

Goings On

RFF Welcomes New President Phil Sharp

The historic mission of RFF is to enhance the ability of this country and other nations to make effective policy—to bridge the gap between rigorous analysis and the political machinations needed to implement good policy,” says RFF’s new president, Phil Sharp. “Three devastating hurricanes, the war in Iraq, 9–11, and other recent crises make it even clearer how crucial this mission is to today’s policy communities.”

An experienced legislator, authority on energy and environmental issues, and policy analyst, Sharp assumed his new role in September, bringing a portfolio of expertise that encompasses the worlds of policy, legislative initiatives, elective politics, academia, and law.

Over a span of four decades, Sharp’s distinguished career includes service as a U.S. Representative from Indiana for 10 terms, from 1975 to 1995. Since leaving Congress, he has been affiliated with the John F. Kennedy School of Government at Harvard University and was a senior policy adviser at the Washington law firm Van Ness Feldman.

“My years in Congress and my experiences at the Kennedy School impressed on me the enormous need for credible information on which to base good policy decisions,” says Sharp. “The thing many policymakers



Phil Sharp became RFF's new president in September.

find so difficult is determining who—or what—they can trust.”

RFF, Sharp notes, is one of the few institutions with a demonstrated commitment to sustaining the credibility of its research, a place where he finds individuals motivated by a desire for new knowledge that can be applied nonjudgmentally to create effective policies.

Long-Term Credibility rather than Short-Term Gain

“One of the reasons I felt so eager to return to the Washington policy world is what I perceive as a pronounced deterioration in public discourse over the last 15 to 20 years,” says Sharp. “For many reasons, the public conversation—in the media, in debates on Capitol Hill, even in academia—has become strident and polarized. The motivation behind every pronouncement is suspect, and too many exchanges are increasingly based on mistrust.”

One reason for this deterioration, Sharp says, is that “today we are an enormously distracted society. We have multiple sources of entertainment and information—one might say

an excess of bread and circuses. It has become hard to sustain a conversation on a serious topic for very long.”

Moreover, the digital revolution—while a major advance as a policy tool—also constitutes a major challenge to serious research. “Today, anyone can be a pundit and say just about anything with seeming authority. This development also has tended to cause the public to disparage the credibility of research pronouncements,” he says.

A final threat to credibility arises when ideology and profit motivate research, says Sharp. “How can people judge or assess the quality of research that may have been bought and paid for or driven by political motives? This only reinforces the importance of RFF anchoring itself to solid independent analysis. Long-term credibility rather than short-term gain will best serve our interests.”

As part of his initial work at RFF, Sharp will lead a strategic review of RFF’s research programs as well as all other work done in support of the research effort. He believes that such a review is appropriate given the change in leadership.

"It has been nearly 10 years since we conducted a thorough look at how we are organized, what our priorities are and ought to be, and how we sustain ourselves for another 50 years," he says. "The Board feels, and I agree, that now is the best time to undertake this important task."

A Career Focused on Energy and Resource Policy

Sharp's combination of talent and experience distinguished him from an extensive list of candidates considered by the RFF Board in an exhaustive international search.

"Based on his multi-faceted background as a longtime member of Congress and his broad experience with our policy issues, Phil quickly emerged as the obvious choice to take RFF into a new era of excellence and influence," said Frank Loy, RFF's Board chair.

Prior to his election to Congress, Sharp was a professor of political science at Ball State University from 1969 to 1974, and before that was a legislative aide to Indiana Senator Vance Hartke, from 1964 to 1969. Following his decision not to seek an eleventh consecutive term in the House, Sharp joined Harvard's John F. Kennedy School of Government, where he was a lecturer in public policy from 1995 to 2001 and director of the Kennedy School's Institute of Politics from 1995 to 1998.

During his 20-year congressional tenure, Sharp took a leadership role in development of energy legislation, including the Clean Air Act Amendments of 1990 and the Energy Policy Act of 1992. In 1977-1978, Sharp chaired an energy task force instrumental in fashioning a compromise plan that phased out price controls on oil and natural gas over several years. He was chairman of the Energy and Commerce Subcommittee on

Fossil and Synthetic Fuels, from 1982 to 1986, and the Energy and Power Subcommittee, from 1987 to 1995. He also chaired the Secretary of Energy's Task Force on Electric Systems Reliability, which issued its report in September 1998, and was a member of the Committee on Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards, which issued its report in 2001. Sharp was elected Majority Whip At-Large for the 99th Congress.

He currently is co-chair of the Energy Board of the Keystone Center, and chair of the Electricity Advisory Board of the Commission for Environmental Cooperation. He also serves on the National Academy of Sciences' Board of Energy and Environmental Systems.

He is a member of the boards of directors of the Energy Foundation; the Cinergy Corporation; the New England Electric Power Co. (a subsidiary of National Grid USA); and Proton Energy Systems, Inc. He was a senior policy advisor on energy, environment, and land- and water-use issues in the Washington offices of Van Ness Feldman, a Seattle-based law firm focused on energy and environmental law.

Born in Baltimore in 1942, Sharp was raised in Elwood, Indiana. After a year at DePauw University, he transferred to Georgetown University's School of Foreign Service, where he graduated *cum laude* in 1964. He spent the summer of 1966 at Oxford University, and received his Ph.D. in government from Georgetown in 1974. ■

Barack Obama Suggests Strategies to Secure America's Energy Future

Facing record-high gasoline prices and forecasts of skyrocketing home-heating costs this winter—exacerbated in the aftermath of Hurricane Katrina—Senator Barack Obama of Illinois called the American energy situation "a clear and present danger to the U.S. economy (that) will not subside." In fact, he predicted, "it's only going to get worse."

Obama presented his views on energy policy in a recent speech entitled "Securing Our Energy Future," given as part of the RFF Policy Leadership Forum series.

Declaring that "the days of running a 21st century economy on a 20th century fossil fuel model are numbered," Obama, a Democrat elected to his first term in 2004, called on his fellow lawmakers to support and adopt more challenging policy measures to alleviate U.S. dependence on oil. "Limited supplies and an unprecedented growth in demand have sent the global oil market teetering toward the edge of disaster. All this means that the price of oil is going to be reaching levels we just can't handle any more."

Obama charged that the federal government has been aware of the hazards posed by the nation's dependence on foreign oil for years. "Despite constant warnings by researchers and scientists, major corporations, and

our own government officials, [oil dependency] is a danger our government has failed to prepare for, failed to listen to, and failed to guard against."

Passed by Congress this summer, the new Energy Policy Act's "solutions are too timid and reforms are too small," Obama stated, adding that he voted for the bill because it offered "baby steps" in the right direction. He stressed the need for more short-term action, including building refinery capacity and expanding the strategic petroleum reserve, as well as investing in clean coal technology, increasing renewable fuels to 20 percent of total energy use, and fitting all cars with flexible fuel engines by 2010.

Obama highlighted the particular need for policy reform toward the automobile industry, noting that the largest source of U.S. dependence on

oil comes from the cars Americans drive. U.S. demand for oil is not sustainable, he stated, and drilling in the Arctic National Wildlife Reserve (ANWR), which the energy law supports exploring, would only meet U.S. petroleum needs for one month. "ANWR is clearly not the solution," he said.

As Brazil nears energy self-sufficiency through biofuels and China and Japan produce and purchase huge numbers of fuel-efficient vehicles, the oil-dependent U.S. auto industry risks being left behind, he said. With health-care costs for its retirees alone climbing year after year, the industry claims it cannot keep pace on technological development, which potentially throws the entire sector into turmoil. According to Obama, \$1,500 from each General Motors vehicle sold today goes toward retiree health care.

Senator Barack Obama of Illinois spoke at RFF's Policy Leadership Forum on Sept. 15.



"This isn't just costing us energy efficiency," Obama said. "It's decimating American businesses and costing American workers their jobs." He laid out several policy options to help the beleaguered industry increase capacity in hybrid and alternative fuel technologies, including direct subsidies and consumer tax credits.

He specifically called for an increase in the CAFE (Corporate Average Fuel Economy) standards of 3 percent per year for 15 years, rather than a one-time large increase, to give automakers a chance to develop energy-efficient auto technology over time. The savings from this, he predicted, could be enormous: a 40-miles-per-gallon requirement on all cars could reduce U.S. oil consumption by one billion barrels per year by 2020.

Obama also recommended that the government shoulder 10 percent of U.S. auto companies' retiree health-care costs and require that automakers invest half of these savings in clean technologies. He estimated the cost of taking on this burden would be \$670 million—a relatively small amount of money that could be funded through closing a tax shelter loophole.

Concluding his speech, Obama reiterated the need for policymakers to take prompt and significant action to reduce American dependence on oil—for the benefit of the environment, the economy, and geopolitical security. "Ultimately," he said, "we see a nation that can't control its future as long as it can't control the source of energy that keeps it running." ■

Reducing Emissions from Electricity Generators: Looking at the Costs and Benefits

The electricity sector is a major source of emissions of several air pollutants, including sulfur dioxide (SO_2), which contributes to acid rain and fine particle concentrations in the atmosphere; nitrogen oxides (NO_x), which contribute to both of these pollution problems and to ground-level ozone; and mercury, which is a toxic substance linked to neurological and other health problems. The effects of SO_2 and NO_x emissions are particularly strong in New York and other northeastern states, which are downwind of the large number of coal-fired generators located in the Mid-Atlantic states and the Ohio Valley.

Recent federal policy proposals to reduce emissions of SO_2 , NO_x , and mercury from the electricity sector—including the U.S. Environmental Protection Agency's (EPA) recently adopted Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR)—promise important improvements in air quality and reductions in acid deposition in New York State and across the nation. But what are the costs of achieving these reductions? The answer depends on the form and stringency of the regulation. In a recent study funded by the New York State Energy Research and Development Authority, RFF Researchers Karen Palmer, Dallas Burtraw, and Jhih-Shyang Shih analyzed



the costs and benefits of CAIR combined with a variety of restrictions on mercury emissions.

The study found that benefits to the nation and to New York State significantly outweigh the costs associated with reductions in SO_2 , NO_x , and mercury, and all policies show dramatic net benefits. Of the four policy scenarios considered, the one that resembles EPA's final rules for SO_2 , NO_x , and mercury is the one with the highest net benefits. However, this finding does not imply an endorsement of EPA rules for two reasons: first, modeling indicates that additional SO_2

reductions would yield benefits in excess of their incremental costs; second, the benefits of mercury reductions are not formally analyzed.

CAIR and CAMR

In 2005, EPA adopted two new rules that together address SO_2 , NO_x , and mercury emissions from the electricity sector. With CAIR, EPA caps emissions of SO_2 and/or NO_x in a large region covering more than 20 states and the District of Columbia. This regulation allows for emissions trading and banking, and restrictions are imposed in two phases, the first beginning in 2010 (2009 for NO_x) and the second in 2015. In the first phase, the program will allocate 3.7 million tons of SO_2 allowances and 1.6 million tons of NO_x allowances to electricity generators in the region. In 2015, the total allocations for annual emissions will drop to 2.6 million tons for SO_2 and 1.3 million tons for NO_x .

In the second new rule, known as the Clean Air Mercury Rule (CAMR), EPA has adopted a national plan to reduce mercury emissions from electricity generators using a cap-and-trade approach applied to all coal-fired generating units in the nation. The rule allows for emissions banking and will distribute allowances for 38 total tons of emissions annually from all coal- and oil-fired electricity generators beginning in 2010, and 15 tons beginning in 2018.

Policy Scenarios

Using an electricity market simulation model, the researchers analyzed four different policy scenarios that coincide with recent proposals. All of these scenarios include CAIR in its originally proposed form in combination with different approaches to reducing mercury emissions from electricity generators nationwide.

1. CAIR plus CAMR: This scenario models the costs and benefits of CAMR coupled with CAIR as it was first proposed. Under this scenario, the seasonal cap-and-trade program for NO_x for electricity-generating units in the State Implementation Plan (SIP) is discontinued.

2. CAIR plus CAMR and seasonal SIP NO_x policy: This scenario includes the continuation of the seasonal cap-and-trade program for NO_x emissions from electricity-generating units in the NO_x State Implementation Plan Call region, which includes 19 states from Massachusetts to Alabama and west to Illinois. Although absent from the original proposed CAIR rule, a seasonal NO_x program is reconstituted in the final rule.

3. CAIR plus tighter mercury standards with MACT: This scenario combines the SO₂ and NO_x portions of scenario 1 with a national requirement that all coal-fired generators achieve either a 90 percent reduction in mercury emis-

sions or a target emissions rate of 0.6 pounds of mercury per trillion Btu of heat input, whichever is less expensive at the particular facility.

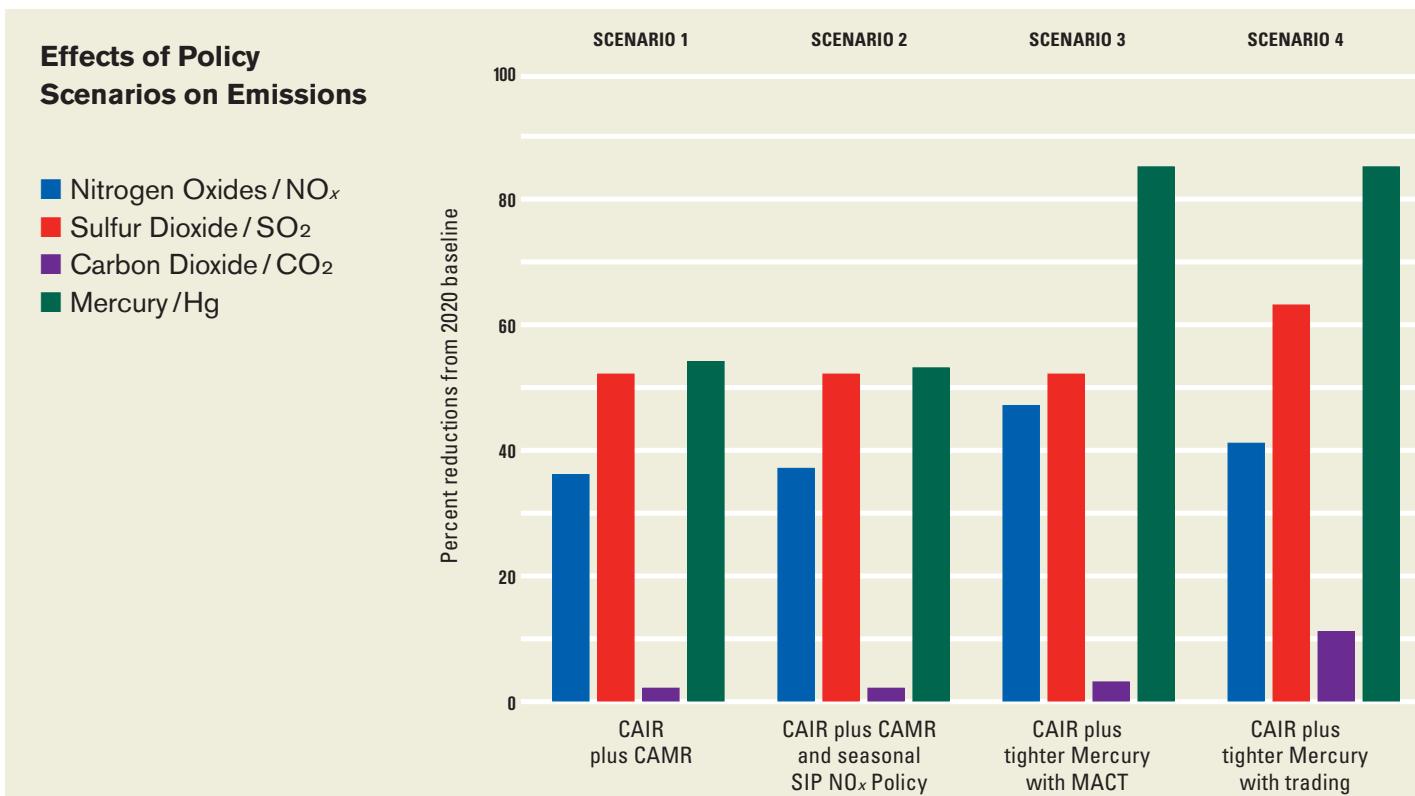
4. CAIR plus tighter mercury standards with trading: This scenario models CAIR coupled with a national cap-and-trade program for mercury in which the national annual emissions cap for mercury in each year is set at the level realized under the MACT rule modeled in scenario 3.

Results

The researchers found that for both New York State and the nation, the benefits of each policy scenario significantly outweighed the costs associated with reductions in SO₂, NO_x, and mercury, even under cautious assumptions about the valuation of the expected health effects. Depending on the policy, between 10 and 13 percent of the total national health benefits associated with reduced emissions of SO₂ and NO_x occurs in New

York State due to the state's large population and its location downwind of major emissions sources. Net benefit estimates are based on a calculation of expected improvements in human health resulting from changes in particulate matter and ozone concentrations.

As shown in the figure below, all of the policies produce substantial reductions in SO₂, NO_x, and mercury emissions in 2020, and scenario 3, tighter mercury standards with trading, leads to ancillary reductions in CO₂ emissions of more than 10 percent. The mercury policies modeled in scenarios 3 and 4 lead to further reductions (by about 67 percent) in mercury emissions beyond those called for in the CAMR rule. An important environmental effect of the tighter mercury standard is that it brings about substantial reductions in emissions of SO₂. In scenario 4, when trading is allowed in order to achieve the tighter mercury standard, the SO₂ cap no longer binds in 2010 and sub-



sequent years because generators rely more on installation of pollution controls that reduce both mercury and SO₂ and less on controls dedicated to reducing mercury alone.

Nationwide, of the four policy options and the set of environmental benefits we consider, the CAIR policy coupled with CAMR and the continuation of the NO_x SIP Call has the highest net benefits—on the order of \$14 billion (1999\$) in 2020. Although this policy comes closest to the one embodied in the EPA's final CAIR and CAMR rules, two important qualifications preclude an endorsement of the final rules. First, this study indicates that the benefits of an SO₂ reduction beyond the CAIR rule far exceed the costs. The cost of an additional ton of SO₂ reduction beyond the requirements of the CAIR rule ranges from \$350 per ton in 2010 to \$1,300 per ton in 2020. An earlier study by Spencer Banzhaf (also of RFF), Dallas Burtraw, and Karen Palmer finds that the average benefit per ton of SO₂ reduced, which is equivalent to the marginal benefit, is on the order of \$3,000 per ton. The large difference between marginal benefits and marginal costs suggests that further reductions in SO₂ emissions beyond those in CAIR would be justified on economic grounds.

Second, the mercury policy analysis does not consider the health benefits of reduced human exposures to mercury in the environment. However, recent research by Glenn Rice and James Hammitt at Harvard's School of Public Health on the benefits of mercury emissions reductions associated with the Clear Skies Initiative can be used to infer estimates of potential benefits of different levels of mercury control. Benefits can also be inferred from reduced acidification that would result from lower SO₂ emissions un-

der the tighter mercury standard with trading scenario. This information suggests that inclusion of health benefits from the tighter mercury standard would reduce the difference in net benefits between the policy scenarios that include the tighter mercury controls and the policy scenarios that include the EPA mercury cap (CAMR).

The effect of the EPA policies on the fuel mix used to supply electricity is fairly modest, with only a slight switch away from coal to natural gas, which accounts for just 4 percent of the reduction in SO₂ emissions. Scenario 3 produces a similar result. The switch from coal to natural gas is larger under scenario 4, accounting for roughly 19 percent of the reduction in mercury relative to the baseline. These results suggest that with tighter mercury standards (beyond those included in EPA's CAMR), a MACT approach preserves the role of coal in electricity generation better than a cap-and-trade approach does.

The results of this analysis contradict one important finding of EPA's analysis of the proposed version of the CAIR rule: contrary to EPA's findings, the RFF analysis finds that CAIR as originally proposed would not keep summer emissions of NO_x from electricity generators in the SIP region below the current SIP seasonal NO_x cap. In the final CAIR, EPA added a seasonal NO_x cap to address seasonal ozone problems and thereby increased the net benefits of the multipollutant policy relative to the original proposal. The main finding, however, is that the benefits of CAIR dramatically outweigh the costs. Indeed, the study provides substantial support for further reductions in SO₂ even beyond those achieved by CAIR. ■

Designing Policies to Protect Coral-Reef Ecosystems

by James N. Sanchirico

Coral reefs take centuries to develop. At the current rate of degradation, 60 percent of the world's coral reefs could disappear in the next 30 years. The result will be essentially irreversible harm to the Earth's most diverse living ecosystems, which support fish and marine animal habitats and provide important protection for coastal communities from storm damage, tsunamis, and erosion. Sociocultural and economic losses will also be substantial because reefs—and the food and services they provide—are important sources of employment, recreation, and tourist income in developing countries throughout the world.

The general causes of the decline are well known and include overfishing, destructive fishing practices (for example, fishing with dynamite or poison to get the fish out of the reef), and increasing levels of pollution driven by human migration to coastal zones. What is not well known, however, is how coastal residents adapt their behavior and practices to these changes in the marine environment. In addition, very little information is known about how coastal residents in less-developed countries rely on their local marine environment for food, recreation, and social well-being.

A colleague at the University of Miami, Dr. Kenneth Broad, and I have developed a socioeconomic household survey to better understand these



GEOFF SHESTER

issues. Our focus is on the Bahamas, an archipelago of hundreds of islands in the Caribbean. The Bahamas provide a special opportunity for this work, because the country is currently in the political process of revamping its marine management, and marine resources remain relatively intact because of the country's large size and relatively small population.

This past summer, an RFF summer intern (Sarah Wise), a College of Bahamas undergraduate (Everton Joseph), and a UC-Berkeley graduate student in anthropology (Amelia Moore) went to Eleuthera, Bahamas, to survey households in the Tarpum Bay settlement. Students from Stanford and the University of Miami had participated in fieldwork sessions on Bimini, Abaco, and San Salvador in previous summers. With the addition of this summer's surveys, over 600 Bahamian households have been interviewed.

Even though data analysis is just beginning, we are already finding patterns in behavior and responses to our survey questions. For instance, many adults in the more remote outer islands

of the Bahamas are adapting to marine degradation by working multiple jobs to make ends meet. Fishing is often a second or third occupation, whereas three generations ago, residents were more dependent on fisheries for their primary source of income.

Both locals and fishery managers view fishing as having the largest impact on the local marine environment, and many believe that creating no-take zones could address these impacts. Local knowledge often points to coral reefs or mangroves as good locations for a no-take zone.

Those opposed to fishery closures list several reasons, including that the economic losses will be too great, that the sea is common property, or that

the marine environment is healthy and does not need protection. Jobs are often scarce in the outer islands of the Bahamas, and creating no-take zones could reduce a household's ability to earn a living in tough economic times, many responded.

Some survey respondents, however, do not see any conflict between the need for jobs and no-take areas, because they believe that a no-take zone could be used to increase tourism. No-take zones can signal to potential tourists that the marine environment off an island is healthy, thus they have the potential to differentiate a community from other outer islands competing for tourist dollars. Such competition is a likely future scenario, but today many of the outer islands lack the necessary infrastructure for sustainable tourism.

We continue to analyze the household survey information to better understand the two missing pieces that currently hinder the ability to design policies to address the reef crisis. Only when governments understand how local residents rely on the sea can they best design and evaluate measures to protect the reefs without negatively impacting local livelihoods. ■

In addition to the generous support of the Marisla Foundation that made this summer's fieldwork possible, this project is supported by a National Science Foundation Biocomplexity grant, and an EPA STAR grant.



RFF Scholar Testifies on the Changing Face of U.S. Climate Policy

In testimony before the Senate Committee on Energy and Natural Resources this September, RFF Senior Fellow Richard Morgenstern outlined critical shifts in the climate change debate since early negotiations around the Kyoto Protocol and laid out key considerations for U.S. policymakers on the issue.

Morgenstern's comments came in response to the recently adopted Senate climate change resolution (S.A. 866), which calls for a "national program of mandatory, market-based limits and incentives on greenhouse gases ... that (1) will not significantly harm the United States economy; and (2) will encourage comparable action by other nations that are major trading partners and key contributors to global emissions."

Drawing on recent proposals by the National Commission on Energy Policy and options set forth by members of Congress, Morgenstern presented an altered landscape of the climate change debate, one that focuses not on steep, near-term reductions but on long-term technology innovation, short-term inexpensive emissions reductions, and international action.

"New technologies are clearly needed to address the climate change issue," he said. "Government has an important role to play in spurring [their] development and diffusion." He noted that while industry typically drives inno-

vation, policymakers must provide incentives to make the pursuit of such innovation worth the investment.

Outlining why climate change technologies are not currently attractive to investors, Morgenstern stated, "There is no market value associated with emission reductions. Further, the prospect of future value—which is driven by policy outcomes—is highly uncertain." He finds that market-based policies are likely to be most attractive to innovators, as they place value on reducing emissions at pres-

Policies that only focus on technology adoption fail to take advantage of reductions that could come from existing technologies and conservation.

ent, while encouraging firms to develop and implement new technologies in the future. In contrast, he says, "policies that only focus on technology adoption fail to take advantage of reductions that could come from existing technologies and conservation."

Morgenstern touched on two other design issues relevant to the Senate resolution. In light of concerns over mandatory cap-and-trade emissions

programs, he encouraged a "safety valve" or price cap approach. Although sulfur dioxide and other cap-and-trade programs have enjoyed success without such measures, he said, "carbon controls are potentially more costly to the economy than these other programs, and, most importantly, there is greater uncertainty about the true costs." A safety valve would keep the economy secure while maintaining emissions control.

Morgenstern also addressed how developing countries might participate in emissions control agreements, calling it a critical need for the long-term success of any effort to address climate change. However, "so far, no proposal has made much headway in this area." He applauded the Senate's approach in its recent resolution, which suggested linking climate change controls to other international concerns.

"If one believes, as I do, that the key to international cooperation on climate change is linkage on a broad range of issues, including global trade, development aid, and technology transfer," he stated, "then such a procedure would potentially provide Congress an opportunity to influence the actions of both developing and developed nations as climate policies evolve over the next few years," while limiting impacts on the U.S. economy.

Morgenstern said these changes in thinking pave the way for the future of climate change policy in the United States—and that all factors must be considered to create a truly effective policy system. "The debate has now shifted," he concluded, "to motivating both the public and private sectors to pursue technology innovation over the long term and capturing the low-hanging fruit of cheap emission reductions, all the while protecting the economy from unwarranted burdens." ■

No Magic Solutions: What Is Wrong with Current Plans to Manage Climate Change

Ruth Greenspan Bell

With the notable exception of official U.S. policy, much of the world is convinced, with varying degrees of intensity, that dramatic greenhouse gas reductions are necessary to combat global warming. The question for most countries is how to achieve them.

The conventional wisdom has settled on an approach with essentially two legs. One is a complement of sophisticated global greenhouse gas emissions trading systems, modeled on the U.S. cap-and-trade system to

control acid rain. The second is a belief in the inevitable power of advancing technology to solve complex problems.

The trading system outlined in the Kyoto Protocol established two mechanisms: the Clean Development Mechanism, which facilitates trading with the developing world, and Joint Implementation, in which a donor country invests in pollution abatement measures in a host country in return for credits that it may use in meeting its own pollution abatement

targets. A European Union trading system also recently started up, and there are some purely domestic systems in Europe.

Such trading systems operate on the assumption that the opportunity to profit from greenhouse gas emissions reductions will motivate generators of carbon dioxide (CO₂), wherever they are located, to make the necessary changes in how they operate their polluting power plants and factories. Advancing technology, the second leg, will make it possible for them to do this.

There is an inherent myopia in both approaches that cries out for examination. The almost exclusive focus to date on trading, for example, ignores the most important element of the U.S. model: the *cap* in cap and trade. It is the cap—the commitment to make genuine, steady reductions in the harmful emissions—that makes or breaks the overall scheme.

Caps have never worked without serious compliance efforts, backed up by old-fashioned commitment to enforce against laggards and cheaters. Global trading requires exactly the same attention to conventional regulatory processes as does effective domestic regulation—CO₂ reductions won't just magically happen.

It is difficult to judge whether global trading is a realistic option or a pipe dream, because very little evi-



dence exists. Sure, the U.S. model works. But its trading element is a technique to increase the efficiency of a classic regulatory program to control sulfur dioxide (SO_2). The SO_2 market isn't remotely laissez-faire: regulators demand a steady decrease of emissions over time, and transactions are regulated down to small details and vigorously enforced. Because "air" is the commodity, traders use mandated and rather elaborate accounting measures and work in such complete transparency that transactions are tracked on EPA's website.

Environmental trading as it is done in the United States has never been tested on a global scale. The best that has been achieved domestically in CO_2 -critical countries like China, India, and Brazil is a handful of administratively managed trades between carefully selected polluters. In part, this is because few such countries can make the requisite commitment to capping pollution in reality, not just in their formal laws. Nor do many have the skills or adequate judicial systems to manage or enforce complex, intangible property rights such as polluted air from the pipe of a factory.

So what else will motivate plants that currently have a free ride to pollute to clean up their act? This is where the technology part of the argument comes into play: through Joint Implementation, outsiders with the incentive to control CO_2 emissions will install technology. It is true that any firm in any part of the world can recognize that someone offering free equipment, for example to capture CO_2 from flue gases expelled by power plants and other sources, is offering something of value. The tricky part is whether the manager of that plant has any incentive to pay the running costs of the equipment, to keep it running night and day, day in and

day out, and to clean it from time to time. Normally, none of this happens without a watchful eye in the form of disinterested enforcement. Experience in China demonstrates that even plants equipped with adequate pollution equipment are not consistently running those controls when doing so proves inconvenient.

The leaders who are quite rightly pointing attention to the perils of greenhouse gases must take the serious step of committing to the cap in cap and trade. There is no other way but for the countries whose cooperation is needed for a global trading scheme to implement the fundamentals of environmental regulation.

With hundreds of thousands of CO_2 sources to be managed, it is not enough merely to have formal laws and ministries, most of which already

exist. Assistance is critical to help each country build realistic practices for effective regulation, monitoring, inspection, and enforcement. Specific help can range from training to provision of computers and monitoring equipment. The public in at least some of the countries can be made a partner and watchdog to reinforce environmental enforcers. The overall objective must be to develop the ambitious but necessary culture of environmental compliance that will ensure that CO_2 is kept under control.

Sporadic efforts have been made to develop regulatory capacity, particularly in the former Soviet Bloc following the fall of the Berlin wall. But the help has not been consistent and systematic. More often, development assistance simply tried, unsuccessfully, to insert practices from the Western economies into developing world law, traditions, and culture. Instead, we should ask what practices will work in the very different conditions posed by the growing CO_2 emitters, and how do governments institute the reforms, country by country.

With help, persistence, and political will, the regulatory skills of the large and growing CO_2 emitters can be improved. Progressive multinationals, including General Electric and Shell, are not waiting for the U.S. government before acting. They may prove to be influential models.

Building capacity to deliver verifiable, credible ongoing reductions of greenhouse gases is tedious work. Attention to the cap in cap and trade requires a steadiness of purpose, a longer view, and major assistance efforts that lack the romance of trading. Technology and trading will play a role. But focusing on the cap is more real than believing in the magic of the market—and it might actually achieve something. ■

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Politics Hamper U.S. Agricultural Assistance for Africa

Never before has the gap between the world's rich and poor been more glaring. The problems are particularly acute in sub-Saharan Africa, where nearly half the region's 700 million people live on less than one dollar a day and a third lack basic food security. And sub-Saharan Africa's situation is deteriorating: it is the only region of the world where poverty and hunger are projected to increase over the next two decades.

Agriculture can be a catalyst for economic growth and poverty reduction. Agricultural development encompasses a wide range of investments, activities, and policies that foster rural economies and reduce poverty and hunger. Examples include natural resources management, improved land tenure systems, liberalized trade rules, and job creation through value-added processing of agricultural commodities.

To evaluate U.S. policies that address African rural development, RFF University Fellow Michael R. Taylor and Partnership to Cut Hunger and Poverty in Africa Executive Director Julie A. Howard studied aid agencies, interviewed agency staffers and stakeholders, and made site visits to Ghana, Mali, Mozambique, and Uganda. Their report, sponsored jointly by RFF and the Partnership was issued in September.

Taylor and Howard find that U.S.

agricultural development assistance to Africa is a complex web of competing policies and interests. At the U.S. Agency for International Development (USAID) top-down budgeting is combined with bottom-up strategic planning. Many other U.S. agencies also provide bilateral assistance to African agriculture. One of these, the Millennium Challenge Corporation, established in 2004 to implement the Millennium Challenge Account (MCA), would depart from traditional U.S. approaches by directing aid to countries that create an enabling environment for economic growth through market-oriented policies, good governance, and investment of their own resources in health and education. President Bush has pledged \$5 billion annually by FY 2006—a 50 percent increase over the current \$10 billion annual funding for development and humanitarian assistance.

Since September 11, 2001, however, support for agricultural development in Africa has competed unsuccessfully with needs in Afghanistan, Iraq, and Sudan. Political considerations have caused a shift away from agriculture-led economic growth in favor of health and education.

Even within the existing framework for funding agricultural efforts, congressional earmarks limit the flexibility and thus the effectiveness of aid programs. At least 90 percent of USAID's assistance is preallocated to microenterprise, plant biotechnology, and other areas that are not necessarily priorities. Domestic politics also increase the costs of assistance when Congress sets requirements to procure U.S. food and ship it to Africa in U.S. ships, tie aid to procurement from U.S. sources, and use U.S. contractors.

Aid for agriculture in sub-Saharan Africa is spread across 24 countries

and 4 regional programs and then further subdivided among contractors and grantees. Fragmentation of resources raises questions about scale and coordination: projects may not be large enough to have a lasting effect, and there is no mechanism to reconcile USAID programs with those of other U.S. agencies or multilateral institutions.

African agriculture assistance should grow at least as fast as overall foreign development assistance, Taylor and Howard contend. But simply committing more resources is not enough: policy and structural features of the current aid system need reform. Among their recommendations:

- Reduce political overhead. More of the resources appropriated for agricultural assistance should actually reach the ground in Africa.
- Reduce fragmentation. Larger and more focused programs managed by fewer vendors would help ensure that U.S. investment adds up to meaningful improvement.
- Improve donor coordination. Programs should be coordinated with those of other agencies into coherent investment strategies.
- Foster local ownership with a new funding mechanism. USAID should support funding for countries that manage resources with transparency and accountability. The MCA approach would insulate aid from politics, but its scope is limited, and MCA remains untested as a vehicle for development assistance. Congress and the administration should create a similar, unearmarked fund specifically for Africa to support rural economic growth in countries that meet the criteria. ■

"Our Wake-Up Call Is Here"

Recent disasters highlight unsustainable path for petroleum in the United States

With the nation counting the human and environmental tolls from the double wallop of Hurricanes Katrina and Rita, substantial attention also turns to the effect of those natural disasters on energy in the United States. As Steven Percy, former CEO of BP America, notes, "We have seen a gathering storm around the issue of whether or not we have adequate petroleum to carry our economy and society into the future."

In this context RFF and GLOBE USA (Global Legislators Organization for a Better Environment) convened "Energy 2050: The Future of Petroleum," the fifth in a series of briefings funded by the Henry M. Jackson Foundation on the state of energy in the United States. The briefing, moderated by Percy, featured Matthew Simmons, chairman of Simmons & Company, International, and was hosted by Representative Roscoe Bartlett (R-MD) and Representative Vernon Ehlers (R-MI).

Looking at the current situation, Simmons declared, "Our energy wake-up call is here." He noted, "The full impact of Katrina is just barely starting to emerge," calling the storm "our energy 9-11." He pointed out that petroleum supplies in the United States were already threatened by increased domestic and international demand and turmoil in the Persian Gulf, while

rigs, refineries, and processing were all effectively operating at 100 percent. The storms left at least 18 oil rigs adrift in the Gulf of Mexico and crippled refining capacity for an unknown period of time.

Yet industry response to the situation underestimates how long term the impacts will be. "The timeframe to rebuild is very hazy," Simmons said. "I think the industry right now unfortunately is lulling itself into believing 'this is going to be a few weeks,' when we should probably realistically be saying we were out of spare parts before Katrina, and rebuilding some of this stuff might take a long, long period of time."

Simmons cited 20 years of "poor data," along with bad analysis, wrong signals sent by low gas prices, and "strong opinions overruling fundamental facts" on policymaking as causing the current dilemma. He stated that "the single most important thing we can do now is energy data reform"

We've gotten so utterly spoiled by low oil prices that we have no idea what prices should be.

but that Americans need to consider a drastic change in how transportation is used. The public, too, seems ill prepared to respond to a crisis in the petroleum industry. Despite the fact that demand for oil was supposed to peak 10 years ago, he said, today fully 70 percent of U.S. oil consumption goes to transportation, and consumer demand continues to grow.

Simmons feels many current suggestions for fixing the oil problem will not adequately address the situation. Hybrids alone will not be sufficient, he said, because turning over the auto fleet

won't happen fast enough to make a big dent—"and we need a big dent." Percy noted that studies have shown if consumers can afford to drive farther, they will, which might result in an unchanged demand for gasoline. Simmons believes increased taxes on gas will not curb the appetite for oil, either, stating that people will then blame higher prices on the taxes, rather than consider changing behavior.

"We've gotten so utterly spoiled by low prices that we have no idea what prices should be," he said, suggesting instead that we return to shipping goods by vessel instead of truck, stop making long commutes, and eat locally instead of consuming produce from around the globe.

Beyond these measures, however, Simmons calls for "a research and development explosion, the likes of which we have never seen, to invent some new forms of energy that don't exist today. We should have energy laboratories springing up all over America ... we haven't tried for 100 years to invent a new energy source."

Percy echoed the call for increased research. "[It] offers a great opportunity for entrepreneurs and innovators who can come up with energy solutions," he said. He also noted that the problem extends beyond U.S. borders, with much of the increased demand coming from places like India and China, so any solutions must have a global focus. "We can flatten our demand, we can even have our demand go down, and we're still going to see growth there unless something is done in those places."

Simmons concluded by stressing the need for immediate action. "Ingenuity is the byproduct of panic," he said, "and we now have a good reason to panic. We should have started (Plan B) a decade ago, but I'd say today is a lot better than tomorrow." ■