Harvard Kennedy School Energy Policy Seminar Series, Fall 2015
Assessing Global Power Sector Climate Policy Initiatives

Monday, October 26, 2015

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The idea that there is a low cost way to significantly reduce carbon emissions is an "appealing illusion" that is an "obstacle to effectively addressing climate change," Mossavar-Rahmani Center Senior Fellow Larry Makovich said in the Energy Policy Seminar on Monday, October 26. Makovich argued that a closer look at what are often viewed as success stories—Germany, California, and Ontario—suggests that reducing carbon emissions from the power sector is expensive and difficult.

While a number of influential analyses (such as McKinsey's 2007 "Global Greenhouse Gas Abatement Curve" and 2015 IEA's "Energy and Climate Change") suggest that significant greenhouse gas abatement can be accomplished at no cost to the economy by leveraging cost savings from energy efficiency and the benefits of renewable energy, Makovich noted that his analysis of world carbon intensity from 1990-2012 found no progress at all towards necessary reductions.

To understand the problem better, Makovich examined power sector policies and CO2 emissions in Ontario, California, and Germany. While California and Germany are generally viewed as examples of successful policies for fostering the growth of renewable energy, Makovich pointed out that neither of these jurisdictions saw any signficant decrease in electricity sector carbon emissions from 2000-2012.

Why might this be? Makovich focused particularly on three issues: the status of nuclear power, the intermittency of new renewables, and limitations in the costs the public may be willing to bear to reduce carbon emissions. Germany, for example, has been phasing out nuclear power at the same time as it has been investing in renewables, filling the gap partly through the construction of new coal-fired plants—with the result that carbon emissions have remained stable or increased, even as renewable energy has grown. At the same time, Makovich noted, countries interested in emulating Germany's growing share of renewable energy should understand that Germany has relied on extensive electricity trading with France to smooth the increasing intermittency of the German power supply—successfully using a similar share of renewable energy as Germany may depend on having access to similar opportunities to smooth the intermittency of renewable electricity production.

Finally, Makovich noted that changes in Germany have been accomplished at considerable cost, pointing to losses in value of German energy companies, dramatic increases in the surcharge paid by Germans for renewable energy, and the fact that German real power prices increased 10% per year since 2000 and industrial electricity prices in Germany in 2011 were more than twice those of the United States. The German economy is robust enough to withstand the burden of increased power prices, Makovich observed, but these may well have been a factor in slowing Germany's recovery from the recent economic crisis.

Reliance on wind, solar, and energy efficiency to achieve climate goals, Makovich concluded, is not likely to achieve climate policy goals and may lead to costs that go beyond what citizens are willing to tolerate—and this poses a policy dilemma, given the importance of the threat of climate change. Makovich noted that his ongoing research effort will focus on finding the approaches that offer a better chance of achieving climate policy goals at a politically acceptable cost. Makovich 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.