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Interactions and coordination between carbon emissions trading and other direct carbon mitigation policies in China

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ABSTRACT

China has decided to rely on a variety of policy approaches to achieve its ambitious greenhouse gas mitigation targets, with carbon emissions trading as the latest policy alongside many existing policies, such as GDP CO₂ intensity reduction, energy efficiency and renewable energy policies. This article is intended to elucidate from a qualitative perspective the interactions between emissions trading and other relevant policies in China through the analysis of their elements, policy processes, characteristics, dimensions, performances and impacts. Intensive interviews were conducted with more than 50 major stakeholders involved in the policy formulation and implementation process, including policy makers at different levels, experts, industries and verifiers. The authors themselves were also deeply involved in the policy formulation and implementation process. The analysis shows that coordination between emissions trading and other policies, which is urgently needed from many aspects, is lacking in most aspects in practice for many reasons, among which institutional vested interests are possibly the most important. It is proposed that coordination should be conducted at both political and technical levels to achieve the full benefits of emissions trading, and starting from technical aspects may be a practical approach.

1. Introduction

China formulated and published its mid-term quantitative greenhouse gas (GHG) mitigation targets on the occasions of the Copenhagen and Paris climate conferences [1,2]; these targets included reducing the carbon intensity of its economy by 40–45% by 2020 and 60–65% by 2030 based on 2005 levels, achieving the peak of carbon dioxide emissions by approximately 2030 and making a strong effort to peak early, and increasing the share of non-fossil fuels in primary energy consumption to approximately 20% by 2030.

To achieve these targets, a series of policy instruments have been or will be utilized, as elaborated in China's Intended Nationally Determined Contributions. In addition to the traditional command-and-control policies, such as the "Energy-saving and Low Carbon Action among 10,000 Enterprises Program" designed for the 12th Five-Year Plan Period (2011–2015) [3] and renewable energy development-supporting policies [4], China has also decided to rely more on market-based approaches, mainly carbon emissions trading system (ETS), within the broad policy context of comprehensively deepening its reforms [5].

As a large country with more than 30 provincial-level regions of

divergent development stages, China has the policy tradition of "crossing the river by feeling the stones" [6], i.e., any major policy to be implemented nationwide must first be piloted in certain regions to test its applicability and to identify possible improvements to be made. ETS is the first major market-based approach to be used in China to control GHG emissions, and the same policy tradition was followed, with the policy being piloted in 7 regions before a nationwide carbon ETS was developed [7]. According to its commitment, China's national ETS will begin in 2017, and substantial progress has been made in many aspects of the development of the national system [8–11].

Many of the energy conservation and renewable energy policies implemented in China establish concrete obligations for major GHG-emitting enterprises that will also be regulated under China's national ETS, for example, energy conservation targets and renewable energy development targets for power generation companies [12]. Other policies, such as economy's carbon intensity reduction targets for the whole country and each province, will affect the design of the key elements of the national ETS, including emissions cap and allocation approaches. Strong interactions between China's national ETS design and relevant mitigation policies are envisaged, and effective coordination is of great importance for the success of these policies.

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The interaction of policies/policy mixes and/or policy combinations has been a very important theme of energy and climate policy studies in recent years, including both theoretical assessment frameworks and empirical studies [13–19]. The development of carbon ETS in China, including both the pilot systems and the national system, has also been covered by many articles. The discussions have mainly focused on the detailed designs of the various systems, the features of the design and the major issues/consideration underpinning the designs [20–25], and only a very limited number of articles have touched on the issue of coordination between the ETS design and specific sectoral policies or energy and mitigation policies, mainly the necessity of coordination [26–28,23,29].

In this paper, we discuss the major design features of China's national ETS, China's main dedicated mitigation policies, energy conservation and renewable energy policies, and the possible interactions between ETS and other policies. The underlying policy processes related to these policies are analysed, the lack of coordination between ETS and other policies is identified, and the major reasons are presented. Proposals for possible coordination between ETS and other policies are also developed. The integrating analytical framework proposed for sustainability transitions analysis is followed in this paper [13].

To carry out the analysis, intensive interviews were conducted with more than 50 major stakeholders involved in the policy formulation and implementation process between September 2016 and December 2016, including relevant policy makers at different levels, experts, industries and verifiers. The issues discussed during the interview include: Are there any interactions between ETS and other mitigation policies? How do they interact with each other, if any? Have these interactions been considered in policy design and implementation? What needs to be further done to address these interactions? The average length of one interview is about half an hour. The analysis also benefited from the direct experiences of the authors themselves gained through their direct and deep involvement in the formulation and implementation processes of relevant policies.

The remainder of the paper is structured as follows. Section 2 presents major features of the key elements of China's national ETS that may interact with other major mitigation policies and the corresponding policy process. Section 3 introduces the main objectives, policy processes, characteristics, dimensions, performances and impacts of other dedicated major mitigation policies in China, and possible interactions with the ETS and coordination between them are analysed. Similar information and analysis regarding energy conservation and renewable energy policies in China are provided in Sections 4 and 5. Sections 3, 4 and 5 emphasize the policy process, which is crucial and has received little attention in previous studies. In Section 6, brief conclusions are given. It should be noted that this paper intends to discuss the interaction and coordination issues from not a quantitative but a qualitative perspective.

2. China's national carbon ETS

For the ETS to be initiated in 2017 as announced, China's national ETS authority, the National Development and Reform Commission (NDRC), has been busy with the preparation work related to many aspects of the system, including legislation; coverage; allocation approaches; the monitoring, reporting and verification (MRV) system; accounting and verification of historical data of enterprises; and off-setting rules. As of January 2017, the main legal basis for the design and implementation of the system is the *Interim Management Measures on Carbon Emissions Trading* (the Interim Measures) issued by the NDRC [8], which clarifies the main roadmap for developing the national ETS and the fundamental rules of the system [25]. As administrative rules, the Interim Measures are weak in the sense that many mechanisms that are crucial to the effective operation of the system such as so-called

administrative licensing,¹ e.g., the eligibility requirements for third-party verifiers, cannot be established. To address this legal challenge, a State Council *Regulation on National Carbon Emissions Trading* (the Regulation) was prepared [9] and is now undergoing the review process.

2.1. Major design features of the system

In accordance with the Interim Measures and the Regulation, China's national system will be a unified system with the same rules applied to all regions covered in the system. No regions will receive preferential treatment. Major design features of the system that may have interactions with policies in other areas are briefly presented below.

2.1.1. Coverage

Although not formally announced, it is clear from the current preparation process [11] that the system coverage at the initial stage will not go beyond eight sectors, i.e., iron and steel, electric power, chemicals, building materials, paper-making, nonferrous metals, petrochemicals and domestic civil aviation. In addition, another emissions threshold will be applied, i.e., enterprises with annual emissions of more than 26,000 tons of CO₂ or annual energy consumption of more than 10,000 tons of coal equivalent (tce) in any year between 2013 and 2015. With these standards, approximately 7000 enterprises, all energy-intensive ones, will be covered by the national system.

2.1.2. Allocation approaches

Free allocation will play a dominant role in the initial stage of China's national ETS, with auctioning being complementary and its share gradually increasing. Most of the sectors to be covered in the system are the key target sectors of China's supply-side structural reform policy and are facing the challenging tasks of reducing over-capacities. One exception is the domestic civil aviation sector, which has been undergoing rapid growth in recent years and will continue to grow rapidly.

To ensure equal treatment of enterprises in different regions, the benchmarking approach will be the first choice for free allocation, with the historical intensity-based approach being the second choice. Meanwhile, the grandfathering approach will be used as a last resort in cases where benchmarking is not possible due to data challenges. An additional issue is determining which production level, historical level or real level shall be used for allocation in case of benchmarking and historical intensity-based approaches. Using the historical production level in allowance allocation may not only lead to considerable over-allocation in the case of economic downturn, as demonstrated in the second phase of the EU ETS [30] but also elicit serious political objections by sectors experiencing rapid growth, such as China's domestic civil aviation sector. To address these possible negative impacts, real production data will be used for allowance allocation in China's national system.

2.1.3. The MRV system

Data are crucial for the design and operation of an ETS, but ensuring the availability and quality of data is especially challenging for China's national ETS given the existing poor statistical system on energy consumption and GHG emissions. The intention to use primarily intensity-based allocation approaches—both benchmarking and historical intensity-based ones—further exaggerates this challenge.

Establishing a robust MRV system has been one of the major areas of efforts by the NDRC. Four major components are envisaged, i.e., emissions accounting and reporting guidelines, eligibility requirements

¹ Administrative licensing indicates that the administrative authorities approve individuals, legal staff and organization to conduct specified activities upon their application and meeting relevant pre-determined requirements.

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