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# How to Cope with Global Warming--Simple Analysis about Carbon Emissions Trading in China

Chen Bingyu<sup>1</sup>, Guo Yuchen<sup>1</sup>, Wang Chunling<sup>1</sup>, Zhu Xin<sup>1</sup> and Qi Wenhan<sup>2</sup>

<sup>1</sup> Tongji University, 1239 Siping Road, Shanghai, China, 200092

<sup>2</sup> Shenyang Ligong University, Nanping RD 6, New Hunnan District, Shenyang, China, 110159;

**Abstract.** Global warming caused by rapid development of human society needs to be solved urgently, and the carbon emissions trading has become an important tool to deal with the greenhouse effect in the world. The domestic carbon trading in China is still in its infancy. This paper analyzes the operation mechanism and existing problems of carbon emissions trading in China, and puts forward some suggestions for perfecting the national carbon emissions trading market.

## 1 Introduction

After human beings walked into the industrial era, burning coal, oil and other fossil fuels for economic development has produced a large amount of carbon dioxide, causing the continual global warming. Global warming can make icebergs melt, and sea levels keep rising; not only can it bring disasters to living things, but also bring a survival crisis to mankind. So, it is urgent to cool the earth down. In 1997, the Kyoto Protocol first proposed the use of carbon emissions trading to control the carbon emissions of countries. Since the marginal cost of carbon abatement in developing countries is much lower than that in developed countries, the Kyoto Protocol introduces the Clean Development Mechanism (CDM) which allows developed countries to implement emissions reduction projects in developing countries. Developing countries can obtain capital and technology support from developed countries, and developed countries can achieve Certified Emission Reduction at a lower cost. The Clean Development Mechanism is one of the most important measures for the whole world to control the greenhouse effect, while China is also making bold attempts to deal with carbon emissions domestically.

## 2 The Connotation of Carbon Emissions Trading

### 2.1 Basic Introduction

Carbon emission right refers to the right owned by regions or enterprises to discharge a certain amount of carbon dioxide, and it's stipulated by the government for the purpose of reducing carbon emissions. When regions or enterprises obtain carbon emission rights, they can sell the excess rights if the quota they have is sufficient, or they can buy emission rights if insufficient. Thus the carbon emissions trading market is built. The carbon emissions trading takes the advantage of market mechanisms to cope with global warming, and pushes the development of low-carbon economy with low cost and high efficiency.

On January 25, 2005, our country approved the first CDM project, and carbon emissions trading was officially set up in China. In October 2011, the National Development and Reform Commission



established seven carbon-emissions-trading pilot areas (Beijing, Tianjin, Shanghai, Chongqing, Hubei, Guangdong and Shenzhen). In December 2017, the NDRC issued the “*National Carbon Emissions Trading Market Construction Plan (Power Generation Industry)*”, and a unified carbon emissions trading system finally completed the overall design. <sup>[1]</sup>

## 2.2 Operation Mechanism

Studies show that China is now in the rising phase of the CO<sub>2</sub> Environmental Kuznets Curve <sup>[2]</sup>, which means that high GDP growth will bring high CO<sub>2</sub> emissions. The contradiction between economic development and environmental protection is becoming increasingly acute. The market and the government are two powerful hands to allocate resources. The public property and externality of environmental products lead to the failure of pure market means. Government management prefers mandatory administrative means, while administrative means often bring the following problems: high cost caused by information collection and regulatory system; inefficiency caused by information asymmetry and internal contradictions that may exist in various administrative regulations; little reward caused by lax enforcement, rent-seeking behavior and legal gray zones, etc. Carbon emissions trading is an organic combination of government regulation and market mechanisms, providing a new direction of energy conservation and emission reduction.

China is getting to the stage of transition to the national unified carbon emission market. The allocation of carbon emissions amount is in a top-down way. The central allocates certain carbon emissions rights to each region with the consideration of historical carbon emissions data, energy structures and economic development level. Local governments will then formulate specific enterprise scopes, distribution methods, detailed allocation quotas of enterprises, etc. The operation of the carbon emissions trading market has produced series of benefits.

- First, carbon emissions trading provides greater flexibility to both the seller and the buyer companies. In the carbon emission market, the enterprises equipped with advanced production process and lower cost of carbon emission reduction which possess excess carbon emissions rights are the supply side; the enterprises equipped with backward production process and higher cost of carbon emission reduction which need carbon emissions rights are the demand side. Compared with the mandatory carbon emissions cap, the market transaction provides enterprises more operational space and resources can be more properly allocated.
- Secondly, the carbon emissions trading clearly prices carbon dioxide, and reasonably quantified the cost of environmental pollution. The principle of “polluter pays” is followed. Companies that seek to maximize their profits have to take the cost of pollution caused by carbon emissions into account, and the externality has been internalized.
- Finally, the government controls the total supply by allocating proper carbon footprints. When the cost of purchasing carbon emissions rights exceeds the cost of carbon emissions reduction, companies will focus on researches and popularization of cleaning processes, and reduce the generation of carbon dioxide. This will lead to a low carbon economy.

## 3 Existing Problems

Although carbon emissions trading is a powerful tool for coping with global warming internationally, Chinese domestic carbon emissions trading is less mature compared with foreign countries. There are still many problems.

### 3.1 From the Perspective of Government

At present, domestic carbon trading lacks uniform and complete laws and regulations, which leads to certain difficulties during the implementation and supervision. The top-down pattern of quotas may result in the lack of procedure transparency. The initial allocation is likely to be manipulated, and it's difficult to avoid rent-seeking behaviors. Besides, there is one of the drawbacks of government regulation: information asymmetry. In order to determine quotas, the government needs to collect a large amount of information. If the government offers too many initial quotas, reduction goals may

seem easy, while actually the transaction mechanism will be pointless.

### *3.2 From the Perspective of Market*

A national unified market has yet to be established. Since there is few corresponding laws and regulations for guidance, different regions have formed different market systems in certain aspects of the transaction, such as the definition of property rights, paid or unpaid distribution methods, etc. The trading system is imperfect and separated from each other, resulting in a dull carbon trading market with low trading volume and frequent price volatility. Meanwhile, fragmented management also loses the cost advantage brought by the scale effect.

### *3.3 From the Perspective of Enterprises*

The immature market makes enterprises slightly passive in the transaction. In this initial stage, enterprises commonly lack awareness of environmental protection and carbon trading, while the trading market presents volatility and instability. Therefore, some enterprises still hold a wait-and-see attitude towards the trading market.

## **4 Suggestions to Perfect the Unified Carbon Trading**

In response to the above problems, we put forward the following four suggestions on how to improve the national carbon emissions trading.

### *4.1 Establish and Improve Relevant Legal and Regulatory Systems.*

In order to successfully transit from the separated market to the unified one, central government should speed up the establishment and improvement of the legal system for carbon emissions trading. Based on general laws, local governments can build corresponding regulations in light of local conditions to guide the improvement of the market operation mechanism. In addition to the legal system, the regulatory system cannot be ignored. It is necessary to supervise disputes and illegal transactions, as well as government behaviors. Given the transparency of the market, we can guarantee the fundamental purpose of energy conservation and emission reduction, and arouse enthusiasm of enterprises to participate.

### *4.2 Accelerate the Establishment of a Unified National Market.*

Establishing a nationally unified market not only refers to geographical unification, but also refers to the national management and trading platform. In addition to gradually lifting regional and industry restrictions, the government should also improve the unified official trading platform, break the transaction barriers between regions and reduce transaction costs. What's more, we can pay attention to the data analysis of the annual quota completion, trading conditions, and economic growth, and dynamically control the total supply of carbon emissions rights according to the emission reduction target.

### *4.3 Develop Diverse Carbon Financial Derivatives.*

The current domestic carbon emissions trading market has only simple types of products. The government may develop more types of carbon financial products, such as carbon futures, carbon options, etc., which can effectively hedge bets and avoid losses caused by sharply fluctuating spot prices. There may be speculation if carbon financial derivatives enter the market. Appropriate speculation can stimulate the market, while the government needs to further strengthen the supervision of the derivatives market.

### *4.4 Coordinate Policies of Carbon Emissions Reduction and Pollution Control.*

Environmental protection is multifaceted, and carbon reduction is only a small part of it. Jump out of the inherent zone, and consider the carbon emissions trading mechanism under the total framework of environmental protection measures. The government may coordinate policies of carbon emissions

trading and pollution discharge permit to make environmental protection more efficient.

## 5 Conclusion

The Chinese domestic carbon emissions trading is in its infancy, and there is still a long way to go to form a mature market. At the same time, we should also realize that cooling the earth down is not the responsibility of a certain country or a certain enterprise. It is the common responsibility of mankind.

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