

## Weatherwane: Global Climate Policy Updates

### New Climate Legislation Analysis

As awareness about climate change increases and the call for federal legislation grows louder, one thing becomes abundantly clear: the details surrounding climate change policy are nuanced, complicated, and intricately connected. Scholars from RFF's Climate and Technology Policy Program offer an in-depth analysis of some of the most controversial aspects of proposed mandatory federal legislation.

Among the topics considered in these new issue briefs, available on RFF's Weatherwane website ([www.weatherwane.rff.org](http://www.weatherwane.rff.org)), are the following:

- Emissions trading versus CO<sub>2</sub> taxes: Senior Fellows Ian Parry and Billy Pizer examine the economic implications of these two policy choices and how design features shape those implications.
- Allowance allocation: Senior Fellow Ray Kopp looks at the strengths and weaknesses of a variety of permit allocation choices should the United States pursue emissions trading.
- U.S. climate mitigation in the context of global stabilization: University Fellow Richard Newell and Research Assistant Daniel Hall consider if and how climate policy action undertaken in the United States now affects long-term, environmentally significant climate outcomes.

- Assessing the costs of domestic regulatory proposals: Fellow Joe Aldy provides an overview of the costs of various climate proposals for the United States over the next several decades.

### RFF Scholar Testifies on the IPCC Report

Senior Fellow Billy Pizer testified on May 16 before the House Committee on Science and Technology on the findings of the Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC). Pizer was one of more than 100 lead authors on the IPCC report.

In his testimony, he led committee members through a series of considerations about the report: "There are a variety of different stabilization targets we could think about over the next century," he stated, outlining the range of options and associated cost estimates. "An important thing to realize is that this range of estimates... does not have a probability associated with it: the costs could actually be higher or lower."

Pizer also highlighted the importance of technology to successful climate policy. "We can't just set a cap-and-trade program in motion and go home. We're really going to need public support for research and development."

He clarified that IPCC estimates assume both economywide coverage and global participation but acknowledged that the latter is unlikely in the near

future. To help mitigate that challenge, he emphasized the importance of action and diplomatic efforts on the part of the United States. "[It is important] to think about broad, flexible domestic policies and engagement with the rest of the world to try and get similar policies elsewhere," he said.

Throughout his remarks, Pizer urged careful thought and further research, but not inaction. "In thinking about policy to deal with climate change, it's very important to consider what is going to happen if our best pick does not end up being right," he advised. However, "the first step is to have a reasonable domestic policy—it's a lot easier to convince people to come along with something once you've already demonstrated leadership."

The full text of Pizer's testimony can be found on Weatherwane.

### Advisory Committee Suggests Design of Cap-and-Trade Program for California

In June, the California Market Advisory Committee released a report of recommendations on the design of a cap-and-trade system to reduce greenhouse gas (GHG) emissions in the state. Senior Fellow Dallas Burtraw is among the 14 expert advisers chosen by the state's secretary for environmental protection to serve on the committee.

Because of California's limited experience with cap-and-trade systems and national and international emphasis on such programs as an essential part of the effort to combat global warming, the members of the committee were charged with making cap-and-trade program design recommendations to the Air Resources Board.

Critical recommendations from the report include incorporating all major GHG-emitting sectors of the economy into the cap-and-trade program, taking a first-seller approach to capping emissions associated with electricity, using a

mixed approach of free allocation and auctioning of allowances, allowing offsets, and providing linkage opportunities for a California cap-and-trade program with similar policy initiatives in other jurisdictions.

The full report is available at [www.climatechange.ca.gov/policies/market\\_advisory.html](http://www.climatechange.ca.gov/policies/market_advisory.html).

#### **RFF, *New Scientist*, Stanford Explore Americans' Willingness to Pay for Climate Improvements**

RFF Senior Fellow Ray Kopp teamed with colleagues from *New Scientist* and Stanford University to provide policy-makers with a better understanding of how willing Americans are to pay for improvements to the climate.

The study, released June 20 at the National Press Club in Washington, is the result of a survey asking Americans how willing they would be to vote for various policies that would result in a range of gas and electricity price increases, in order to reduce U.S. carbon emissions to 5 percent below business as usual by 2020.

The poll set out to test the attractiveness of three main ways to reduce GHG emissions: standards or mandates, in which the government tells companies exactly how they must act to achieve a cut in their emissions; economic incentive-based approaches, including an emissions tax; and a cap-and-trade system. The survey looked only at how options would work for vehicle fuel and the electricity sector, since those categories are responsible for a substantial proportion of U.S. GHG emissions. Also, costs in those categories would likely be passed on to consumers.

According to the survey results, specific policies to combat global warming can command majority support in the United States, as long as they don't hit people's pockets too

## **Dr. Chauncey Starr, EPRI Founder and President Emeritus, Dies at 95**

**D**r. Chauncey Starr, 95, founder and president emeritus of the Electric Power Research Institute (EPRI) and a longtime supporter of RFF, died April 17, 2007, in his home in Atherton, California.

A leader in the electric power industry since World War II, Starr spent 20 years at Rockwell International early in his career, building the Atomics International division. Starr came to know RFF around the time of its founding through his relationships with its early leaders—Sam Schurr, Hans Landsberg, and Joel Darmstadter.

In 1966, Starr accepted a position as dean of the UCLA School of Engineering and Applied Science. While there, he directed a research effort on societal safety in technical systems, which led to a paper titled “Social Benefits versus Social Risks,” published in *Science* in 1969. That paper is widely considered the starting point of the formal technical field of risk analysis.

Starr went on to form EPRI in 1972 as a research and development organization to address the challenges faced by the electric utility industry.

During his lifetime, he received numerous honors, including the 2006 George C. Laurence Pioneering Award, given by the American Nuclear Society for pioneering contributions to nuclear reactor safety; the 1990 National Medal of Technology, awarded by then President George H.W. Bush for contributions to engineering and the electric industry; and the 1988 Rockwell Medal, awarded by the International Technology Institute for excellence in technology and contributions to the betterment of mankind.

In 2004, Starr donated \$2 million to RFF to fund a chair in risk analysis that bears his name. The chair is currently occupied by Roger Cooke, one of the world's leading authorities on mathematical modeling of risk and uncertainty.

Starr is survived by his wife of 69 years, Doris; a daughter, Ariel Wooley of Los Altos, California; a son, Ross Starr of San Diego, California.; and five grandchildren. ■



DR. CHAUNCEY STARR

hard. One of the most interesting findings is that Americans tend to favor standards and mandates over incentive-based approaches. However, the strength of that preference de-

pends on the cost of the regulatory approach. If incentive-based approaches are less costly than mandates, then the preference for mandates fades. ■

# Nanotechnology and Nature: Reducing Risks and Reaping Rewards

**N**anotechnology is no longer a futuristic idea but a present reality: about 500 consumer products on the market use it, and that inventory increases by four to five products each week. As Jennifer Sass of the Natural Resources Defense Council noted at RFF's June First Wednesday Seminar, "The nano-Titanic has left the port."

She and panelists from the Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars, the Federal National Nanotechnology Initiative, and EPA gathered to offer their perspectives on burgeoning nanotechnologies, their applications, and their potential health and environmental risks.

To give an idea of nanotechnology's scale, Andrew Maynard of the Project on Emerging Nanotechnologies explained, "Your hair grows approximately 10 nanometers in the time it takes to say 'nanotechnology.'" Scientists now have the tools to work at such a tiny, near-atomic scale, and the potential benefits for society, he and other panelists agreed, are great.

On the energy front, such technology can be applied to improve photovoltaics, fuel cells, energy storage in batteries, energy efficiency in manufacturing, and the conversion of waste heat to energy.

Nanotechnology also holds promise for the cleanup of waste sites, said

Marti Ott, an environmental engineer with EPA's Office of Superfund Remediation and Technology Innovation. Nano-sized iron, for example, can be used to remove chlorinated hydrocarbons from groundwater, and other particles at the nano scale can remove heavy metals like mercury from smokestacks and waste streams.

Countries including the United States are investing heavily in these new technologies, according to Celia Merzbacher of the White House Office of Science and Technology Policy. In fiscal year 2001 the federal government launched the National Nanotechnology Initiative that encompasses 26 agencies, half of which have funding totaling about \$1.5 billion this year. The initiative focuses on both R&D and oversight: about \$37 million was spent on risk research in 2006, an amount that will increase to \$60 million in 2008, Merzbacher said.

Sass noted, however, that nanotechnology's novel properties are allowing it to slip through the regulatory cracks. "Partly it's because most of the regulations we have need volumes or mass thresholds to trigger oversight," she said.

She argues for precautionary regulation, citing several areas of concern. The Center for Responsible Nanotechnology has issued a report warning that nanotechnology could create a large-scale disruption on the scale of the industrial revolution—in a much shorter time span—and not all of the risks of nanotechnology can be addressed by the same approach. NATO, too, has called the effects of nanotechnology disquieting: since nano-particles can easily slip into human pores, they hold grave potential for biological and chemical warfare.

In addition, little is known about the toxicity of nanotechnology. What we do know, Sass said, is that gener-

ally, the smaller the particle, the more harmful. As an example, she pointed to particulate matter, which is known to cause heart and lung problems in humans.

Her solution? "Prohibit untested or unsafe uses."

Maynard pointed out that in addition to technical risks, perceived risks must be addressed. Consumers concerned about the possible negative effects of nanotechnology in sunscreen, for example, can choose products that don't use the technology. "If we're going to see nanotechnology succeed, we're going to have to address the scientific uncertainties, but we've also got to address uncertainty in the minds of consumers," he said.

Merzbacher likened nanotechnology to the Wild West, a new frontier characterized by a frenzy of research and sometimes hyperbolic news coverage. "Behind the wave of the frontier," she said, "there's order that follows. The agencies that have the responsibility for oversight are paying attention."

The seminar was moderated by RFF Senior Fellow Terry Davies, who has written a report, *EPA and Nanotechnology: Oversight for the 21<sup>st</sup> Century*, while working as a senior adviser to the Project on Emerging Nanotechnologies. "This is an extraordinary technology; some people have referred to it as the second industrial revolution," he said in his opening remarks. "Whether that's hype or not, I'm not sure, but it gives you some idea of both the broadness and depth of the technology." ■