Development Status of and Suggestions for China's Carbon Finance Market and Products

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Carbon finance is defined as the carbon-trading financial market with carbon emission allowances as the underlying assets as well as various types of financial products derived from the market. It is one of the important aspects for China to realize the goal of peaking carbon emissions and achieving carbon neutrality (the dual carbon goal). After ten years' development since local pilot programs were launched to trade carbon in 2011, China's carbon finance market has made great strides, but not yet grown large enough. There is much room for it to further develop. This paper examines the status quo of China's carbon finance market and products, points out the existing problems, and puts forth some suggestions.

I. Significance of Carbon Finance for Realizing the Dual Carbon Goal

i. There is a long way to go for China to realize its dual carbon goal

At the United Nations General Assembly convened on September 22, 2020, China pledged to peak carbon emissions before 2030 and achieve carbon neutrality by 2060. The planned period from the carbon emission peak to carbon neutrality is much shorter than the periods in developed countries. China has been the world's top carbon dioxide emitter since 2005, and its carbon footprint accounted for 29% of the world's total in 2019. In terms of carbon intensity, China's carbon emission per unit of GDP stood at 685 g/USD in 2019, much higher than those in developed countries such as the EU and the US.

ii. Carbon finance helps achieve the dual carbon goal

The core of a carbon finance market is carbon emission allowances. After the ownership of carbon emission allowances is clearly defined, the market as an invisible hand can be used to reduce carbon emissions at the minimum cost. This is the basic logic behind the birth of the carbon trading system. As shown by practical experience, the carbon trading system can reveal the scarcity and value of carbon emission allowances, and carbon pricing is an effective incentive for curbing climate change. When a region or an industry is required to limit its total carbon emissions at a certain level, the carbon trading system can stimulate the flow of funds among different sectors and aspects of the real economy through the carbon pricing mechanism. In other words, it is possible to adjust the energy structure through the market, encourage low-carbon investments, press ahead with economic transformation, guide carbon-intensive enterprises to save energy and reduce emissions, and propel low-carbon enterprises towards sound development, all of which will help China move closer to its dual carbon goal.

II. Current Operations of the International Carbon Finance Market

According to the statistics of the International Carbon Action Partnership (ICAP), one supranational agency, five countries, 16 provinces or states, and seven cities worldwide formed markets where carbon emission allowances were traded as of January 31, 2021, which represented a 42% share of global GDP. Since the first carbon trading market was launched in the EU in 2005, the global carbon emissions trading volume has kept growing. In 2005, carbon trading markets covered 5% of global carbon emissions, and that figure more than tripled to 16% by the end of 2020. Among the world's carbon trading markets in operation, that in the EU is the most mature. In 2020, 1.3 billion tons of carbon emissions were emitted in the EU, and the carbon trading volume in the market hit 8 billion tons, accounting for more than 90% of the world's total trading volume.

III. Course of Development of China's Carbon Finance Market

i. Seven local pilot programs and one national market go in parallel (7+1 mode)

In September 2010, the State Council issued the *Decision on Accelerating the Formation and Development of Strategic Emerging Industries*, which proposed for the first time establishing and improving the emission allowance trading system of major pollutants and carbon. To date, piloting the carbon emission allowance trading programs and promoting the construction of a national carbon emission allowance trading system have become an important part of the efforts to make ecological progress.

China's carbon finance market has by far experienced 10 years of development since 2010. In 2013, seven Chinese provinces and municipalities directly under the central government, including Beijing, Tianjin, Shanghai, Chongqing, Hubei, Guangdong, and

Shenzhen, started to pilot their carbon emission allowance trading programs. One year later, Fujian joined them. The eight pilot markets covered nearly 3,000 major carbon emitters from more than 20 industries, including electricity, iron and steel, and cement. In 2017, preparations began to build a national carbon trading market for the electricity industry. On July 6, 2021, the national carbon emissions trading market was launched, which included more than 2,000 electricity generation enterprises and covered 4 billion tons of carbon emissions, accounting for about 40% of China's total emissions. This signaled that China's carbon finance market entered the track of fast development.

ii. Operations of the Chinese carbon market and the existing problems

1. Spot products available in the market

The spot products available in China's carbon market include the carbon emission allowances (CEAs) and the Chinese certified emission reductions (CCERs). Of which, CCERs can be used to settle CEAs in deficit. Both spot products can be traded in the pilot markets, while only CEAs are available for trading in the national carbon trading market for the time being.

2. Market operations

As at June 2021, the eight local carbon markets operated on a trial basis traded 480 million tons of carbon worth RMB11.4 billion. Over the period from July 16 (the day when the national carbon market was inaugurated) to October 26, the national carbon market traded 19,123,100 tons of carbon in RMB863 million.

3. Existing problems

After nearly a decade of development, China's carbon finance market has made a series of achievements. It established a complete set of norms and systems with reference to the successful experience of the EU market, and launched a nationwide trading market where the industries and enterprises covered kept growing in number and the trading volume went up year by year. Even so, the market is still in its infancy, with the potential to be further unlocked. Below are some major programs facing it at present. **First, internal motivation is insufficient.** Taking CCB for example, all of its CEAs are distributed free of charge, and the oversupply has dented the enthusiasm of enterprises subject to carbon caps for participating in the market. **Second, carbon prices remain sluggish**. Since the launch of the carbon trading market, carbon prices have been depressed, lower than the global level and about one-tenth of the average price of the

EU carbon trading market. Its degree of marketization needs to be improved. **Third, there is a shortage of liquidity**, which is manifested by the low trading volume and the concentrated trading periods. In China, a country producing nearly 10 billion tons of carbon emissions annually, the national carbon market has recorded a cumulative trading volume of less than 500 million tons since its inception. Moreover, trading transactions in the market are overwhelmingly concentrated around exercise dates. For instance, there was no trading operation in the carbon trading markets operated on a trial run for more than 30% of trading days throughout 2020. **Fourth, development is uneven in different regions.** It can be seen from the trading volumes and transaction prices of the local carbon markets operated on a trial basis that there are huge gaps between different regions, a situation that is detrimental to the interconnectivity of the national market. **Fifth, participating entities fall short of diversity.** The national carbon trading market now only allows enterprises subject to carbon caps to participate in trading, with all financial institutions excluded. So it is imperative to boost the market effectiveness. **Sixth, a limited number of industries have been included.** To date, the national carbon trading market has covered only the electricity industry, which limits its role in emission reduction to a very limited extent. Cement, iron and steel, aviation, and other carbon-intensive industries need to be further included in the market.

IV. Development Status of Carbon Finance Products in China

i. Practical use of carbon trading products

Carbon finance products are the extension of mainstream financial products in the carbon market. Abundant carbon finance products can help establish a complete set of carbon finance market systems and increase the depth and breadth of the market. In terms of product pedigree, carbon finance products can be divided into trading instruments, financing instruments, asset allocation products, and other innovative products.

1. **Trading instruments** are used by enterprises to lock in costs and hedge against risks from future price fluctuations. Specifically, they include carbon forwards, carbon futures, carbon swaps, carbon options, carbon asset securitization, and indexed carbon trading products. Diversified trading methods could enhance market liquidity and strengthen the price discovery function.

2. **Financing instruments** are used to expand financing channels for enterprises.

Specifically, they include carbon bonds, carbon funds, carbon asset pledges, carbon asset trust, carbon asset repurchase (repo), and carbon asset leasing.

3. **Asset management instruments** are used to revitalize carbon assets, unlock the hidden value, and generate more yields. Specifically, they include carbon trading, carbon asset custody, carbon finance-related structured deposit, and carbon insurance.

ii. Development status of carbon finance products

Since the establishment of local carbon trading markets operated on a trial basis, China's financial institutions have explored a series of carbon finance products and services with CEAs as the underlying assets. However, carbon finance is still confined to a limited scale. Most products are operated sporadically on a trial basis, so they are weak in replicability.

The underdevelopment of carbon finance products is mainly attributed to three reasons. Firstly, the promotion of these products is heavily dependent on the maturity of the spot carbon trading market. Secondly, the primary purpose for which enterprises subject to carbon caps use these products is to honor their contracts rather than invest in and manage carbon assets. In addition to being less-motivated, they are also incompetent in this regard. Thirdly, the unclear legal attributes of carbon emission assets hold back the development of carbon financing business.

V. Suggestions for China to Develop Its Carbon Trading Market

On October 24, the CPC Central Committee and the State Council issued the *Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy* to make systematic planning and overall arrangements for the realization of the dual carbon goal. As required in the document, the government and the market would work together to accelerate the formation of a market-based mechanism and improve the national carbon emission trading market, with a view to guaranteeing the realization of the dual carbon goal. A sophisticated market mechanism can stimulate the internal motivation and creativity of market players in the process of the low-carbon transition. As per the relevant requirements put forth in the document, the following suggestions are raised to facilitate the development of China's carbon trading market.

i. Establish an appropriately tight carbon emission allocation system to exercise cap control

It is imperative to set a definite national target for total carbon emissions and devise clear emission reduction plans for different development stages. On this basis, efforts will be made to establish an appropriately tight carbon emission allowance system, introduce a carbon allowance auction mechanism in good time, and gradually replace unpaid allowances with paid ones, all of which are aimed to arouse the initiative of market participants in carbon trading.

ii. Incorporate carbon sink trading to improve an ecological protection compensation mechanism

It is important to continuously explore a mechanism through which carbon sink products can realize their value. Based on the practical experience gathered from the pilot markets, carbon sink trading will be incorporated into the national carbon trading market. Meanwhile, a carbon offset mechanism based on the trading of CCERs will be improved so that market-based means can be fully leveraged to encourage voluntary emission reduction.

iii. Strengthen financial support to form an effective carbon pricing mechanism

The carbon finance market cannot operate efficiently without a reasonable carbon pricing mechanism. According to international experience, the formation of a reasonable pricing mechanism is conditional on the participation of financial institutions and the introduction of trading instruments. It is hence recommended that more financial institutions be introduced into the national carbon trading market of China, where they can give full play to their three major functions, that is, resource allocation, risk control, and market pricing, thus breathing life into the market. Meanwhile, a carbon futures market should be established. Characterized by excellent continuity and transparency, futures are able to provide sufficient liquidity for the market, guide market expectations, and send out effective price signals.

iv. Improve laws and regulations to clarify the asset attributes of carbon emission allowances

It is advised to explicitly define the ownership and transfer rights of various environmental rights and interests, including carbon emission allowances, at the legal level, thus providing a legal basis for financing business.

v. Step up talent training and guide enterprises subject to carbon caps to engage in carbon asset management proactively

Enterprises subject to carbon caps need to manage the risks arising from carbon price fluctuations, and trading instruments can help them lock in financial costs and ensure smooth operation. At the same time, by actively managing carbon assets, these enterprises can expand financing channels and increase income. With the help of professional personnel, they will do better in carbon asset management, and take an active part in market-based carbon transactions. In this way, there will form an ecosystem in favor of the carbon finance market.

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