



Efficiency and equity implications of China's national cap-and-trade system

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What role could a national cap-and-trade system play in China's effort to reach "peak" carbon emissions and begin reductions by 2030? Giorgio Ruffolo Post-doctoral Research Fellow Pu Wang reviewed existing regional Chinese cap-and-trade systems for clues, and presented his findings in Monday's energy policy seminar.

Seven pilot regional emissions trading systems have been operating independently in geographically diverse parts of China in recent years, Wang reported. With an eye to reducing carbon emissions and air pollution and promoting technology upgrades, Wang said, the Chinese government is currently planning to implement a national cap-and-trade program for carbon—however, the details of how the program will be implemented (including what the cap will be) have not yet been determined. Wang's research, drawing on experience in China and in other parts of the world, focuses on the likely equity and efficiency implications of implementing a national cap and trade system in China, looking specifically at likely effects on regional development, air quality, and health co-benefits, as well as the likely impact on different industries.



Wang noted several ways in which a cap and trade system could potentially impose unequal costs on different parts of China and on different Chinese industries. For example, low emissions, high income provinces are likely to be less financially affected by cap and trade than areas with high emissions, or areas in which emissions are likely to grow significantly along with economic development. Thus, a uniform national cap and trade system could be very regressive, Wang warned.

Similarly, industries may experience different impacts from a cap and trade system. In China's case, the electricity industry faces special challenges in responding to cap and trade price signals, because dispatch is based on treating all resources equally, not cost. Thus, additional costs for electricity from coal would not necessarily affect the dispatch of electricity. However, over time, these costs might result in higher end use electricity costs, curbing demand. The other possible route for impact, Wang suggested, would be through auctioning allowances, and investing the resulting revenues in carbon-reducing projects.

One other area in which costs and benefits may not be equally distributed, Wang noted, is in the health benefits associated with reduced carbon emissions. Here, urbanized areas near emissions sources might benefit from a high carbon price—but the same benefits might not be realized in more rural parts of the country.

Thus, Wang saw considerable potential for unequal distribution of costs under a national cap-and-trade system in China. To address this, Wang suggested that China consider some version of a "common but differentiated responsibilities" principle, perhaps implemented through a careful combination of emission credit allocations and auctions. In all cases, Wang suggested, credible monitoring and enforcement are likely to be important. Finally, in sectors such as electricity, Wang suggested that market reforms might be necessary in order to maximize the potential benefits of implementing cap-and-trade.

Wang spoke as part of the Kennedy School's Energy Policy Seminar Series, which is jointly sponsored by the Energy Technology Innovation Policy research group of the Belfer Center and by the Consortium for Energy Policy Research of the Mossavar-Rahmani Center on Business and Government.