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China's Energy Conservation and Carbon Emissions Reduction System

by Hao Zhang

hina's energy consumption has received global attention due to the large amount of carbon dioxide the country has produced during its current industrialization and its heavy reliance on fossil fuels, particularly coal.¹ The country's huge population, combined with its high rate of economic development, is unprecedented; yet the fast-paced, ongoing economic development in China continues, and the rate of gross domestic product (GDP) growth increases every year. Energy consumption is a core characteristic of China's fast-developing economy,² and an increase in energy consumption has been observed to be critical to China's continued development.³ The nation's overconsumption of fossil fuels and its low energy efficiency in the name of development have largely contributed to the status quo of China's carbon emissions.

As the world's largest carbon dioxide emitter,⁴ China's attitude on climate change has been a cause of general concern for the international community. Even though China is not listed as an Annex I country subject to the mandatory target of reducing carbon emissions under the Kyoto Protocol, such a large emitter of carbon dioxide should take some action on its national low-carbon policy. As early as 2004, the Report on China Energy Development Strategy and Policy Study forecasted the rise of the marginal cost of carbon reduction in China,

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China is one of the largest receivers of financial support to develop offset projects under the Kyoto Protocol's Clean Development Mechanism (CDM) and has hosted the largest number of CDM projects since the Protocol took effect in 2005.⁶ The renewable energy sector has been the leading beneficiary under the CDM in China, with more than 70% of all CDM projects approved by China's National Development and Reform Commission (NDRC) belonging to the renewable energy category.⁷ A robust industry in support of CDM projects has grown in China despite policy hurdles regarding ownership, pricing, and foreign investment, as well as post-2012 uncertainties.⁸

Confronted with international and domestic pressure, China has pledged to implement the domestic binding target⁹ of reducing carbon emissions by 40-45% by 2020 compared to the 2005 level.¹⁰ China now finds itself with the daunting task of continuing its economic growth while reducing its carbon use. Some argue that China's future carbon reduction can be achieved by slowing economic growth, reducing energy intensity, developing renewable energy, and increasing the carbon sink capacity of the carbon offset sectors.¹¹ But others argue that cutting energy intensity and carbon emissions at the cost of economic development is not a realistic option for China, both at the central and local level.¹² Despite ongoing debates on how to address energy consumption and greenhouse gas (GHG) emissions challenges, the Chinese government has begun integrating the concept of "energy efficiency and emissions reduction" into its overall national and local plan of social and economic development. It is expected that the primary method for China to contribute to the global mitigation effort while simultaneously achieving binding domestic targets is through identifying and

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The Basis: China's Environmental Governance

China's legal framework on environmental protection has been largely improved since the 1990s. The country has recently promulgated a number of laws and regulations to curb environmental degradation and damage.¹³ The central ministerial reform in 1998 and 2008 also enhanced the recognition and functionality of environmental governance within the central government, where the State Environmental Protection Agency (SEPA) was promoted to the ministerial level and the new Ministry of Environmental Protection (MEP) was made part of the cabinet in 2008.¹⁴ Despite an improvement in the environmental governance structure in China, there remains a disjuncture between governmental commitments and actual performance in addressing environmental issues.¹⁵ This "implementation gap" is largely due to the complex multiplicity and hierarchical lines in Chinese governance that lead to unclear responsibility and accountability.

Domestic Policy and Law on Carbon Emissions Control: Toward a More Integrated Approach

Policy

The key question facing China is not how to reduce energy consumption in the short term, but how the increased energy will be supplied and consumed in a more efficient and sustainable manner.¹⁶ China is starting to put a range of ambitious climate change policies in place and has announced goals of reducing energy intensity per GDP and increasing the share of low-emissions energy sources.¹⁷

China's five-year planning guideline, promulgated and released every five years, outlines social and economic development in China and is intended to coordinate public policy priorities and set out major development objectives for the coming five years.¹⁸ The Eleventh Five-Year Plan sought to reduce energy intensity per unit of GDP by 20% by 2010 based on the 2005 level. The Twelfth Five-Year Plan, which adopts a 17% energy-intensity reduction goal between 2011-2015,¹⁹ lists priority strategies the nation will take to address climate change, including substantially reducing energy intensity, effectively controlling GHG emissions, inhibiting the excessive growth of high energyconsuming industries, enhancing energy efficiency, improving relevant regulations and standards on energy efficiency, and gradually establishing a market for carbon emissions trading.²⁰

Law

Energy policy and law at the central level is a mix of command-and-control and market-based instruments. The Energy Conservation Law (ECL) is a national legislation that addresses reducing carbon emissions in China. The ECL was first promulgated in 1997 and amended in 2007. The ECL is intended to advance energy conservation, improve energy-utilization efficiency, protect the environment, and promote sustainable social and economic development.²¹ The ECL provides very strong governmental control and supervision over energy conservation objectives. Market forces are expected to play an increasingly important role as China transitions to a low-carbon economy in the long term, and the ECL shows the trend of deregulation in the respective sector. Furthermore, the amended ECL has an increased number of provisions relating to penalties and liability with respect to noncompliance, and sanctions are much higher than in the original law.

The Renewable Energy Law (REL), promulgated in 2005, was China's first legislation on renewable energy. The REL sets major principles by prioritizing development and integrating renewable sources in energy production.²² However, the REL's regulatory framework yields a number of implementation issues. For example, the price-based mechanism adopted in the REL does not fully provide enough incentive to make renewable energy widespread.

Institutional Settings to Reduce Carbon Emissions in China: Features and Improvements

The fast development of policymaking and legislation on carbon reduction requires the corresponding administrative agencies to play supportive roles. Operation of the above-mentioned schemes engages a number of institutions from central to local governments, and from environmental protection agencies to sector regulators. The existing system is quite developed and involves multiple lawmaking bodies and executive agencies at various levels of government, as well as a number of different policy instruments and measures. The current scheme for implementing carbon reduction in China, however, lacks certain features necessary for success; for example, the inadequacy of collaboration and coordination at a horizontal level may lead to a number of problems. A leading group headed by Wen Jiabao, the Premier of the People's Republic of China, was established in 2007 at the national level to provide overall guidance and leadership on climate change, energy conservation, and emissions reduction.²³ Since then, however, no new fulltime organizations have been created that specialize in these issues, and the actual number of staff dedicated to energy conservation and emissions reduction work at all levels of government has not increased by much.

Responsibility for the development and implementation of climate change-related laws and policies is split between national and local levels of government. In general, the central government provides policy direction within the legal and institutional framework, while local governments are responsible for implementation and enforcement.²⁴ The institutional settings at the local level simply adapt to the central government's visions. And without clear implementation and enforcement mandates, local governments are often responsible for choosing appropriate measures to achieve national goals.²⁵ Not surprisingly, more experimentation occurs at the local level, typically with pilot programs. Since local development is producing much more carbon emissions, command-and-control policies are preferred by the Chinese planning authority in the short term. However, in some cases where heterogeneity exists (in terms of damage rather than abatement costs), local industrial activities may produce a hot spot that exceeds the critical loads of pollution.²⁶ Existing agencies must be empowered, or new agencies must be created, to focus on energy conservation and emissions reduction issues, and the number of staff dedicated to these issues must be increased at all levels of government.²⁷

Finally, the disparity between eastern China and the less-developed western China has resulted in different levels of awareness and concerns about conserving energy and reducing emissions regionally, creating huge differences in production costs as both regions undergo rapid industrialization.

Voluntary, Market-Based Schemes

Regional Carbon Markets

In the absence of a national forum for trading GHGs, three regional carbon markets have emerged in China. The Tianjin Climate Exchange (TCX) was created in 2008 as China's first integrated emissions trading exchange instruments. The TCX's focus is on enhancing energy conservation and emissions reduction through market-based instruments and financial innovations. In addition, the Shanghai Environment Energy Exchange (SEEE) provides a platform for trading asset rights, creditor's rights, stock rights, and intellectual property rights in the environmental and energy arena. The China Beijing Environmental Exchange (CBEEX) provides a market platform for trading not only carbon dioxide, but also various environmental commodities. The CBEEX has initially developed the domestic voluntary "Panda Standard" for the creation of domestic GHG offset assets, especially in the agriculture and forestry sectors, to realize the socioeconomic benefits of offset projects.

A very recent development with respect to the carbon trading market in China is the incorporation of establishing a national emissions trading market through regional experimentations.²⁸ Four municipalities (Beijing, Chongqing, Shanghai, and Tianjin), two provinces (Guangdong and Hubei), and one city (Shenzhen) have been selected to explore the theoretical positions and practical experiences in designing and operating a regional emissions trading program. Along with the concept of establishing a carbon emissions trading market in China through regional experimentations, a time line for implementation has also been drafted. The time line recommends pilot emissions trading to begin in 2013, with nationwide trading in 2015. Local authorities under the pilot initiatives are expected to design and implement the regional program to explore the market design and management for the long run, but would also assist in the fulfillment of provincial emissions reduction targets in the short term.

Within this complex and paralleled scheme of carbon emissions trading with diversified dimensions and isolated geographic coverage, issues on regional collaboration and future linkage are already emerging problems. The lack of centralized schemes and measures in realizing the national target has been the main reason leading to polycentric and fragmented approaches at the provincial levels. Provinces with a pressing target of reducing emissions may meet targets well ahead of schedule, while those still struggling to fight poverty may be confronted with the challenge of simultaneously increasing GDP and transforming the structure of energy consumption.

Voluntary Carbon Reduction Schemes

While the expectations of how China should act under a centralized carbon market are evolving, China's voluntary carbon reduction scheme has been developed in a few dimensions. China's regional voluntary markets have implemented a number of regulatory norms and systems and seek to establish a comparative advantage in the country's emerging carbon market. Under the context of a domestic voluntary carbon emissions reduction scheme, China's regional efforts on reducing carbon with diversified perspectives have a few aspects that call for further research into the respective area. The voluntary offset market has developed along with the marketization of the forest environmental services in China. In the absence of national regulation of GHG emissions offsets, a few initiatives have been established to promote and standardize the domestic offset market, with the initial focus on forestry and agricultural sectors.

The voluntary offset market has been more standardized and promoted since the Panda Standard was first promulgated in 2009. The CBEEX has been leading the way toward building the domestic standard in accounting and auditing offset credits, with a comprehensive set of procedures and requirements for the offset to be generated. Multiple technical and management factors determine whether such carbon offset projects can be successful in the long term, especially in the afforestation and reforestation sectors.²⁹ Along with development of the domestic carbon offset market, there are widespread concerns about land and offset project locations, which have emerged as a major obstacle to achieving the goals of the voluntary offset market.

Chinese environmental authorities have increasingly expressed interest in the use of tradable permits as a regulatory instrument to control carbon emissions.³⁰ Market instruments in China will experience a transitional phase where the set of laws, institutions, and practices that are associated with tradable allowance are not fully developed. As an emerging regime and part of the policy mix to realize the national strategy on climate change, tradable permits play a vital role as part of the incentives provided at both national and regional levels.

Despite increasing market-based measures, commandand-control policies remain a major part of Chinese climate change governance. Government command-andcontrol policy will have to play a role since the socially optimal level of energy efficiency and emissions reduction cannot be achieved solely by administrative approaches or market instruments. Command-and-control policies may continue to be necessary to achieve technological change and to address remedial approaches to tackle hot spots when regional fast-growing industrial production surpasses the critical loads of emissions. Positioning administrative means in association with other measures to achieve the optimum efficiency has been an emerging obstacle that needs to be solved in climate change governance in China.

Potential National Carbon Tax?

A carbon tax is the final instrument that needs to be addressed in Chinese climate change governance. A recent development at the national level suggested that research into the carbon tax has led to positive influence over policymaking, and it is reasonably foreseeable that a carbon tax will be implemented during the Twelfth Five-Year Plan period (2011-2015), as indicated and proposed by research groups in the Ministry of Finance and the NDRC.³¹

Disparate development in China has triggered a massive industrial transfer involving a large number of industries with large amounts of carbon emissions across the country. A carbon tax will lay extra burden to western development and slow down the industrialization process due to the increased cost of energy consumption.³² The imbalanced existence of industries among regional places, especially between eastern China and the less-developed western China has raised concerns about the equity and coordinated development among regional places.

Conclusion

China's adoption of a fragmented climate change mitigation and adaptation governance framework leaves room for more ambitious policies to be implemented at a national level and enhanced collaboration at the ministerial level. Although moving toward a more coherent regime will increase tensions between the central and local governments, as well as eastern and western regions, it is clear that the piecemeal approach at the local level is not an ideal solution to the difficulties facing China as a nation. The current Chinese climate governance structure, with multilayered regulatory systems, generates more complex issues about the relationships between and compatibility among the various regional schemes. The Twelfth Five-Year Plan appears to recognize this uncertainty by seeking to strengthen national policy on climate change through reduced energy intensity, controlled GHG emissions, enhanced energy efficiency, improved regulations and standards, the establishment of carbon emissions trading markets, and a potential carbon tax regime.

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Reality Check: The Prospect of Introducing Carbon Taxes in China

by Michael I. Jeffery, QC, and Gao Qi

C ince its announcement a year ago, the prospect of a carbon tax being introduced in China as early as 2015 is **J** receiving increased media attention in many quarters, particularly in Australia.¹ Along with the implementation of carbon taxes in several Scandinavian countries for some two decades, national or state-based actions and pilot plans have begun to emerge in many major developed countries.² Nevertheless, considering the uncertainties following the expiration of the Kyoto Protocol, as well as the nation's political and economic circumstances, whether and how to introduce such a tax remains extremely controversial. This was certainly evident in the case of Australia, where a carbon tax, set at an initial price of \$23 per ton, began in July 2012. As the broadest and most expensive carbon tax in the world, critics have argued that this scheme will significantly disadvantage Australian industries, increase the cost of living, and achieve little in terms of emissions reduction domestically and globally.3 The Liberal/National Coalition Party has vowed to repeal the Australian carbon tax should it defeat the Gillard minority Labor government in the next election.⁴ At the time of writing, the opinion polls, particularly with regard to the marginal seats of Western Sydney would indicate a crushing defeat for Labor, in part driven by public opposition to the carbon tax.5 Meanwhile, recent news reports indicate that China is planning to introduce a carbon tax system with the starting price of approximately \$1.55 (10 Yuan) per ton before the end of the 12th Five-Year Plan (2011-2015).6 While relevant efforts in the developed world have proved to be problematic in many ways, this article explores the prospects of a carbon tax in China, focusing on its potential design and challenges.

Challenges to an Effective Carbon Tax in China

As the world's biggest emitter of carbon dioxide (CO_2) ,⁷ China has announced plans to cut its emission intensity in 2020 by 40 to 45% from 2005 levels and to achieve

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The adoption of a carbon tax in China faces three major challenges: the existing economic and political circumstances; the effectiveness of carbon taxes on emissions reduction; and its impacts on domestic industry and the cost of living. While these issues are somewhat comparable to similar debates in developed countries, the situation is far more complicated in China.

A number of major influential factors impact China's general economic and political circumstances. For example, the nation is faced with growing inflation and a high cost of living, coupled with a disproportionately rapid increase of financial revenues compared to its gross domestic product. China also suffers from a lack of transparency of its tax system and government spending, and there exists a strong need for structural tax reductions. In addition, China must address criticisms aimed at administrative agencies for failing to fulfill their obligations with respect to environmental protection. Although many of these issues do not directly link to the rationale and design of a carbon tax, they do have notable impacts on the social acceptability of such taxes in China. Therefore, if a carbon tax is to be introduced by 2015, it must be accompanied with more dramatic structural reforms.

The effectiveness of carbon taxes on emissions reduction is also problematic. Carbon pricing can be achieved by means of a carbon tax, a cap-and-trade scheme, or the combination of both. Although the latter is often viewed as a more favored mechanism¹⁰ (despite serious difficulties with its implementation in Europe), the former remains a more feasible and operational choice for China in the near future. While some pilot emission trading schemes have been recently approved¹¹ and may gradually develop into a national market as conditions mature, China's current market pricing mechanisms in energy trading are still too incipient to provide a solid market foundation for a cap-and-trade scheme.¹² In contrast, a carbon tax is more adaptable to China's existing administrative systems and therefore can be implemented more quickly.

Designing a Carbon Tax Regime in China

The design of a carbon tax should focus on its goal of internalizing negative externalities associated with carbon emissions. Hence, the ideal tax rate would be "where the marginal benefit of abatement equals the marginal cost of abatement."¹³ In practice, however, relevant policymaking is also influenced by its economic impact on the domestic market and on the international competitiveness of China's energy-intensive industries. In light of the strong development imperatives in China, whether the proposed carbon tax could achieve some degree of balance between the two urgent needs for modern China is subject to vociferous debate and some scepticism as to whether it can achieve any meaningful reductions in greenhouse gas emissions.

The mixed considerations with regard to these issues very much underpin discussions on the design of the proposed carbon tax in China. At this initial stage, more attention is paid to the framework issues than to important yet subtle arrangements. With regard to the tax base, the prevalent view is to target fossil fuels, particularly coal, petroleum, and natural gas. This would affect most energy and energy-intensive industries. Notably, carbon-intensive goods like cement, chemical products, and ferrous and nonferrous metals are important export products of China. A carbon tax would probably be imposed on industrial and commercial uses of energy, but domestic (residential) use is likely to be excluded,¹⁴ reflecting the need to minimize administrative costs, as well as the cost of living. Nevertheless, since the energy industries in China are largely state-owned and some have gained a high degree of monopoly power, there are concerns that carbon taxes could be used as a convenient way to raise prices disproportionately to further increase state revenues. The potential for these industries to maintain their profit margins may reduce any incentives they may have to engage in real efforts to reduce carbon emissions. Another troublesome issue is how to fit the new tax into existing tax regimes. China has already put in place a variety of taxes on coal, natural gas, petroleum, ferrous and nonferrous metals, and fuel.¹⁵ Although they are

not explicitly targeted at environmental protection, they undoubtedly affect carbon emissions. This requires further adjustments to improve the effectiveness of a carbon tax and to maintain a reasonable level of tax burden.

Another fundamental issue is the price or rate applied to the proposed carbon tax. To achieve its intended goals, three options are available for the introduction of a carbon tax: a slow ramp-up of the tax; grandfathering existing emissions; and immediate uniform adoption.¹⁶ The first option appears to be favored by Chinese policymakers, but given the numerous uncertainties in the initial design process, further adjustments will have to be made based on new information and experience in the field. The key question, however, is how low the price should be. Concerned with its impact on international trade, Chinese policymakers are looking for a starting point that would send a signal to the market to reduce carbon emissions but maintain the international competitiveness of China's carbon-intensive industries. China's implementation of the polluter-pays principle has long been criticized for not generating enough incentives for industries to actually reduce emissions. More often, simply incurring liability for the pollution fees and/or penalties is still much cheaper and convenient than introducing new technology or equipment to reduce pollution. This attitude is evidenced to some degree from past experience in introducing marketbased mechanisms for environmental protection and raises doubts as to whether the current price-setting will have any meaningful influence on climate change mitigation in practice. Nevertheless, some may also argue that the adoption of such a tax will represent a big step forward, and the opportunity to review its impacts on emission reduction and to make adjustments accordingly still remain. At this stage, more open debate and participation is necessary to at least increase both the transparency and credibility of the decisionmaking process.

As mentioned earlier, the lack of proper transparency of the current tax system and government spending could have a negative impact on the social acceptability of a carbon tax and its implementation. Transparent decisionmaking should be reflected in the design and adjustment process, the tax collection process, and, more sensitively, in how carbon tax revenues are spent. So far, discussions on imposing a carbon tax are largely restricted to government officials and experts. While the major industries might be able to influence the design of a carbon tax in an informal way or through behind-thescenes negotiations, the general public still has limited means under the current legislation to participate in the decisionmaking process. With respect to government spending, China has some general requirements on information disclosure.¹⁷ In practice, however, figures are often revealed in very general terms and without necessary interpretation. Although some local tax administrative agencies (such as the Beijing Local Tax Bureau) have begun to disclose information on how the tax revenue is spent by the government in a more detailed manner,¹⁸ such practice is still relatively rare in most parts of China, and there is little legal guidance available. Changes in this area will largely rely on more fundamental reforms on a broader scale. The introduction of a carbon tax may provide some momentum for further reform.

Two possible ways of spending the carbon tax revenue in China include: (1) subsidizing the development and utilization of new energy technologies and other climatefriendly technologies; and (2) compensating certain groups of society that are severely vulnerable to potential increases in the cost of living. These measures, however, should be further integrated with more comprehensive strategies for climate change mitigation and adaptation and income distribution adjustments. Although China is not currently under any binding obligation to limit its emissions, it recognizes that it must actively prepare itself for more intensive measures to tackle climate change. The effectiveness of a carbon tax will depend, in large part, on the development of a comprehensive domestic climate change regime and the development of more sophisticated expertise. On the other hand, opponents argue that a carbon tax will simply increase the tax burden of ordinary Chinese citizens when the living cost is already high. Nevertheless, opportunities still lie in this huge challenge. The large margin for improvement of distributive justice in China entails many institutional options and potentials for mitigating negative impacts of a carbon tax on the costs of living without compromising its basic function as an economic mechanism to promote behavioral changes. Nevertheless, reforms in this area could face huge political obstacles, much as they are in developed countries such as Australia, Canada, and the United States, and are likely to occur gradually.

Against the background of economic restructuring and fiscal reform at the crossroads, enormous uncertainties and difficulties remain. The uncertain future of global carbon markets and the dramatic decline in the price of emission credits experienced in the European Union's Emissions Trading Scheme in recent years further complicate the issue. There is no absolute commitment on the part of the Chinese leadership to introduce such a tax, and China's announcement of a carbon tax may have been partly in response to criticism levied at both China's and India's refusal to accept binding emissions targets, which were largely blamed for triggering a collapse of the Copenhagen summit in December 2009. The introduction of a carbon tax could provide more incentives to tip the scale toward more sustainable economic growth. During this critical transition period, the levy of a carbon tax requires both extreme prudence and bold risk-taking. It is more likely that the initial form of any carbon tax in China would be quite modest, leaving more room for learning by doing. Nevertheless, given China's unsatisfactory record of environmental protection, more attention should be paid to its effectiveness on reducing carbon emissions. While a low starting price on carbon may be more politically feasible for China under the current circumstances, a clear timetable and legal procedures should be elaborated to enable further evaluation and adjustments. Otherwise, the so-called carbon tax solution could end up as another window-dressing project for the continuation of China's well-entrenched development imperatives.

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by Chelsea Tu

China Mandates Social Risk Assessment for All Major Projects

On November 12, 2012, Chinese Environment Minister Zhou Shenxian announced that all major projects must pass social risk assessments (SRAs) before they begin.¹ The mandate for SRAs is a direct response to a series of violent protests that have shut down proposed large-scale construction projects with potentially dire environmental and public health consequences.² SRAs, which will measure the likelihood of public backlash, aims to "reduce the number of mass incidents in the future," stated Mr. Zhou.³

SRAs demonstrate China's effort to improve social stability and maintain the government's credibility as the country transitions from a developing to an emerging economy.⁴ Chinese citizens are increasingly weary of the projects' social and environmental costs and are demanding better governmental accountability for addressing these issues while adopting the "not-in-mybackyard" mentality. Public unrest will likely escalate as planned rapid urbanization brings more people in proximity of major construction projects.⁵ While the Chinese government has not provided further details on how it plans to implement SRAs, key issues it will need to address are: who is responsible for conducting SRAs; who will be held accountable under SRAs; and whether SRAs are purely procedural or will have substantive impacts on if and how proposed major projects move forward.⁶

Guangdong's Pilot Emissions Trading Scheme Ramps Up

Guangdong Province, the hub of China's international trade, with a population of 100 million and a gross domestic product (GDP) in excess of RMB 5300 billion (USD 841 billion), is making headway toward a promising regional carbon emissions trading scheme (ETS). Companies with over 20,000 tons of annual carbon emissions or 10,000 tons of coal equivalent consumption per year will be

Chelsea Tu is a law clerk at the Environmental Law Institute. She is a 2008 graduate of the University of California, Berkeley, and expects to receive her law degree with a focus on environmental law from the American University Washington College of Law in May 2013. required to participate in the emerging system.⁷ By 2015, Guangdong plans to regulate 277 million tons of carbon dioxide, which would make it the fifth largest carbon market in the world next to Europe, California, South Korea, and Australia.⁸ Guangdong's ETS is a critical part of its effort to reduce 19.5% of its carbon dioxide emissions per unit of GDP by 2015.⁹

Shortly after the Province released its draft regional ETS implementation plan in September 2012, four cement companies purchased 1.3 billion permits of carbon dioxide emissions.¹⁰ In February, the Development and Reform Commission of Guangdong released a list of 239 companies that would be required to participate in trading, and 71 in reporting their emissions.¹¹ This list currently includes four industrial sectors—cement, power generation, iron and steel, and petrochemicals—and will be expanded to cover textiles, nonferrous metals, plastic and paper, and ceramics as well. The Province plans to announce its first emission allowances this spring.¹²

The design and implementation of Guangdong's emerging pilot ETS emerged from ongoing business and provincial governmental partnerships, as well as collaborations between Australia and Chinese government officials. Australia has expressed interest in eventually linking its newly established emissions market with China's ETSs, which would create a larger, more stable carbon market and help reduce international carbon trade competitiveness.¹³

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