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

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Abstract. In 2017, China’s carbon emission trading market was officially launched. This paper summarizes the work of the seven carbon emission trading pilots and the implementation progresses of the key industries that participated in the program. This work serves as an important basis to support the establishment of the standard system of China’s carbon emission trading market.

1. Introduction
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 had been positive in response to climate change.

In October 2011, the National Development and Reform Commission of China issued the Notice Regarding Start of Carbon Trading Pilots, and approved seven provinces and cities: Beijing, Shanghai, Tianjin, Chongqing, Hubei, Guangdong and Shenzhen to implement the carbon trading pilot program. In December 2017, the National Development and Reform Commission issued the National Carbon Emission Trading Market Construction Plan (Power Generation Industry), marking that the national carbon market had been completed in the overall design and was officially launched [1].

2. Investigation on the Status Quo of the Standardization of China’s Carbon Emission Trading Market
As carbon trading is increasingly active, the China’s carbon trading pilot work has gradually matured, and the state has continuously strengthened the construction of and support to the carbon emission trading market from the policy level [2-4], however, the carbon rights trading standards have not yet been established. With the support of the NQI program, we conducted a survey on the standardization of the carbon trading market and the need for it in national as well as province- and city-level carbon trading pilots and related provinces and cities. This work tries to further promote the establishment of carbon rights trading standards and explore the carbon emission trading mechanism adapted to China’s national conditions.

2.1. National policy documents and standardized documents
Since 2010, the Chinese government has issued a number of key documents in the process of exploring the trial and implementation of carbon emissions trading, to support the complete establishment of China’s carbon emissions trading market.
In July 2010, the General Office of the National Development and Reform Commission issued the Notice Regarding Start of Carbon Trading Pilots, which required the pilot regions to actively explore the institutional mechanism conducive to energy conservation and emission reduction and the development of low carbon industries, and study how to promote the control on the greenhouse gas emission through the use of market mechanism.

In June 2012, the National Development and Reform Commission issued the Interim Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Transactions, which guided the state’s decision-makers of the state to review the situation, comprehensively consider the current conditions, development stages and sustainable development strategies, etc., as the result, several policies have been issued timely, guiding and promoting the domestic greenhouse gas emission reduction work.

In December 2014, the National Development and Reform Commission issued the Interim Measures for the Management of Carbon Emissions Transactions, which also guided the state’s decision-makers of the state to review the situation, comprehensively consider the current conditions, development stages and sustainable development strategies, etc., as the result, several policies have been issued timely, guiding and promoting the domestic greenhouse gas emission reduction work.

On December 19, 2017, the National Development and Reform Commission issued the National Carbon Emission Trading Market Construction Plan (Power Generation Industry), which marked that China has entered a new stage in controlling and reducing carbon emission by means of economic measures through the market mechanism.

In November 2015, China National Institute of Standardization took the lead to organize relevant institutions to develop and issued the General Rules for Accounting and Reporting of Greenhouse Gas Emissions of Industrial Enterprises (GB/T32150) as well as the first batch of series national standards (11 totally) regarding the greenhouse gas emission accounting and reporting requirements involving 10 industries, including power generation, power grid, steel, chemical, electrolytic aluminium, magnesium smelting, flat glass, cement, ceramics and civil aviation, etc., raising the uniform requirements for the issues like what to calculate, and how to calculate for the enterprise greenhouse gas emissions. The standards fully absorbed the experience from China’s carbon emission trading pilots, and referenced relevant international standards, effectively solving the problems like lack of greenhouse gas emission standards and non-uniform accounting methods, achieving a major breakthrough of growing out from nothing in terms of the national standards for China’s greenhouse gas management, and providing technical support for the establishment of the national carbon emission trading market.

### 2.2. Standardization Documents of China’s Carbon Emission Trading Pilot

In 2013, China carried out the pilot work for carbon emission trading in seven provinces and cities. In response to the implementation of national carbon emission trading policy documents, the pilot provinces and cities also issued direct or indirect standardization documents to support the carbon emissions trading pilot work, as shown in Table 1.

| Pilot Province/and City | Indirect Standard or Standardized Document |
|-------------------------|--------------------------------------------|
| Shanghai                | 1. Shanghai Greenhouse Gas Emissions Accounting and Reporting Guide (Trial) |
|                         | 2. Shanghai Carbon Emission Verification Work Rules (Trial) |
|                         | 3. Relevant US and EU standards |
|                         | 4. Refer to environmental protection standards with respect of monitoring requirements |
|                         | 5. Thermal Power Generation Standard Statistical Code |
|                         | 6. Technical standards such as emission factor detection methods |
### Chongqing

1. Carbon Emission Accounting and Reporting Guideline of Chongqing Industrial Enterprise (Trial)
2. Chongqing Municipal Carbon Accounting, Reporting and Inspection Rules
3. Work Standards for Chongqing Municipal Carbon Emission Inspection
4. Guide for Preparation of Provincial Greenhouse Gas List (Trial)
5. GB/T 2589-2008 General Principles for Calculation of the Comprehensive Energy Consumption.

### Guangdong

1. 2013 Guangdong Carbon Emission Quota Accounting Method
2. Guangdong Carbon Emission Quota Management Rules
3. Guangdong Enterprise Carbon Emission Verification Regulations (Trial)
4. General Rules for Carbon Dioxide Emission Reports of Enterprises (Units) of Guangdong Province (Trial)
5. Guangdong Carbon Dioxide Emissions Information Reporting Guide (Trial)
6. Series Standards for Guangdong Enterprise (Cement, Steel, Petrochemical, Thermal Power Generation Enterprises) Carbon Dioxide Emission Information Reporting Guide (Trial)
7. Guangdong Enterprise Carbon Emissions Information Reporting and Verification Implementation Rules (Trial)
8. GB 17167-2006 General rules for the provision and management of energy-consuming large internal-energy measuring instruments

### Hubei

1. Guidelines for the detection, quantification and reporting of greenhouse gas emissions of industrial enterprises in Hubei Province (trial)
2. Quantitative guidelines for enterprise greenhouse gas emissions of 12 industries
3. Hubei greenhouse gas emission verification guide (trial)
4. GB/T 2589/-2008 General principles for calculation of the comprehensive energy consumption
5. GB/T 17167-2000 General rules for the coordination and management of energy metering devices
6. GB/T 16780-2012 Cement unit product energy consumption limit (used in combination with the cement industry benchmark value for cross-validation)

### Shenzhen

1. Interim Measures for the Administration of Carbon Emission Trading of Shenzhen
2. Several Provisions on Carbon Emission Management of Shenzhen Special Economic Zone
3. Shenzhen Carbon Emission Trading Verification Agency and Verifier Management Measures (Revised Draft for Soliciting Opinions)
4. SZDB/Z 69-2012 Specification with guidance for quantification and reporting of greenhouse gas emissions
5. SZDB/Z 70-2018 Organization greenhouse gas emissions verification guidelines
3. Conclusion

From the above standardization documents, we know that there are no uniform and standardized enterprise-level greenhouse gas accounting standards for some key industries which have been included in the carbon trading system. There is also no scientific basis for the allocation of carbon emission quotas in the industry. The carbon emission levels based on unit product of the enterprises in the industry are not exactly mastered. Meanwhile, the enterprises involved in carbon emissions trading are not under appropriate supervision, especially on the fuel-side measuring instruments, emission-section online monitoring, monitoring requirements of key facilities, and uncertainty assessment methods, etc. Furthermore, there is lack of a scientific evaluation system for low-carbon technologies in key industries, which has brought certain difficulties to the effective identification of applicable low-carbon technologies. Besides, the emission reduction achieved by the emission reduction and carbon sequestration technology cannot be verified with a scientific method. All of the above issues need to be solved by developing and implementing a series of standards.

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