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## CHINA CO<sub>2</sub> EMISSIONS PERFORMANCE ANALYSIS AT SUB-PROVINCE LEVEL

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### Abstract

Sub-province (prefecture-level) regions are more fundamental and flexible in carbon mitigation and policy implementation in China compared to provinces and counties, due to their more manageable area than provinces, and more powerful governing capacity by means of regulations and standards than counties. Using the EDGAR database and prefecture boundary data, CO<sub>2</sub> (carbon dioxide) emission performances at the prefecture level in China were investigated using statistical analysis. The results demonstrate that the spatial pattern of China's CO<sub>2</sub> emissions were mainly concentrated in certain key prefectures. The top ten prefectures in terms of per capita emissions are all concentrated along the coal mining belt in north China. Half of the prefectures (46%) in China have contributed more than 80% of total emissions, and roughly one third of the population lives in prefectures where annual per capita emissions are above the national average emissions level (5.7 ton CO<sub>2</sub>). Clustering analysis show that prefectures in China can be categorized into 6 groups, and half of the prefectures were in the low emission and low economy group. It is urgent for the prefectures in this group to make a low carbon transition so as to avoid the fate of high emission development. The implication of these findings for policymakers is that prefectures should be the focus of future strategies for low carbon development rather than provinces, and the selection of low carbon pilots need be based on the type of development, emissions intensity and their representativeness of certain category of prefectures.

*Key words:* CO<sub>2</sub> emissions, prefectures, low carbon development

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