Investigation and Survey on the Standardization of China’s carbon emission trading market Based on the Enterprise Demand Analysis

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Abstract. In 2017, China’s carbon emission trading market was officially launched. This paper investigates on the needs of carbon emission standardization in key industrial fields such as chemical industry, building material industry and paper industry. To provide the standardized support for the stability, expansion and sustainable development of China’s carbon emission trading market, this paper proposes the direction of the standardization construction that is urgently needed by key industries in China’s carbon emission transaction.

1. Introduction

Climate change has become a common concern across the world. The emergence of the phenomena such as global warming, sea level rise and extreme weather has seriously affected the harmonious development of the human’s living environment and the entire ecosystem. From the adoption of the United Nations Framework Convention on Climate Change on May 9, 1992 to the 24th Conference of the Parties to the United Nations Framework Convention on Climate Change, held on December 5, 2018, all countries are positive in response to climate change.

Carbon trading is an effective means to control and distribute carbon emissions through the market mechanism, and ultimately reach the purpose of reducing greenhouse gas emissions. In October 2011, the National Development and Reform Commission issued the Notice Regarding Start of Carbon Trading Pilots, and approved seven provinces and cities such as Beijing, Shanghai, Tianjin, Chongqing, Hubei, Guangdong and Shenzhen to implement the carbon trading pilot program. In September 2015, the U.S.-China Joint Presidential Statement on Climate Change proposed that China would launch the national carbon emission trading system in 2017. In December 2017, the National Development and Reform Commission issued the National Carbon Emission Trading Market Construction Plan (Power Generation Industry), which marked the national carbon market had been completed in the overall design and was officially launched. As of November 26, 2018, the transaction volume had reached 270 million tons of carbon dioxide, with a turnover of more than RMB 6 billion[2].

2. Standardization Needs of China’s Carbon Emission Trading Market

On the basis of the issued national policies and standardized documents, we carried out the investigation on the construction of the standardization system for different industries, aiming to summarize the need for standardization of key emissions industries in the carbon emissions trading process.
2.1 Investigation Objects

In 2017, the National Development and Reform Commission issued the National Carbon Emission Trading Market Construction Plan (Power Generation Industry), which proposes to start the national carbon emission trading system with the power generation industry as the breakthrough; and gradually expand it to other industries. The first-stage plan for the national carbon market covers eight industries, i.e. petrochemical, chemical, building material, steel, nonferrous metal, paper, power and aviation. Therefore, this investigation mainly focused on the building materials, paper, power, chemical, steel, nonferrous metals, electronics and petrochemicals industries in pilot and related provinces and cities, and analyzed their need for the standardization of carbon emission trading. The total number of investigated samples is 291 enterprises, including 201 interviews on phone, 84 paper questionnaires, and 6 online research systems. The industry distribution map is shown in Figure 1:

![Distribution Map of Investigated Industries](image)

2.2 Investigation on Industries’ Need for Standardization

According to the characteristics and actual conditions of carbon emission trading in each pilot province and city, combined with the current key standardization areas supporting China’s carbon emission trading, we carried out an investigation in terms of the need for standardization on the aspects of project emission reduction, carbon emission limit per unit product (service), metering monitoring, management system, data quality, low-carbon technologies, low-carbon evaluation, carbon sinks, and product carbon footprints by accounting and verification. Due to limitation of space, we only selected four major industries, i.e. electric power, chemical industry, building material and paper industries for the statistical analysis according to the distribution of the investigated industries in Fig.1. The investigation results are as follows:

1. Electricity
Figure 2. Standards that the electricity industry can support the carbon market in the future. Data source: ACMR investigation data + On Line data + questionnaire recovery data (Number of samples: N=45)

(2) Chemical

Figure 3. Standards that the chemical industry can support the carbon market in the future. Data source: ACMR investigation data + On Line data + questionnaire recovery data (Number of samples: N=48)

(3) Building Material
2.3 Analysis of the needs for standardization of different industries

In general, the enterprise respondents agree that “industrial accounting and reporting standards”, “verification standards” and “carbon emission metering & monitoring requirements standards” are the top three among the standards that can support the carbon market in the future, and the proportions are 90.3%, 86.9% and 73.4% respectively.

From the situation of industries, the enterprise respondents from the chemical, building material, paper, and power industries generally believe that the top two of the standards that can support the carbon market in the future are “industrial accounting and reporting standards” and “verification standards”. As for the third one, their opinions are a little different. The proportion of the chemical industry is 95.8% in the industrial accounting and reporting standards, 89.6% in the verification standards, and 60.0% in the carbon emission metering & monitoring requirements standards. The proportion of the building material industry is 76.7% in the industrial accounting and reporting standards, 63.3% in the verification standards, and 70.0% in the carbon emission metering & monitoring requirements standards. The proportion of the paper industry is 76.7% in the industrial accounting and reporting standards, 73.3% in the verification standards, and 70.0% in the carbon emission metering & monitoring requirements standards. The proportion of the power industry is 76.7% in the industrial accounting and reporting standards, 60.0% in the verification standards, and 66.7% in the carbon emission metering & monitoring requirements standards.
standards and 79.2% in the project emission reduction accounting and verification standards; the proportion of the building material industry is 93.3% in the verification standards, 86.7% in the industrial accounting and reporting standards, and 70.0% in the carbon emission management system standards; the proportion of the paper industry is 96.7% in the industrial accounting and reporting standards, 93.3% in the verification standards and 80.0% in the unit product (service) carbon emission limit standards; and the proportion of the power industry is 96.7% in the industrial accounting and reporting standards, 93.3% in the verification standards and 80.0% in the unit product (service) carbon emission limit standards”.

3. Conclusion
China has achieved good results since the establishment of the national carbon emission trading market, which has stimulated the enthusiasm of enterprises to participate in carbon emissions trading to a certain extent. However, due to the lack of standards and the insufficient incompatibility of various standards with respect of data acquisition, data quality, accounting, monitoring and metering, and carbon limit, the needs for standards of different industries participate in carbon emissions trading cannot be met, as the result, only a little number of industries get involved in the carbon emission trading market in China at present, without covering China’s key emission industries. Therefore, it is necessary to implement management and supervision of the carbon emission trading chain properly, improve the standard system, and develop the standards in relevant fields according to different characteristics of the industries, which is the base to support the stable, expanding and continuous operation of China’s carbon emission trading market.

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