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Inquiry: Design of a Sustainable Financial System

ESTABLISHING CHINA'S GREEN FINANCIAL SYSTEM

Detailed Recommendations 7: Promote Development of Emissions Trading Markets

This is a background paper to the report: *Establishing China's Green Financial System* published by the Research Bureau of the People's Bank of China and the UNEP Inquiry into the Design of a Sustainable Financial System.

Detailed Recommendation 7:

Promote Development of Emissions Trading Markets

As shown by international experience, carbon trading and pollution rights trading markets are important financial infrastructures for reducing the cost and increasing the efficiency of emission abatement. Carbon trading and pollution rights trading are all market-based instruments of emission abatement with different objectives, regulatory authorities and approaches. The seven major carbon trading pilot programs have been successively initiated since 2013 and the development of a national carbon market has also been put on the agenda with trial operation on a national scale scheduled in 2016. In the current stage of top-level design, the priority for promoting the healthy development of national carbon market is to review the experiences of regional carbon trading pilot programs and strike a balance between fairness and efficiency, liquidity and stability, and political acceptability and practical operationality in light of the characteristics of a national market different from existing regional markets. Meanwhile, the establishment of a pollution rights pricing and trading system should also become a major institutional innovation in the area of China's environmental protection.

(I) Experiences and lessons of pilot carbon markets

On October 29, 2011, the National Development and Reform Commission promulgated the *Notice on Launching Carbon Emissions Rights Trading Pilot*, which approved carbon trading pilot programs to be carried out in Beijing, Tianjin, Shanghai, Chongqing, Hubei, Guangdong and Shenzhen. Launch of carbon trading in Shenzhen on June 18, 2013 marks the first step for implementing carbon trading in China. Without doubt, China's carbon trading pilot programs have achieved the objective of market-based emission abatement to some extent and various localities have made different attempts and explorations in such areas as policies and regulations, technical standards and market operation. They have also established solid technological foundations and capabilities and initially realized the pricing function of carbon market. However, we should also draw attention to the problems arising from the course of pilot programs.

Meanwhile, the development of a national carbon market has been swiftly put on the agenda with trial operation on a national scale scheduled in 2016. The NDRC promulgated *Interim Measures for the Administration of Carbon Emissions Rights Trading* on December 10, 2014, which provides a basic institutional framework for the development of a national carbon trading market to be followed by relevant rules afterwards. In the current stage of top-level design, an essential task of promoting the healthy development of China's carbon market is to draw upon the lessons and experiences of regional carbon pilot programs and strive to strike a balance between fairness and efficiency, liquidity and stability, and political acceptability and practical operationality in light of

the characteristics of national market that are different from regional markets. The following questions arising from the course of pilot carbon trading markets have been observed:

1. An initial carbon trading system has been created but various mechanisms have yet to improve

Various pilot regions have designed whole sets of carbon trading systems, including a series of core mechanisms such as coverage scope, capping and quota allocation, an accounting system, a registration and record filing system, a trading system, information disclosure and market supervision. Five pilot regions have already successfully completed the first-year contract performance. Nevertheless, carbon trading system is a highly complex policy system and it took years of planning and experiment from the deliberation and official operation of foreign carbon markets. However, from the preliminary preparations by the end of 2011 to the official launch in 2013, China's pilot carbon trading programs are not sufficiently prepared and, with the exception of a few pilot programs, most pilot programs were launched in a hasty manner with the following problems:

- **Lack of policy continuity:** As a result of insufficient preparations and inadequate policy design and capacity building, some pilot programs had to frequently revise relevant policies and adjust trading systems after the first year of contract performance.
- **Weak legally binding force:** A carbon trading system cannot be properly implemented without the safeguard of compulsory legally binding force. Among various pilot regions, only Shenzhen, Beijing and Chongqing have adopted local legislation with relatively strong binding force on emitters. Most other pilot regions have followed government regulations and a few pilot regions such as Tianjin have only adopted departmental documents as basis of carbon trading systems. The level of penalty is the lightest for Tianjin, which only requires rectification before deadline and cancellation of policy preferences for three years. Although other pilot regions have employed fines of different magnitudes, the overall level of penalty remains limited.
- **Poor foundations for statistical accounting for carbon emissions:** Prior to pilot programs of carbon trading, China did not have a statistical system in place for greenhouse gas emissions at the corporate level and various pilot programs all faced the dilemma of incomplete history data. Most pilot programs acquired certain data on the basis of history emission data but these retroactive data are relatively poor in quality. In addition, the competency of data verification institutions is uneven with inconsistent verification standards. Naturally, certain deviations will exist in those policies instituted on the basis of these data. For instance, the capping of carbon emissions is set too high and the benchmark values of carbon emissions are designed improperly.
- **Lack of transparent carbon market information:** Various pilot carbon trading programs all have the problem of information transparency for the inclusion of corporate emission data, confirmation of quota volume, quota allocation scheme and trading data. The reason for such transparency problems is that local governments and exchanges are

unwilling to disclose relevant data to the public, resulting in a highly policy driven market, greatly increased trading cost and inefficiency.

- **Incomplete market regulation:** Currently, regulatory authorities have attached inadequate attention to regulation while focusing on regulatory design and the issuance of various policies to address problems that emerged at every turn. However, a complete market regulation system is not in place for both market players and trading activities. Efforts must be made to enhance certification, management and supervision of market players and strengthen the identification, prevention and penalty of insider trading and market manipulation.

2. Challenges confronting quota allocation

Quota allocation is a major difficulty of carbon trading system and represents the emission rights of emitters in contract performance years as the main objects of transaction. Allocation of emission quotas decides the emission abatement and contract performance costs for emitters. Among the seven pilot programs, with the exception of independent declarations adopted by Chongqing, six pilot programs have adopted three mainstream quota allocation methods, i.e. history method, benchmark method and auction method with respective positive attempts and innovations. The following experiences and problems can be identified:

- **History method has the problem of equality:** In addition to the pilot programs of Chongqing and Shenzhen, the other five pilot programs have adopted free allocation methods based on the history of emission intensity or historic emissions. This method is easy to operate but has brought about significant equality issues. For instance, the structural changes of industry climate cycles give rise to an equal quota allocation; earlier emission abatement actions are not taken into consideration; emergencies such as maintenance shutdown and incidents are not well represented in quota allocation. Various pilot programs have attempted to address these problems through ex-ante quota allocation and ex-post quota adjustment but with poor results. In some cases, the problem of 'quota rent-seeking' has emerged and some cap-limited companies have attempted to increase quota allocations through various public relations efforts, giving rise to new inequalities.
- **Benchmark method is subject to the impact of subjective factors:** Shenzhen is the only pilot program that has adopted a benchmark method and employed a benchmark method of quota allocation for electric power, water supply and fuel gas sectors. Value-based carbon intensity indicators (carbon emissions per unit of industrial value-added) have been put into place based on the explorations of manufacturing and other industrial sectors. Other pilot programs are still confined to electric power and heating supply sectors and a few other sectors in their attempts of establishing the benchmark method. The advantage of the benchmark method is the representation of intra-industry equality that encourages companies to take energy conservation and emission abatement actions. The downside is difficulties of implementation and impacts of subjective factors.

Currently, the benchmark method of electric power sector has been adopted the most extensively among the pilot programs but inconsistent benchmarks also exist for different regions and incentives have a limited effect.[1]

- **Auction mechanism is not flexible:** Auctioning is considered, as an allocation method, the most favourable to price discovery. However, auctioning will also increase the performance cost of companies and therefore, its acceptability is limited in the initial stage of market development. This drawback has been fully reflected in the pilot program of Guangdong province, where the 'entrance ticket system' (3 percent of paid quota should be auctioned in order to receive 'entrance tickets' before the 97 percent of free quota are distributed) has increased the threshold for companies to participate in the carbon market and the one-off payment of 3 percent quota greatly affected the cash flow of companies and encountered strong resistance. Currently, Guangdong has already optimized its auctioning system, cancelled the 'entrance ticket system', substantially reduced the bottom prices of auctioning, and permitted non-cap-limited companies to participate in the auctioning. Hubei province, Shanghai municipality and Shenzhen city have carried out an auction respectively. Among them, Hubei auctioned 30 percent of quotas reserved by the government through open bidding and permitted non-cap-limited companies to access primary markets.

3. The market size and price range have developed but the liquidity shortage is severe and carbon price signals are inaccurate

After one year of operation, the secondary markets of various pilot regions have assumed an initial scale and the band of overall market price fluctuations has been limited between 20 yuan/ton and 90 yuan/ton, which sets a good example for the band of future national carbon market price fluctuations. However, the problem of serious liquidity shortage has also affected the accuracy of carbon pricing.

First, a severe shortage of liquidity. Between the launch and August 22, 2014, the trading volume of various pilot regions is less than 13 million tons per day with total trading value less time 500 million yuan (US$80 million), which is smaller than the peak single-day trading volume of Europe in carbon market. Market liquidity is jointly determined by such factors as institutional design, risk preferences of products and participants, as well as other institutional constraints. Currently, regional quotas are local privileges and the size of quota volume and tightness of quota allocation directly affect a region's trading vibrancy. Trading products in the market are limited and confined to the spot trading of quotas. For various reasons, by August 22, 2014, China's Certified Emission Reduction Program (CCER) was yet to be launched in the market. Various pilot regions cancelled offset ratios and the trading volume of the CCER is expected to be very limited. Most of market

[1] Li Xueyu: Dilemma of Quota Allocation Remains As China Prepares to Build a National Carbon Market, 21st Century Business Herald, September 24, 2014.

players are cap-limited companies, which are engaged in real industries with limited awareness of carbon assets and low acceptability of carbon trading. Unspecified procedures of accounting and ledgers, invoice issuance and tax types have presented cap-limited companies with complicated internal communication and approval procedures, which have dampened their enthusiasm to take part in trading activities. Although most pilot regions have been opened to investment institutions, investment institutions have maintained a wait-and-see attitude due to the uncertainties of the carbon market and meagre liquidity. In addition to individual investors, Shenzhen has recently introduced overseas investment institutions but Shenzhen has the smallest market size compared to other pilot regions, which makes it difficult to substantially increase trading volume. Subject to the "37/38 Document" of the CSRC, carbon trading platforms have adopted the trading model of "T+3/5" that restricts the vibrancy of market trading.

Second, the carbon price signal is inaccurate. An important function of the carbon market is to release carbon price signals that reflect the cost of carbon emissions abatement. However, prices vary greatly across different pilot regions. By August 22, 2014, the highest market price reached 130.9 yuan/ton (Shenzhen) and the lowest price was 20.74 yuan/ton (Tianjin) while the highest average strike price was 70.2 yuan/ton (Shenzhen) and the minimum strike price was 29.6 yuan/ton (Tianjin). Price fluctuations are the greatest in Shenzhen within the range between +80 percent and -62 percent and relatively small in Shanghai's and Beijing's markets. Most pilot provinces and municipalities have defined performance periods to be June or July of each year and in 2014, the last month before contract performance accounted for more than 65 percent of total trading volume for all pilot regions, which indicates that most transactions take place in the last month with the main purpose of contract performance, an excessive trading concentration and inadequate market effectiveness. As a result, it is difficult to develop fair prices.

4. Enterprises are becoming aware of the urgency for emission abatement but the awareness of carbon asset management remains poor

Most cap-limited companies have initially developed an awareness of emission abatement through the institution of trading rules for various regional carbon trading pilot programs, promotion and capacity building and more than one year of trading. However, given the novelty of carbon trading, rapid progress of pilot programs and insufficient consultations with stakeholders, some companies have yet to fully understand the significance and objectives of this policy and inevitably tend to resist its implementation, as reflected in their lethargic participation in carbon trading and uncooperativeness with the verification of carbon emission reports. Awareness of carbon asset management is generally rather weak.

Effective carbon asset management will not only achieve assets compliance, but also help abatement companies to lock up prices and minimize price risks in the process of emission abatement while maximizing the revenues from carbon assets. However, most companies have yet to establish an effective carbon assets management system and only a few companies have specifically established carbon assets management companies to enforce consistent management

of carbon assets of cap-limited companies affiliated to the corporate conglomerates. Currently, companies have adopted different management methods for carbon assets and established various management departments including financial department, office of energy conservation and emission abatement management, as well as administrative office and comprehensive affairs office. Due to the lack of professional talents, most companies have appointed department managers or deputy general managers as responsible persons consisting of engineers or energy and environmental management personnel, who lack the knowledge, experience and confidence for taking part in market transactions.

(II) Policy recommendations on developing a national carbon market

According to the NDRC planning, relevant administrative measures on the national carbon market will be promulgated by the end of 2014 in the following stages: stage of preparation between 2014 and 2015 characterized by the improvement of relevant laws and regulations, technical standards and infrastructure development; stage of operation and improvement (Stage I) between 2016 and 2020, when carbon market will be launched and improved on a comprehensive basis; stage of further development after 2020 (Stage II), when the scope of participating companies and trading products will be expanded and attempts of integration with international markets will be made. After careful research and analysis, we would like to propose the following policy recommendations regarding the development of a national carbon market:

1. Implement both 'top-down' and 'bottom-up' development approaches

Although the objective of carbon trading pilot programs is to provide experiences for developing a national carbon market, regional carbon trading pilot programs will not be terminated indiscriminately with the establishment of a national carbon market. Efforts must be made to effectively integrate existing pilot markets with the national carbon trading market and allow flexibility on the part of local governments. The national carbon market should be a multi-tiered market system that includes both a national secondary trading market and a regional primary market, as well as carbon finance market. Local governments should play a major role in the development of the latter.

Therefore, two pathways exist for the creation of a national carbon market: **first, a top-down carbon market,** namely, the NDRC creates national systems of emission abatement objectives, contract performance, MRV, market operation and supervision and establishes consistent market rules to carry out market transactions under the new framework. **Second, a bottom-up carbon market,** i.e. regional capital markets will be granted with greater autonomy in such areas as interconnections with other non-pilot regions and national carbon market, independent quota allocation, together with flexible use of funds raised from auctions. Attention should be paid to the following two important questions in creating the carbon market:

First, a reasonable allocation of authority between central and local governments. Quota allocation is the key issue of carbon market and concerns the balance between fairness and

efficiency. Given the great complexity of quota allocation, various regions have already adopted different allocation methods with certain experiences. The key to quota allocation for national carbon market lies in the unification of allocation rules while local governments should be endowed with the rights and flexibility of quota allocation.

Second, a successful transition of pilot carbon exchanges. China's existing seven pilot carbon exchanges have developed highly complex operational models and equity structures yet the national carbon market needs to be supported by no more than two exchanges. This indicates that at least five exchanges need to be converted and the following two directions of conversion have been identified: first, develop into local auctioning platforms; second, transform into carbon finance service institutions. Efforts must be made to properly address the issues of the conversion costs of carbon exchanges and the identification of standards for national carbon trading.

2. Improve relevant institutional design and effectiveness evaluation

First, establish a steering work group of top-level design. Future carbon market cannot function well without an appropriate design for carbon market mechanisms, which requires decision-makers to not only have an in-depth knowledge about carbon market but also be familiar with economic, financial and market operations. China should put together a work group of top-level design for national carbon market consisting of representatives from relevant government departments (the NDRC, local development and reform commissions of pilot regions, the CSRC and the Ministry of Finance), academia, exchange institutions (including cap-limited companies and investors), third-party institutions and various pilot markets, with a view to developing a joint working mechanism, create a regular evaluation mechanism based on the experiences of existing regional carbon markets, properly evaluate policy effectiveness, and constantly improve the top level design.

Second, enhance legal binding force. Under the constraint of *Interim Measures for the Administration of Carbon Emissions Rights Trading*, efforts should be made to identify carbon emission rights, increase the legal binding force of the Interim Measures and increase the cost of violations. In addition, strict information disclosure mechanism should be put into place to increase market transparency, long-term policy stability and market predictability, including policy