Comparative Study of Emissions Trading Status-quo in China, Australia and Other Countries

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Abstract

Market-based approaches, particularly the emissions trading schemes, are broadly utilised by the developed world in order to reduce the greenhouse gases emissions, which are the main course of global climate change. All the existing schemes and schemes to be introduced play an important role in one country’s national climate change policies. China, as the largest contributor to the greenhouse gases emissions in the world, has also shown its intention to introduce an emissions trading scheme. However, there is no national regulatory framework or policy for carbon trading market in China. Thus, successful experience from the existing schemes and the good intentions in proposed ones are worthwhile for China to learn.

This project seeks to review and undertake comparative analyses of emissions trading schemes and sustainable energy policies between China and other countries, particularly in the context of international treaties and initiatives on climate change adaptation and mitigation strategies. Both published literature and some survey information are collected and critically analysed, and recommendations on both effective emissions trading schemes and sustainable energy policies are developed for China to implement the national initiatives and strategies in relation to the climate change adaptation and mitigation. Through comparative study, how emissions trading scheme, one of the market-based approaches, can mitigate the greenhouse gas emissions will be illustrated. Therefore, the establishment of a national carbon market will be proved as an efficient approach for China to curb greenhouse gas emissions and reduce energy intensity.

The establishment of emissions trading schemes is a world trend. Developed countries would like to take the cap-and-trade approach, with the caps settled in accordance with the Kyoto Protocol, while the developing countries prefer the domestic baseline-and-credit
approach. Being deficit-neutral in budget, most schemes are introduced step by step and have a compliance period of one financial year. Most cap-and-trade schemes adopt the approach of gradually moving from free allocation to auction. Banking and short-term borrowing of permits are allowed and various penalties for non-compliance entities are utilised. Some schemes consult with industrial representatives and economic organisations about the regulations, and few latest schemes carry out modellings of the introduction of schemes and adopt appropriate measures to mitigate the impact on industries and households. In addition, significant over allocation, windfall profits and price volatility should be prevented in the initial period and a safeguard mechanism (a price cap or a floor price) should be established.

The baseline-and-credit approach would be a possible way for China to set national emissions trading scheme, no matter how carbon intensity or energy intensity is settled as the baseline. Adopting a phase by phase timeframe and forming several regional carbon trading markets during the pilot program may be beneficial to all sources. If the cap-and-trade approach is utilised, China may adopt the way of gradually moving from free allocation to auction, but how to set the national cap and link with international carbon market would be big challenges. Persistent political support from the government is crucial for China to establish an emissions trading scheme. No matter what kind of emissions trading approaches China will adopt, the formulation and implementation of climate change related laws and regulations, the strengthening of institutional innovation and mechanism construction, and the establishment of national greenhouse gas emissions information system would be the most urgent issues in China.

Finally, through the evaluation of the design and result, the success of emissions trading schemes in terms of energy intensity and carbon dioxide emissions reductions are well understood. This study has improved the understanding that China could build its own
carbon market based on its own economic development and pollution status and international experience with the similar target-setting schemes.
Acknowledgement

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My gratefulness also goes to Associate Professor Chengrong Chen and other members and students from Professor Zhihong Xu’s group for their advices on this study and their consideration during my research.

No words can adequately express my thanks to my boss, Mr Jinghua Cao, Deputy Director General of the Bureau of International Cooperation from Chinese Academy of Sciences, for his kind support of allowing me to take one-year off my work and study this interesting topic at Griffith University.
Declaration of Originality

The comparative analysis, suggestions and recommendations in this thesis represent original work that has not been previously submitted for a degree or diploma at any university. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person except where due reference is made within the thesis itself.

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Bolun Ning
### Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>CCAF</td>
<td>Climate change action fund</td>
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<td>CCS</td>
<td>Carbon capture and storage</td>
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<td>CCX</td>
<td>Chicago Carbon Exchange</td>
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<td>CDM</td>
<td>Clean development mechanism</td>
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<td>CER</td>
<td>Certified emission reduction</td>
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<td>CO₂</td>
<td>Carbon dioxide</td>
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<tr>
<td>CO₂-e</td>
<td>Carbon dioxide equivalent</td>
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<tr>
<td>CPRS</td>
<td>Carbon Pollution Reduction Scheme</td>
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<td>EASA</td>
<td>Electricity Sector Adjustment Scheme</td>
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<td>EC</td>
<td>European Commission</td>
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<td>EIA</td>
<td>Energy Information Administration</td>
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<td>EITE</td>
<td>Emissions-intensive trade-exposed</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<tr>
<td>ERU</td>
<td>Emission reduction unit</td>
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<tr>
<td>ETS</td>
<td>Emissions trading scheme</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>EUA</td>
<td>European allowance</td>
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<td>EU ETS</td>
<td>European Union Emissions Trading System</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GHG</td>
<td>Green House Gas</td>
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<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>JI</td>
<td>Joint implementation</td>
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<td>MAC</td>
<td>Marginal Abatement Cost</td>
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<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>NAP</td>
<td>National Allocation Plan</td>
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<td>NDRC</td>
<td>National Development and Reform Commission</td>
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<td>NGERS</td>
<td>National Greenhouse and Energy Reporting System</td>
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<td>NZ ETS</td>
<td>New Zealand Emissions Trading Scheme</td>
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<tr>
<td>NZU</td>
<td>New Zealand Unit</td>
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<tr>
<td>OTN</td>
<td>Obligation Transfer Number</td>
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<tr>
<td>ppm</td>
<td>Parts per million</td>
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<tr>
<td>RGGI</td>
<td>Regional Greenhouse Gas Initiative</td>
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<tr>
<td>SAI</td>
<td>Strongly affected industries</td>
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<tr>
<td>SO₂</td>
<td>Sulphur dioxide</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
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<td>WCI</td>
<td>Western Climate Initiative</td>
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Papers Published and Submitted for Publication from This Dissertation

Parts of this thesis are going to be submitted for publication:

(1) Summary and comparison of emissions trading schemes across the world (Derived from Chapters 1, 2 and 3).

(2) Suggestions and recommendations for China to establish a national emissions trading scheme (Derived from Chapter 4).