

A Brief Discussion of the Legal System of Carbon Emissions Trading Market Regulation

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Abstract: This article consists of four parts. The first part briefly describes the carbon emission trading market, and briefly discusses its meaning, theoretical basis, and market system construction; the second part outlines the legal system of carbon emission trading market regulation, and divides the carbon trading market-related norms and practices at the central and local levels; the third part divides the legal system of market regulation of emission trading market, and outlines its systems of market access, market competition, and securities regulation; the fourth part is a summary of the self-assessment.

Keywords: Carbon Emissions Trading Market, Carbon Allowances, Market Regulation Law, Market Access, Market Competition, Securities Regulation.

1. Introduction

Since the IPCC was established in 1985 and attributed global warming to greenhouse gas emissions, it has continued to politicize and promote and conclude relevant international treaties, such as the 1992 United Nations Framework Convention on Climate Change, the 1997 Kyoto Protocol, and the 2015 Paris Agreement, etc. Due to the disparity in comprehensive national power, the critical interests of countries, and the differences in equity and efficiency dimensions The United Nations Framework Convention on Climate Change (UNFCCC) in 1992, the Kyoto Protocol in 1997, the Paris Agreement in 2015, etc., are "essentially a game of interests between developed countries (or subjects) and backward countries (or subjects)"[1], and so far there is no effective international carbon emission rights allocation and carbon emission reduction scheme, and the schemes are still pending in the academic world.

At a time when all countries are clamoring, China has taken the initiative to commit to the carbon emission reduction target of '2030 carbon peaking and 2060 carbon neutral' out for the greater good of the community of human destiny, and since 2011, the Development and Reform Commission approved the carbon emission trading pilot in seven provinces and cities[2], and in 2016, two more provinces and cities were added to the pilot market, and by July 16, 2022, the national Carbon emission trading market (power generation industry) is officially online, and China's central and local two-tier carbon emission trading market system and related market supervision legal system are gradually formed.

2. Brief Description of The Carbon Emission Trading Market

2.1. Meaning Related to Carbon Emissions Trading

Carbon trading "is a trading and investment activity mainly based on 'carbon emission rights' and its derivatives"[3]. Carbon trading is not fundamentally different from the general financial trading market, and the trading system includes trading venues, the establishment of trading varieties and methods, registration levels, account opening and trading

procedures, and trade settlement. The trading system includes trading venues, the establishment of trading varieties and methods, registration levels, account opening and trading procedures, trading settlement, etc. According to Lu Min[4], the types of carbon trading market can be divided into mandatory and voluntary carbon trading market, regional and national carbon trading market, onsite and offsite trading market, etc.; and consists of total volume control, quota allocation, trading system, regulatory system, risk control, and other elements; its participants roughly include market subjects of emission reduction and compliance, government regulators, various investors, and other practitioners providing carbon accounting and legal services. It involves government supervision of the carbon trading market, "a management system combining supervision and sub-management with the ecological environment department as the competent department and the finance, statistics, energy, and natural resources departments as co-management departments"[5].

The carbon emissions trading market system itself is an attempt to promote energy saving and emission reduction by market regulation and optimize the allocation of resources, in addition to the direct levy of a carbon tax or environmental tax by the government. "The carbon trading mechanism is a policy tool based on the carbon price theory"[6], which encourages energy-efficient enterprises or spurs energy-consuming enterprises to reduce emissions by making the price per unit of carbon emission rights close to the cost of emission reduction through the market mechanism. After the initial allocation of carbon credits by the government, emitters can buy, sell or transfer carbon credits through the carbon trading market. The total amount of carbon emission rights is limited within a certain period, and the initial amount of carbon emission rights for enterprises is also limited, so carbon emission rights become a relatively scarce commodity. Carbon emission rights are artificially transformed into a "new productive resource" by the system of quota compliance and balance circulation, and because "excess emissions bring economic penalties, enterprises with insufficient emission allowances have to buy carbon emission rights in the carbon trading market; energy enterprises have surplus carbon emission rights after fulfilling their emission reduction

obligations After fulfilling their emission reduction obligations, energy companies can sell them on the carbon trading market to gain revenue"[7] , which constitutes the operational mechanism of carbon emissions trading.

2.2. Theoretical Basis of Carbon Emissions Trading

The term "carbon credits" generally refers to "the right to use a certain amount of climate environmental resources acquired by the subject of the right"[8] and the current legislation refers to "carbon credits allocated to key emitters for a specified period"[9] , which can be substantially considered as the right to use climate environmental resources and development rights[10] . As the global atmosphere is a public good with unknown property rights, carbon emissions are associated with negative externalities, and to limit the 'tragedy of the commons, "there are two ways to internalize such externalities One is the Pigou theory, which focuses on government intervention and regulation, and the other is the Coase theory, which focuses on spontaneous market regulation"[11] : the former advocates that "'marginal net private output' and 'marginal net social output The former advocates that "free market competition cannot achieve the Pareto optimal allocation of social resources in the case of divergence between 'marginal private net product' and 'marginal social net product,' and that government intervention should subsidize the party that generates 'marginal social benefits and tax the party that generates 'marginal social costs' "[12] , i.e., the main source of a carbon tax; the latter mainly has the theory of environmental property rights and the theory of emissions trading, i.e., the theoretical source of carbon emission rights and carbon trading.

The theory of environmental property rights, "refers to the general term for the rights of ownership, use, possession, disposal, and benefit of an environmental resource owned by an actor"[13] . According to Coase's theory of property rights[14] , based on the discussion of transaction costs, property rights, and resource allocation efficiency, the property rights system is Pareto optimal; and to internalize the external costs of the environment, it is necessary to specify the property rights, and "the allocation of environmental goods has led to the discussion of the concept of environmental property rights"[15] , that is environmental property rights. Environmental property rights). According to Feng Jinhui, the latter "advocates the allocation of environmental resources, the allocation of management and environmental management, and the determination of the ownership of the environment"[16] , which gives environmental obligations, i.e., the theoretical origin of the obligation to reduce emissions by carbon quotas.

The theory of emissions trading is transmuted from the theory of property rights. According to[17] , Coase proposed 'emission rights' based on the idea of property rights, and developed 'emission trading' by Dales, which means "the national government has the right to sell environmental resources. Emission rights can be purchased not only from the government, but also from other emitters, and can be sold or transferred between emitters"[18] . In the carbon trading market, the essence of carbon emission rights is the same as that of emission rights"[19] , so emission rights trading is the theoretical source of carbon emission rights trading.

2.3. Carbon Emissions Trading Market Construction

As mentioned above, the trading market of carbon emission rights created artificially for emission reduction is composed of the system of initial allowance, emission reduction compliance, and carbon asset circulation, which is "essentially a problem of total emission control and emission allowance allocation"[20] . In other words, the establishment of the carbon trading market mechanism needs to first carry out the two steps of "designing emission caps and allocating emission allowances"[21] . After carbon accounting and clearing carbon allowances in production, if there is a surplus, carbon assets will be granted, or carbon assets will be obtained through certified emission reduction projects or carbon sinks. Subsequently, when market players enter the carbon trading market, the carbon assets held by them will be traded on the spot and the corresponding price will be set by the market supply and demand. This section will briefly discuss the total amount of carbon emission rights, allowance allocation, and asset formation.

2.3.1. Total Carbon Emission Right Setting

According to Yang Liu finishing[22] , the total global carbon emission rights estimation, through the IPCC 2 °C warming threshold, Stern will be 450-550ppm determined as a safe concentration level, by Ding Zhongli will be temperature threshold, non-fossil energy substitution level, developed and developing countries emission trends, etc. after the inclusion of further precise to 470ppm determined as the control target of atmospheric carbon dioxide concentration before 2050. The carbon sink absorption rate is limited to be unchanged during 2006-2050, which eventually translates into a cap of 127,577 million tons of CO₂.

Because the world has not concluded a specific and effective carbon quota agreement, China's total carbon quota has not been allocated from the international level; Yang Liu based on the principle of common but differentiated responsibilities, based on the number of population, historical responsibilities, and development needs, etc., 10% of the quota set aside for development reserves, freeze the total global population to simplify the calculation, to comprehensive comparison CDIAC, IEA, EIA, CAIT, PBL, JRC, EDGAR To quantify and estimate the total amount of carbon dioxide emission rights that China can get from 2006 to 2020, such as CDIAC, IEA, EIA, CAIT, PBL, JRC, EDGAR, etc.[23] .

Another way to set the target is based on the carbon neutral time frame, "China's carbon intensity reduction target has been set at 40-45% in 2020 and 60-65% in 2030 compared to 2005"[24] , based on this, Tian Yun et al.[25] modeling estimates by the Paris Agreement, the total setting method is as follows: combined with The annual average rate of change q (Eq. 1) between 2018 and 2030 is measured in 2017, and the annual growth rate of GDP is assumed to be 5.00%~6.00% between 2018 and 2030, and the reduction target of carbon emission intensity in 2030 compared with 2005 is calculated by combining the historical carbon emission intensity. The number of carbon emission rights C_t (equation 2) for each year, and summed to obtain the total carbon emission C (equation 3) in China in 2017-2030, this model has some reference significance for the initial total carbon emission allowance setting in China.

$$q = 1 - \frac{I_{2030}}{I_{2017}} = 1 - \frac{I_{2005} \times (1-\beta)^{13}}{I_{2017}} \quad (1)$$

("I" is the annual carbon emission intensity (kg/10⁴ CNYuan)

$$C_t = GDP_{2017} \times [1 + (5.00\sim 6.00)\%]^{t-2017} \times I_{2017} \times (1-q)^{t-2017} \quad (2)$$

("Ct" is the total carbon emissions in year t (10⁴ tons))

$$C = \sum_{t=2017}^{2030} C_t \quad (3)$$

2.3.2. Carbon Emission Rights Quota Allocation

This section is divided into two parts: enterprise and national level.

① Allocation to enterprises as the main subject

The initial allocation of carbon credits generally adopts a mixed model, i.e., a combination of free allocation based on the historical method and baseline method and paid allocation based on the auction method, and there is a tendency to gradually increase the proportion of auction and decrease the proportion of free allocation. The following is an overview of the two types of allocation methods.

Free allocation refers to the allocation of carbon emission rights of regional, industry, enterprise, and other subjects at all levels by government administrators according to relevant standards, mainly embodied in two types of historical emission method (grandfathering) and benchmarking method (benchmarking).

The historical emissions approach, which "allocates carbon credits based on the historical emissions or parameters of a company, is known as the 'grandfathering approach' This allocation method is recognized by the Kyoto Protocol"[26] . This approach recognizes the vested interests of high carbon emitting enterprises, with relatively little resistance and easy data collection; however, it has the problems of windfall profit from the perspective of free use of environmental resources and regressive nature from the perspective of the income distribution, lacking fairness, etc.[27] .

The baseline allocation method is "an allocation method that uses an index of historical production or equipment capacity multiplied by a standard emissions ratio to determine the number of allowances to which each equipment is entitled"[28] , means that for the same production, equipment with higher emissions will receive fewer allowances, which is more equitable than the historical method. The baseline method for free allocation is based on product baseline values, which can also be heated baseline values, fuel baseline values, and process emission baseline values, and is widely used in the European Union's carbon emission trading system (EUETS), while "China currently only uses the baseline method in a few industries such as power (including hot spot co-generation), and the country is divided according to pressure, unit capacity and fuel type Conventional coal-fired units, CFB & IGCC units and gas-fired units are divided into three categories with 11 sub-categories to set the baseline"[29] ; or as in the Shanghai carbon trading market for industrial enterprises, the historical emission intensity baseline x annual product output is used to float allowances.

In addition to the above two categories, free allocation is divided into a wide range of carbon trading market practices by countries at various times. According to Liu Ke, "free allocation can also be divided into grandfathering method

based on historical emissions, baseline method based on emission rates, equal per capita rights method, natural debt method based on historical responsibilities, etc."[30] ; according to Nie Li, "free allocation can also be divided into exogenous criteria-based allocation and output-based allocation. "It is further divided into two types of allocations based on exogenous criteria of manufacturers (exogenous criteria) and output-based allocations (output-based)"[31] .

Paid allocation, which mainly includes auction allocation method and fixed price method.

Auction allocation, which refers to according to certain rules, enterprises through public bidding, from the hands of government management agencies to obtain carbon emission rights for a fee. According to Liu Ke collated[32] , the auction method contains a sealed uniform pricing auction, sealed individual bidding auction, rising bidding auction, etc. It is controversial which of the options better reflects the marginal cost of emission reduction of regulated enterprises by auction price. And according to Eunice Tsai's commentary[33] , the auction mechanism allows for efficient allocation of resources, reduces monopoly and manipulation, and reduces distortionary taxation and rent-seeking behavior, although it is more burdensome for businesses.

Fixed-price method, also known as marked-to-market, according to Sun Yue examination[34] , its advantages in setting a transition period to limit price increases and ensure the stability of the incipient carbon trading market; "but the fixed price of allowances does not reflect the true market demand, and is inferior to the auction method in terms of resource allocation efficiency Australia and New Zealand have adopted this method"[35] , which has some reference value.

② Allocation by the state as the main subject

The state constructs the carbon emission rights allocation system and de facto holds the right to allocate. From the perspective of the central-territory relationship, the allocation path includes bottom-up and top-down models; from the perspective of the allocation hierarchy, the allocation path includes the single-level allocation model of 'state-enterprise' and the multi-level allocation model of 'state-(region)-industry-enterprise'; the following will The two are described separately below.

The 'bottom-up' allocation model refers to the decentralized reporting by regions of their carbon allowance schemes, which are aggregated and approved by the central administration for initial allocation, e.g. the EU's first two phases of quota practice[36] ; the 'top-down' is the opposite, where the total amount is set and the central government allocates the allowances For example, the Ministry of Ecology and Environment (MOE) approves the quotas of key emission units in China's interim approach. According to Jiang Huiqin's commentary[37] , the 'bottom-up' approach is suitable for the construction of quotas at the early stage of the carbon trading system, and the allocation of quotas in the absence of practical experience and historical emission data in the country can fully take into account the differences in resource endowment, economic development level, industrial structure, energy consumption structure, population size and density of each region, but it may be over-allocation of quotas due to the multiple interests of each region. The 'top-down' approach can strictly control the total amount of quotas, which is conducive to macro-control and a certain degree of inter-regional equity, but requires the central government to have complete regional basic data, and has a high demand on

the management capacity of the central government.

The single-tier allocation model of 'state-enterprise' and the multi-tier allocation model of 'state-industry-enterprise', "differ in whether the initial allocation process of quotas involves multiple regions and whether the industrial sector and enterprise The[38] former is suitable for regions with a single industrial sector, while the latter is China's current allocation model, such as the Ministry of Ecology and Environment's quota implementation plan for the power generation industry circular[39], which takes full account of industrial characteristics and is more equitable and conducive to its transformation and upgrading. The 'national-regional-enterprise' multi-layered allocation model[40], on the other hand, allocates quotas from the state to each carbon trading region, which in turn allocates quotas to the regulated enterprises, to reduce the cumbersome procedures and administrative costs of carbon quotas directly from the state to the whole economy.

2.3.3. Carbon Emission Rights Asset Formation

"Carbon assets are carbon emission rights allowances, emission reduction credits and related activities generated under the mandatory carbon trading mechanism"[41], which can be divided into two categories: allowance of carbon assets and emission reduction carbon assets. After the market subject in the production of carbon accounting and clearing carbon allowances, if the carbon emission rights surplus is awarded quota carbon assets, or certified voluntary emission reduction to obtain emission reduction carbon assets. Subsequently, when market players enter the carbon emission trading market, they can trade the carbon assets they hold on the spot, and the market supply and demand will line into the corresponding price.

The carbon asset, i.e. 'carbon emission rights', also known

as 'carbon credits, is the main subject of carbon market trading, and the unit is measured in "tons of carbon dioxide equivalent (tCO₂ e)"[42]. The carbon allowances held by the market players can be traded through the carbon emission trading market after the actual emissions are accounted for and the allowances are paid off, and the surplus emission rights or the emission rights that need to be purchased.

Carbon emission reduction assets, known as certified voluntary emission reductions (CCERs), are measured in tons of carbon dioxide equivalent (tCO₂ e)[43], and can be used by market participants to offset carbon emission allowances due, with one ton of CCERs equal to one ton of carbon emission rights. In the national carbon emission trading market, the offset limit is 5% of the carbon emission allowances to be paid up.[44], and "At present, each pilot carbon market has set certain conditions for offsetting CCERs, with different regulations on the types of CCER projects that can be offset and the offset ratio. However, this does not affect the flow of CCERs through the pilot exchanges, most of which accept direct trading of CCERs"[45].

3. Overview of the Legal System for Regulating the Carbon Emissions Trading Market

This section provides an overview of the legal norms and policy documents related to the national and pilot provincial and municipal carbon emission trading markets and prepares the ground for the next section to analyze the regulatory legal system related to market access, market competition, and securities regulation, and the relevant legal norms and policy documents that can be retrieved in one's field of vision are shown in the table below.

Table 1. Documents related to the regulatory legal system of the partial carbon emissions trading market

Time	Scope	Relevant legal norms or policy documents
August 2011	China	State Council on the issuance of the "Twelfth Five-Year" comprehensive work program of energy conservation and emission reduction notice
October 2011	China	Notice of the General Office of the National Development and Reform Commission on the pilot project of carbon emission trading
December 2011	China	The State Council on the issuance of the "12th Five-Year Plan" to control greenhouse gas emissions work program notice
June 2012	China	Notice of the National Development and Reform Commission on the Issuance of Interim Measures for the Management of Voluntary Greenhouse Gas Emission Reduction Trading
October 2012	China	General Office of the National Development and Reform Commission on the issuance of the "Greenhouse Gas Voluntary Emission Reduction Project Validation and Certification Guidelines" notice
May 2014	China	Notice of the General Office of the State Council on the issuance of the 2014-2015 action plan for energy conservation, emission reduction, and low-carbon development
December 2014	China	National Development and Reform Commission of the People's Republic of China Order No. 17 "Interim Measures for the Management of Carbon Emission Trading
October 2016	China	Notice of the State Council on the issuance of the "Thirteenth Five-Year Plan" to control greenhouse gas emissions
December 2016	China	The State Council on the issuance of the "Thirteenth Five-Year Plan" comprehensive work program of energy conservation and emission reduction notice
December 2017	China	Notice of the National Development and Reform Commission on the Issuance of the National Carbon Emissions Trading Market Construction Plan (Power Generation Industry)
January 2019	China	Notice on the Development of the 2018 Annual Carbon Emissions Reporting and Verification and Emissions Monitoring Plan
December 2019	China	Notice on the work related to the 2019 annual carbon emission report and verification and the submission of the list of key emission units in the power generation industry
December 2020	China	Notice on the Issuance of the Implementation Plan for Setting and Allocating the Total Amount of National Carbon Emission Trading Quotas for 2019-2020 (Power Generation Industry), the List of Key Emission Units Included in the Management of National Carbon Emission Trading Quotas for 2019-2020, and the Pre-Allocation of Quotas in the Power Generation Industry
December 2020	China	Carbon Emissions Trading Management Measures (Trial)

September 2021	China	The Central Committee of the Communist Party of China State Council on the complete and accurate implementation of the new concept of development to do a good job of carbon peaking and carbon neutral work
December 2021	China	The State Council on the issuance of the "14th Five-Year Plan" comprehensive work program of energy conservation and emission reduction notice
March 2022	China	Notice the key word related to enterprise greenhouse gas emission report management in 2022
March 2022	China	Notice on strengthening the management of enterprise greenhouse gas emission reports
June 2015	Shenzhen	Regulations on the Management of Offset Credits in the Shenzhen Carbon Emission Trading Market
November 2015	Shenzhen	Notice of Training for Carbon Emission Verification Agencies and Verifiers
August 2016	Shenzhen	Announcement of Newly Funded Projects of Shenzhen International Comprehensive Demonstration of Low-carbon Energy Conservation and Emission Reduction Policies
June 2022	Shenzhen	Shenzhen Carbon Emission Trading Management Measures
January 2014	Guangdong	Guangdong Carbon Emission Management Trial Measures
February 2015	Guangdong	Implementation Rules of Guangdong Provincial Development and Reform Commission on Enterprise Carbon Emission Information Reporting and Verification
May 2015	Guangdong	Highlights of the National Low Carbon Province Pilot Work in Guangdong in 2015
August 2015	Guangdong	Rules for Trading Carbon Emission Allowances on the Guangzhou Carbon Emission Rights Exchange
September 2015	Guangdong	Implementation Plan for Reporting Greenhouse Gas Emissions of Key Enterprise Units in Guangdong Province
December 2015	Guangdong	Risk Control Management Rules for Carbon Emission Trading in Guangzhou Carbon Emission Trading Center
November 2016	Guangdong	Guangdong Province Carbon Emission Allowance Buyback Trading Carbon Purchase Demand Release
November 2013	Shanghai	Shanghai Carbon Emission Management Trial Measures
January 2015	Shanghai	Shanghai Energy Exchange Notice on Voluntary Greenhouse Gas Certification Trading Reduction
February 2015	Shanghai	Opinions on the Implementation of Establishing and Strengthening the City's Statistics for Addressing Climate Change
June 2015	Shanghai	Shanghai Energy Exchange Carbon Emissions Trading Rules
December 2016	Shanghai	Announcement on the Trial Operation of Shanghai Carbon Quota Forward Trading Business
April 2014	Hubei	Interim Measures for Carbon Emissions Management and Trading in Hubei Province
September 2015	Hubei	Management Measures for Carbon Emission Allowance Placement and Buyback in Hubei Province
November 2015	Hubei	The 2015 Carbon Emission Allowance Allocation Plan of Hubei Province
December 2015	Hubei	Notice on the Issuance of Hubei Province 2016 Carbon Emission Quota Allocation Plan
September 2016	Hubei	Decision on Amending Paragraph 1 of Article 5 of the Interim Measures for the Management and Trading of Carbon Emission Rights in Hubei Province
December 2013	Tianjin	Notice of the General Office of Tianjin Municipal People's Government on the Issuance of <Tianjin Carbon Emission Trading Management Interim Measures> (Version 1)
April 2015	Tianjin	On the Development of Carbon Emissions Trading Pilot Incorporating Enterprise 2014 Supervision of Carbon Emissions Reporting and Verification
April 2016	Tianjin	Notice of the General Office of Tianjin Municipal People's Government on the Issuance of <Tianjin Carbon Emission Trading Management Interim Measures> (Second Edition)
June 2018	Tianjin	Notice of the General Office of Tianjin Municipal People's Government on the Issuance of <Tianjin Carbon Emission Trading Management Interim Measures> (Third Edition)
June 2020	Tianjin	Interim Measures for the Management of Carbon Emission Trading in Tianjin (Fourth Edition) Effective from 2020.7.1-2025.6.30
July 2014	Beijing	Measures for the Management of Carbon Emission Trading in Beijing (for Trial Implementation)
December 2014	Beijing	Notice on the Release of the Recommended List of Third Party Evaluation Organizations for Energy Management System Carbon Emission Management System
January 2015	Beijing	Carbon Emission Trading Rules of Beijing Environmental Exchange
December 2015	Beijing	Notice on the Work Related to the Carbon Emission Trading Pilot in 2016
March 2016	Beijing	Notice on the Announcement of the List of New Key Carbon Emission Units in 2015 after the Expansion of the Carbon Market
April 2014	Chongqing	Interim Measures for the Management of Carbon Emissions Trading in Chongqing
March 2015	Chongqing	Notice of Chongqing 2014 Annual Carbon Emission Allowance
May 2015	Chongqing	Notice on Tightening the Grip on Carbon Emission Allowances for 2013-2014
August 2016	Chongqing	Notice of Carbon Emission Review for 2015 Annual Allowance Management Units

For the general direction of the carbon market at the central level, see the "12th Five-Year Plan"[46] , "13th Five-Year Plan"[47] , "14th Five-Year Plan"[48] Comprehensive Work Plan for Energy Conservation and Emission Reduction and the "12th Five-Year Plan"[49], "13th Five-Year Plan"[50] "The Annexes of these documents set the total amount of carbon emission allowances for each province and city

through energy consumption reduction and control targets; the regulations for the national carbon emission trading market (For the regulations of the national carbon emission trading market (power sector), please refer to the Interim Measures for the Management of Carbon Emission Trading[51] and the Measures for the Management of Carbon Emission Trading (Trial Implementation)[52] , and for its

specific implementation, please refer to the Implementation Plan for Setting and Allocating the Total Amount of Carbon Emission Trading Quotas in 2019-2020 (Power Generation Sector) and the List of Key Emission Units Included in the Management of National Carbon Emission Trading Quotas in 2019-2020[53], giving The detailed list of key emission units and the free allowance method with the baseline method.

In addition, if the government's macro-regulation of the carbon trading market is included in the scope of regulation, it also involves carbon storage and advanced mechanisms. At the enterprise level, the "storage mechanism allows enterprises to store their carbon credits in a government-licensed 'carbon bank'", while the "advance mechanism allows enterprises to advance the next stage of their carbon credits according to specific regulations and relevant policies". The "advance mechanism is the possibility to advance the next phase of the company's carbon credits according to specific regulations and relevant policies"[54]. At the government level, the storage advance mechanism can be used as a macro-regulatory tool for carbon trading prices, "modeled after the central bank's open market operations, in which the government sets aside allowances to intervene in case of abnormal fluctuations in carbon prices"[55]. If combined with the auction method, the unsold allowances in the auction will be deposited into the government reserved allowances, and when the supply and demand change the reserved allowances will then flow into the market. For example, the EU's Market Stabilization Reserve and Advance Mechanism (MRS)[56] is designed to respond to sudden shocks and stabilize the carbon trading market and carbon price expectations.

4. Subdivision of the Legal System of Market Regulation of Carbon Emission Trading Market

This part will be subdivided into the legal regime of market regulation in the carbon emission trading market. Regarding the analysis framework of the legal system of market regulation, according to Yang Zixuan's fifth edition textbook[57], the market regulation law involves market access and withdrawal law, competition law, consumer rights, and interests protection law, product quality law, advertising law, regulatory law of telecommunication, real estate, and banking industry, securities, insurance, and futures regulatory law; while the carbon emission trading market has its special characteristics, CNKI studies on it such as Zhang Long (2013)[58] carbon The legal system of carbon trading regulation, Pan Yahui (2014)[59] on carbon trading government regulatory system and other perspectives, most of the research is not directly conducted in the framework of the analysis of market regulation law, only Cui Yaru (2016)[60] directly on the legal system of carbon emissions trading market regulation, the analysis of domestic legislation and foreign legislation part of its text, the framework of analysis of carbon emissions trading market regulatory law include regulatory system, access system, information disclosure and recourse system in four parts, and this structure is the main reference for the structure of my subdivision.

My analytical framework for the legal regime of market regulation of the carbon emissions trading market is divided into three parts: market access, market competition, and securities regulation, for the following reasons.

The penalty rules of the national carbon emission trading

market involve the part of the market subject, only the key emission units in the emission reduction and compliance stage are punished with fines and an equal amount of allowance reduction for false reporting, concealment, refusal to report and failure to pay carbon allowances in full and on time[61], etc. The withdrawal rules only involve the removal of enterprises from the list of key emission units[62], i.e., the enterprises no longer meet the access criteria or shut down their business, which is still within the scope of market access, in essence, so, Therefore, only the market access law is included in my analytical framework.

Carbon emission rights are artificially created 'new production line resources', which do not become actual products and circulate at the consumer level, except for the enterprises' compliance with emission reduction and allowance clearing for compliance, and their derivative secondary market for trading or investment, so they should not involve consumer rights protection law, product quality law, etc., and also not involve, Therefore, it should not involve the consumer rights protection law, product quality law, etc., nor the regulatory law of telecommunications, real estate, banking, etc. Of course, since the regulation of the carbon emission trading market involves the regulation of some market behaviors, the competition law is included in the analysis.

The existence of 'carbon information disclosure' in the carbon emission trading market is personally considered to be more in line with the information disclosure in securities regulation rather than advertising law, so it is classified into the part of securities regulation. In addition, since the existing carbon emission trading market in China is spot trading and does not involve derivatives such as futures and insurance, for the time being, its related research is mainly an introduction to practices in Europe and the United States, etc., so it is not involved.

4.1. Brief Description of The Access System of Carbon Emission Trading Market Subjects

Carbon trading market access threshold, involving mandatory emission reduction and voluntary emission reduction two markets, that is, the trading access to allowance carbon assets and emission reduction carbon assets trading access. For access to the carbon trading market, market participants are of course required to complete their carbon emission allowances, and only key emission units are now required to complete their emission allowances and start mandatory emission reduction compliance, as compiled in Part II of this paper, only key emission units (power generation industry) are now admitted to the carbon trading market at the national level, with the criterion of "annual greenhouse gas emissions reaching 2.6 [63]; while the local carbon trading market has also formulated its entry criteria, which can be found in the table in Part II, with a broader scope than the power generation sector and lower criteria than 26,000 tons; and "key emitters included in the national carbon trading market will no longer participate in the local carbon trading pilot market "[64], market access to the national and local carbon emission trading markets is mutually exclusive. In contrast, the market for Certified Voluntary Emission Reductions (CCERs) is relatively liberal in its access, and "domestic and foreign institutions, enterprises, groups, and individuals can participate in voluntary greenhouse gas emission reduction trading.

Before access to the carbon trading market, the carbon emission of enterprises needs to be verified to confirm whether they meet the standards, and by is to prepare a national and local list of key emission units. Carbon verification refers to the verification of carbon emissions by the government, institutions, and other verification bodies, according to the relevant norms for market players. Carbon accounting or accounting, on the other hand, is the corresponding concept at the enterprise end, "carbon accounting refers to an economic management activity in which the relevant enterprises account for, record, reflect and supervise carbon consumption and carbon emission rights"[65] , carbon accounting, i.e. carbon accounting excluding carbon sequestration, carbon absorption, or removal aspects, corresponds to the connotation of carbon emission aspects.

Carbon emission accounting methods and standards, methods according to Wang Wei et al. mainly contain two mainstream methods, the process analysis method and the input-output method[67] , according to Jingjing Liu compared[66], the former is bottom-up, based on the whole life cycle of products for accounting, applicable to the micro level; the latter is top-down, "using input-output tables to visualize economic indicators, by building consumption matrix, providing all economic The latter is top-down, "using input-output tables to visualize economic indicators, and providing basic activity data related to carbon emissions in the process of all economic activities", which applies to the macro level. According to[68] , the main carbon accounting standards at the product level are PAS 2050:(2008) published by the British Standards Institute, GHG protocol:(2011) published by the World Resources Institute and the World Business Council for Sustainable Development, and ISO 14067:(2013) published by the International Organization for Standardization. (2004), ISO 14064-1: (2016), and IPCC: (2006) issued by the Intergovernmental Panel on Climate Change (IPCC) at the corporate, organizational and national levels.

4.2. Brief Description of The Regulatory System for Carbon Emissions Trading Market Competition

There is almost no research on competition law related to the carbon emission trading market in CNKI. And there are no direct regulations or approaches involving the regulation of trading behavior in the carbon emission trading market, and each possible relevant norm is relatively scattered in the national and local carbon emission trading market management approaches, concerning the 'competition-promoted regime' whose "constitution involves the competitive assessment system, monopoly industry [69] etc., and the legal fields involved in competition law "including the prevention of unrestrained competition through anti-unfair competition law, and the elimination or weakening of possible competition through the prevention of monopolistic behavior through anti-monopoly law"[70]etc., I would like to organize the possible marginal norms as follows.

The national carbon emission trading market is[71] , which involves Article 2 "adhering to the principles of market orientation, gradual and orderly progress, fairness and openness, and honesty and trustworthiness", Article 5 "the national carbon emission registry and trading institution shall regularly report to the Ministry of Ecology and Environment on their registration, trading, settlement, and other relevant

matters. Article 22: "Take effective measures to prevent excessive speculative trading behavior", etc.

At the level of the local carbon emission trading market, directly related to the regulation of the carbon trading market in Beijing[72] , Articles 16 and 17 stipulate that "disclosure of trading information, organization and supervision of trading, settlement and delivery, and other trading activities, and trading shall be carried out using open bidding and agreement transfer"; Shanghai[73] , Article 14 on the introduction of third-party institutions, Article 23 on the trading method of open bidding, Article 24 "No person shall use fraud, malicious collusion or other means to manipulate the price of carbon emission trading"; Guangdong, Article 24 and 25 "No person shall use fraud, malicious collusion or other means to manipulate the price of carbon emission trading. The introduction of third-party institutions, Article 23 of Shanghai[74] , Article 23 of the trading method of open bidding, Article 24 "No person shall use fraud, malicious collusion or other means to manipulate the price of carbon emissions trading"; Guangdong, Articles 24 and 25, Chongqing[75] , Article 24 as before; Shenzhen[76] , Article 27 provides that In Shenzhen[77] , Article 27 provides for "one-way bidding and agreement transfer"; while in Tianjin[78] and Hubei, it is difficult to find relevant provisions in the carbon trading market regulations.

4.3. Regulation of Securities in the Carbon Emissions Trading Market Brief description of the system

The carbon quotas or CCERs traded in the carbon trading market are property, liquidity, investment, and materiality, and should be regarded as securities; it is difficult to construct a complete securities regulatory system in this part, which only covers the carbon information disclosure and carbon trading risk prevention and control norms in the securities regulatory system of the carbon trading market, and shallowly mentions the carbon futures trading, carbon credit, and carbon sink markets that have not yet been established.

Regarding carbon information disclosure, according to Liu Quanqi[79] , its framework mainly includes accounting, reporting, management, auditing, and application modules, and its content mainly includes the disclosure of carbon activities, carbon emission reduction technology, carbon accounting, carbon trading information, and much other information. The government's grasp of enterprise carbon information is mainly at the level of emission reduction compliance and clearing allowances, requiring enterprises to produce carbon emissions ledgers according to the facts[80] , while enterprises' disclosure of carbon information can fall under the scope of corporate disclosure to investors in securities regulation.

There are relatively few regulations on carbon information disclosure. The regulations on information disclosure at the national carbon emission trading market level mainly concern the supervision and management of carbon trading market institutions; at the local carbon emission trading market level, there are, for example, Article 26 of Chongqing's[81]and Article 22 of Tianjin's[82] , which requires the establishment of a relevant information disclosure system with highly similar expressions and relatively macroscopic regulations.

The risk prevention and control norms of the carbon trading market, the national carbon emission trading market level is mentioned in Article 33 declaratively, the local carbon emission trading market level has such as Chongqing's[83]

Article 28 of the carbon trading includes "up and down limit, risk warning, violation of the default treatment, transaction dispute handling" risk management system, Shanghai's [84]Article 28 "involves the up and down limit system, the maximum quota holding limit system, as well as the large account reporting system, risk warning system and risk reserve system", Guangdong's[85] Article 37 instead gives the responsibility of risk management to the enterprise, and the penalty for failure to establish the implementation of the risk management system of the enterprise to fine; in addition, Beijing's Article 16, and Hubei's Article 29 are sworn provisions.

About carbon futures trading, Li Songyang believes[86] that the possible models are carbon futures exchange M&A model and carbon futures varieties Internet trading model and may involve cross-border trading of carbon emission rights and international carbon financial market, etc.; Guo Miao Miao et al.[87] try to introduce futures trading, forestry carbon sinks, carbon credits, etc. to the carbon market based on spot trading and trading of carbon quotas and CCERs. In conclusion, the carbon emission trading market is still in the construction stage, and the industries, enterprises, and related legal regulations included are still limited, and there is still room for the development of legal regulations, trading targets, and possible derivative financial products.

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