Lessons offered by emerging carbon trading markets

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Although markets for trading carbon emission credits to reduce greenhouse gas emissions have stalled in United States federal policy-making, carbon markets are emerging at the state level within the U.S. and around the world, teaching us more about what does and doesn't work.

In a Policy Forum article in the March 21 edition of *Science* magazine, Duke University's Richard Newell, William Pizer and Daniel Raimi discuss the key lessons from a decade of experience with carbon markets. They also discuss what it might take for these markets to develop and possibly link together in the coming years and decades.

These carbon markets are a key part of an emerging global policy framework that includes trading programs and other policies such as renewable energy incentives, carbon taxes, and traditional regulation. They have encouraged modest reductions in greenhouse gas emissions so far and expanded to cover a substantial and growing share of global emissions.

The Duke authors note that the emergence of a global system, built from the bottom up, faces a number of challenges including differences in program structure and the concern that business and industry may be driven away from a region or nation where programs are more stringent. While economic arguments tend to favor the linking of markets, other issues such as the challenge of comparing one program to the next, national and regional political concerns, and the financial flows resulting

from international carbon trade will create challenges for the bottom-up linking of programs.

"The challenges are indeed real, but each time these markets have faced a challenge, they've learned something important," said Newell, director of the Duke University Energy Initiative and the Gendell Professor of Energy and Environmental Economics at the Nicholas School of the Environment.

"With these markets springing up, we have lessons from the past that can be applied to new markets such as the one in California, the one in Quebec, or the ones developing in China," Newell said. "As a result, they will hopefully avoid some of the problems that others have dealt with in the past."

The European Union's Emission Trading System (EU-ETS) has seen significant challenges recently, with prices falling to historic lows in 2013. Australia's carbon market is slated to be repealed this summer, after the new governing party makes good on its election promise to abolish it.

Still, such issues haven't stopped the development of new programs. China recently saw the establishment of five regional pilot carbon markets, nearly doubling the volume of emissions covered by existing trading programs. Kazakhstan also has a pilot program in place, and South Korea plans a new market. After successful launches in 2013, California and Quebec have recently linked their markets.

The authors review how these programs are addressing concerns such as uncertainty over carbon market prices and how to approach differences in policy and structure across programs.

"We are learning from the problems and successes of the past," said co-

author William Pizer, an Associate Professor of Public Policy, Economics and Environment at Duke's Sanford School of Public Policy and a faculty fellow at the Nicholas Institute for Environmental Policy Solutions. "As governments revise existing market rules or new markets arrive, the system evolves. It's all being tried and updated in real time."

More information: Carbon Market Lessons and Global Policy Outlook, www.sciencemag.org/content/343/6177/1316.full.pdf

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