to 2012, the third stage is from 2013 to 2020, and the fourth stage is after 2021. In the first and second stages, quotas are mostly distributed free of charge. In the third stage, auction becomes the default form of distribution. Only in the industrial field, there are still free quotas, and the highest proportion of free quotas is not more than 43%.

3.3 Multiple forms of emissions trading coexist

Spot transaction: the transaction settlement (payment and delivery) is carried out immediately or within a short period of time, and the spot date is generally within two working days after the transaction date (the date of agreement to sell).

Futures Trading: both parties buy or sell a certain number of carbon units according to the price (futures price or strike price) agreed on that day, and the delivery and payment will take place on a specific future date, that is, the delivery date. Futures trading is conducted on the spot (exchange).

Forward transaction: both parties have reached an agreement at the time of sale, but the delivery and payment take place on a later date. Unlike futures trading, forward trading is nonstandard OTC trading.

In addition, there are many forms of trading, such as swap trading and option trading.

3.4 Quotas can be stored or borrowed

Starting from the third phase, EU ETS allows quotas to be stored and borrowed across years in one phase. In other words, because there is a gap between the time points of quota issuing and quota clearing in each performance year, the unused quota in one performance year can be reserved for the next performance year, and a part of the quota in the next performance year can also be borrowed for the previous performance year.

4. CONCLUSION

Carbon emission trading is one of the most effective tools to reduce carbon emissions at low cost. Through carbon emission trading, it can not only promote the survival of the fittest of emission control enterprises, but also gradually affect the tendency of market investment, making future investment more inclined to clean and low carbon. Relying on market orientation, carbon trading will form a carbon price signal in the whole society and lay a solid foundation for the low-carbon transformation of the whole society. Speeding up the construction of China's accounting standards for carbon emission trading will help to realize China's commitment of "reaching carbon peak by 2030 and carbon neutral by 2060".

Since the second half of 2020, the introduction of various documents shows that China is stepping up the construction of a national carbon trading market. As the industry with the highest greenhouse gas emissions, power generation industry was first included in the national

carbon emission trading market and began to trade. It is believed that this will effectively promote the elimination of inefficient coal-fired power plants in the power generation industry and promote the low-carbon transformation of the power generation industry.

However, according to data analysis, at this stage, the problems of convergence between the national carbon emission trading market and the seven pilot areas still need to be solved. In addition to the fact that the power generation industry has been directly classified into the national market for unified management, some pilot areas also cover industries other than those specified by the national regulations, such as public construction and service industries, and the transactions in these industries are still lack of national unified management; the entry threshold of trading entities in the pilot areas, that is, the requirements of greenhouse gas emissions, is also different from the national regulations. It can be predicted that in the short term, the national carbon emission trading market and the pilot areas will still coexist.

It is believed that in the future, China's relevant policy-making institutions will continue to reform and improve the relevant provisions of carbon emission trading according to China's national conditions, absorb and learn from the relevant practical experience of foreign countries, continue to play the role of market-oriented resource allocation, accelerate the relevant emission control industries to achieve the carbon peak, and help achieve the goal of carbon neutrality in 2060 by innovative means.

Acknowledgement. This work was supported by Major Social Science Project of Tianjin Municipal Education Commission “Research on Accounting and Financial Issues in Tianjin Green Economy” (Project Number 2020JWZD38).

REFERENCES

[1] Shen Hongtao. International model and Chinese practice of carbon emission trading accounting [J]. Finance and accounting, 2020 (11): 5

[2] Gao jianlai, Wen Ye. International progress and reference of carbon emission trading accounting [J]. Ecological economy (Chinese version), 2015, 031 (004): 56-59,77

[3] Zhang Ge. Research on accounting treatment of carbon emissions [J]. National circulation economy, 2020, No. 2252 (20): 178-180

[4] Du Ziping, Li Genzhu. Research on the impact of carbon information disclosure on enterprise value [J]. Friends of accounting, 2019, 000 (016): 66-70

[5] Li Na. Analysis of "Interim Provisions on accounting treatment of carbon emission trading" -- from the perspective of consistency of standard system [J]. International business accounting, 2020 (8)