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COMMENTARY:

Carbon emissions trading in China

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China is to introduce a national emission trading system based on regional pilot projects despite structural hurdles ahead.

As the world's largest greenhouse gas (GHG) emitter, China reportedly attempted to block the development of the Copenhagen Accord in 2009 (ref. 1). Before the Copenhagen negotiations, however, the country substantially scaled up its unilateral commitment: carbon intensity down by 40–45% below 2005 levels by 2020. Although the international climate community is happy to see such an ambitious timeline, the question is how this can be achieved. China – halfway through its transition from a socialist economy to a market economy – promises a market-based solution.

Carbon emissions trading is now on China's national agenda. Nonetheless, such trading is not seen as a viable option until the limits of 'command-and-control' policies became clear (ref. 2). The country reduced energy intensity by 19% from 2006 to 2010 against the target of 20%. This was achieved largely through regulation and top-down administrative orders. The costs involved were prohibitive; for example some provinces were forced to shut down their industrial capacity towards the end of 2010 in order to meet their assigned energy-saving targets (ref. 3). The marginal success came with growing interest in market-based strategies for GHG control.

During the same period, carbon trading has found its way in industrialized economies, including the European Union (EU), the North-eastern US, New Zealand, and recently Australia (ref. 4 and 5). In keeping with global trends, China has come to realize the advantages of creating its own domestic carbon markets. Political motivations include environmental commitments, and expected economic benefits to be generated from the fast-growing carbon finance industry. Global carbon trades, with a soaring market value of

US\$176 billion in 2011 (ref. 5), offer numerous economic opportunities. In fact, cash has been flowing into China to support the development of its domestic emission trading schemes (ETSs), in the form of international assistance from the Asia Development Bank, and the EU, and the World Bank, among others (ref. 6).

Carbon trading initiatives

Carbon trading requires that a regulatory body set a cap on the amount of carbon emissions and issue emission permits accordingly. Under the policy, firms are required to hold emission permits equivalent to the carbon emissions they produce. These permits are transferable in markets; those firms that are able to cut back emissions at lower costs sell excess permits, whereas those that find it more costly to reduce pollution buy permits. In theory, opportunities for trading could ensure pollution reduction at the lowest cost.

Carbon trading is one of the key policy initiatives listed in China's high-profile '12th Five Year Plan for National Economic and Social Development' (2011–2015), which entered into force in March 2011 upon adoption by the National People's Congress. The short-term goal is to establish trans-provincial and trans-regional ETSs in transition to a national scheme by 2015 (ref. 7). Centrally approved pilot schemes are due to operate in 2013 and onwards in five municipal areas, Beijing, Chongqing, Shanghai, Shenzhen and Tianjin, and two provinces, Guangdong and Hubei (Figure 1). These areas account for about 18% of the country's total population and 27% of its national gross domestic product in 2010 (ref. 8).

These regional pilot projects are preceded by uncoordinated growth of many trial carbon markets across the country without effective regulatory systems in place. Domestic carbon trading markets in China have proliferated since 2008. More than twenty environment/carbon exchanges have been set up in various coastal and inland provinces, and even counties, where formal approval from the central government is not essential. Yet, there is no parallel growth in domestic voluntary demand. Chinese firms are subject to no binding emission reduction targets, and the majority of the certified

emissions reductions are exported. There are more sellers than buyers in these markets.

These domestic carbon markets compete with each other for the already limited supply of trading opportunities. Only three million tonnes of carbon emissions were traded in the China Beijing Environment Exchange, the flagship carbon market located in the nation's capital, in three years since its establishment, falling short of the daily trading volume in Europe (ref. 9). Marginal surplus is recorded only in Shanghai. Few transactions took place in its counterparts in Changsha and Shenzhen in the first few years since operation. Premature closure of small municipal exchanges is then not surprising (ref. 10). Weak domestic demand has constrained the scale of individual carbon exchanges, and this is aggravated by their unchecked proliferation. Actual carbon trading activities are limited in these markets which are created primarily to improve public image.

Regulation

Regulatory infrastructure is far from complete. According to a State Council's report (ref. 11), one of the pressing issues is the eligibility of market participants, which is related to the quality of the 'certified' emission reductions being traded. At present there are few regulatory restrictions to market entry, which could have excluded unqualified projects. There are also considerable challenges in setting up robust monitoring, reporting and verification mechanisms in China (ref. 3), where legal enforcement is constantly a problem confronting all levels of the society. Accurate and consistent measurement of emissions is the cornerstone of a successful ETS. In China, the current systems are predominantly based on self-reporting. Regulated firms prepare emissions reports by themselves subject to occasional inspections by environmental agencies. They are only required to report fuel inputs; emissions are not monitored on a regular basis (ref. 12). Punitive mechanisms are poorly constructed. A firm would not be fined twice for the same polluting activity in the event of non-compliance, consequently creating little motivation for curbing emissions or trading emission permits (ref. 12).

‘Cap-and-trade’ GHG control mechanisms necessarily require an enforceable limit on total emissions. Provincial and municipal leaders in China are reluctant to put up an emission cap, which is regarded as a potential constraint on local economic growth. The strong administrative resistance is structural; performance of local chiefs is primarily measured against prescribed targets closely associated with the economic growth of the regions they govern. The seven pilot sites are regional economic hubs driving the country’s economic success and are home to many emission-intensive industries. In these areas, the desire for continuing growth has discouraged attempts to introduce legally binding emission targets.

Nevertheless, the central government is determined to create a national ETS in a short timeframe, and local governments have limited constitutional authority to resist. A possible outcome is that local authorities will be left to make substantial adjustments that respect the centrally adopted framework as economic circumstances change. Currently under the pilot schemes they have the discretion to determine emission targets and permit allocation rules, and to develop governance systems and market infrastructure (ref. 5). Substantial sector-specific exemption and reserved emission allowances, for instance, are likely to be included (ref. 6).

Regional economic considerations

The diverse locations of the pilot schemes reflect the different levels of economic activity and development in China (ref. 6). Guangdong, for example, is the country’s most developed province, whereas Hubei is at a lower level of development. The diversity of pilot sites allows China to test different ETS models before implementation of a national ETS. On the other hand, however, this raises a regional inequality issue. Competition for capital between provinces and municipalities is intense. To minimize economic impacts, provincial and municipal governments are likely to re-arrange economic activities within their jurisdictions to the disadvantage of the least developed areas. The mountainous north of Guangdong, for instance, has a small economic scale and is among the poorest in the country, whereas their southern municipal counterparts are among the most developed with a high concentration of energy-intensive industries.

A rational strategy amenable to economic theory is to reserve the rights to emit GHGs to the south and limit those of the north. There are incentives for provincial administrators to enforce emission caps on the less developed areas strictly and to excuse those in the other end of the economic spectrum. At the national level, equitable allocation of emission permits would be even more challenging for the central government, given the substantial variations in economic structure, growth rates, and energy consumption across provinces (ref. 3).

Currently, carbon trades in China simply serve to demonstrate the compatibility of the market with the GHG control regime. Carbon trading markets are restricted to sub-national levels and found in multiple locations in the country and with varying levels of success. Trading volumes grow slowly as there is no nationwide emission cap and emission mitigation remains a voluntary commitment. Legal infrastructure is not complete and regulatory uncertainties abound. The Chinese carbon trading markets play a symbolic role rather than a functional one (ref. 3). Nonetheless, the ETS pilots may eventually find the ways forward by trial-and-error, for which national coordination is underway. Armed with powerful state machinery, China may be able to avoid the earlier failures of the EU ETS.

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