

# What Have We Learned from 30 Years of Cap-and-Trade Programs?

China is launching what will be the world's largest carbon dioxide emissions-trading system. The European Union is extending and strengthening its CO<sub>2</sub> cap-and-trade system. California has extended and strengthened its carbon cap-and-trade system. And in the late summer, nine New England and Middle Atlantic states announced their plan to extend and strengthen the Regional Greenhouse Gas Initiative.

This is an important time to think carefully and critically about the history of cap-and-trade, and identify lessons that can be learned from three decades of experience. That is precisely what Richard Schmalensee and I sought to do in an article that appeared earlier this year in the

*Review of Environmental Economics and Policy.*

Thirty years ago, many environmental advocates argued that government allocation of rights to emit

pollution inappropriately legitimized environmental degradation, while others questioned the feasibility of such an approach. At the time, virtually all pollution regulations took a command-and-control approach, either specifying the type of pollution-control equipment to be used or setting uniform limits on emission levels or rates.

Today, it is widely recognized that because emission-reduction costs can vary greatly, the aggregate abatement costs under command-and-control approaches can be much higher than under market-based approaches, which establish a price on emissions — either directly through taxes or indirectly through a market for tradable emissions rights established under a cap-and-trade regime. Because market-based approaches tend to equate marginal abatement costs rather than emissions levels or rates across sources,

they can achieve aggregate pollution-control targets at minimum cost.

Cap-and-trade systems are now being seriously considered for a wide range of environmental problems, and past experience can offer some guidance as to when this approach is most likely to be successful. First, the greater the differences in the cost of abating pollution across sources, the greater the likely cost savings from a market-based system — whether cap-and-trade or tax — relative to conventional regulation. Second, the greater the degree of mixing of pollutants in the receiving airshed (or watershed), the more attractive a market-based system, because when there is a high degree of mixing, local hot spots are not a concern, and the focus can thus be on cost-effective

achievement of aggregate emissions reductions.

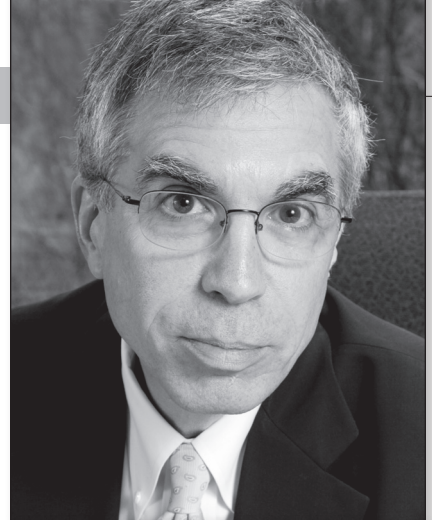
Cap-and-trade has proven itself to be environmentally effective and economically cost-effective relative

to traditional command-and-control approaches, and less flexible systems would not have led to the technological change that appears to have been induced by market-based instruments or the induced process innovations that have resulted.

The performance of cap-and-trade systems depends on how well they are designed. In particular, it is important to reduce unnecessary price volatility, and hybrid designs can offer an attractive option if some variability of emissions can be tolerated, since substantial price volatility generally raises costs.

All of this suggests that cap-and-trade merits serious consideration when regions, nations, or subnational jurisdictions are developing policies to reduce greenhouse gas emissions. And, indeed, this has happened. However, because any meaningful climate policy will have significant impacts on eco-

**We now know what merits consideration when reducing carbon dioxide emissions**



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nomics activity in many sectors and regions, proposals for such policies have often triggered significant opposition.

In the United States, the failure of cap-and-trade climate policy in the Senate in 2010, after the House had passed the Waxman-Markey legislation, was essentially collateral damage from a much larger political war that has decimated the ranks of both moderate Republicans and moderate Democrats. Nevertheless, political support for using cap-and-trade systems to reduce GHG emissions has emerged in many other parts of the world. In fact, in the negotiations leading up to the Paris conference in late 2015, many parties endorsed key roles for carbon markets, and broad agreement emerged concerning the value of linking those markets, as codified in Article 6 of the Paris Agreement.

It is certainly possible that three decades of high receptivity to cap-and-trade in the United States, Europe, and other parts of the world will turn out to have been only a relatively brief departure from a long-term trend toward reliance on command-and-control environmental regulation. However, in light of the generally positive experience with cap-and-trade, there is reason for optimism that the tarnishing of cap-and-trade in American political debates will itself turn out to be a temporary departure from a long-term trend of increasing reliance on market-based environmental policy instruments.

Only time will tell.