MEMO TO PRESIDENT-ELECT OBAMA:
‘Sustainability’ Key to Energy Policy

By Melinda Tuhus

With the price of gasoline and crude oil at historic highs and climate change an increasingly serious threat to the global environment, President-elect Barack Obama will have an historic opportunity to remake the world’s largest economy into a leader on alternative energy. When asked what advice they would give to the next administration, several F&ES professors identified “sustainability” as the key to a viable long-term energy policy.

Paul Anastas, founding director of the Center for Green Chemistry and Green Engineering, says that sustainability, which he defines as “meeting the needs of the current generation while preserving the ability of future generations to meet their needs,” must undergird any forward-looking energy policy.

To determine sustainability, Anastas says, all aspects of an energy source must be taken into account through sustainable-design principles. “In the case of solar energy, for one example, we must consider the means of capturing the sunlight and the materials involved. Are they depleting? Are they toxic? Are they renewable? What happens to them at the end of their useful life? After doing that analysis, then we’ll see whether it’s going to be sustainable or not.”

The primacy of sustainability is echoed by Karen Seto, associate professor in the urban environment. She studies the environmental impact of cities, which this year became home to more than half of the global population. She says people tend to think about energy in very individualistic ways—like how many miles per gallon of gasoline they can squeeze out of their car—but not to think about how their lifestyle choices affect the bigger energy picture. “We have to consider things like how cities are developed and planned, so people can use mass transit.”

Seto says the emphasis so far has been on low-hanging fruit and feel-good steps people can take. “Ethanol, EnergyStar, hybrids, fuel cells, even a gas tax or carbon tax—they fundamentally do
not change our consumption patterns. We need to be more integrative and rethink those patterns. We need a sustainability policy; an energy policy is one element of that.”

Marian Chertow, Ph.D. ’00, associate professor of industrial environmental management, says she has looked into several energy models. “I think we need to be consistent and systematic about reducing our dependence on foreign fossil fuels. Drilling more now just extends something that’s unsustainable. We need to be mindful of public policies that ease the pain of transition but don’t avoid the transition; the government may have to offer subsidies to people below certain income thresholds or help finance new technologies.”

Most of those interviewed favor regulations for reducing greenhouse gases but consider market forces more effective in promoting other aspects of an energy policy, like the mix, availability and price of various kinds of energy.

Robert Mendelsohn, Edwin Weyerhaeuser Davis Professor of Forest Policy and an economist, is a big believer in the power of the market to solve America’s energy woes. “I believe that the first priority for sorting out our energy problems is to sort out our foreign policy problems,” he says. “It is critical for the United States to end the wars in Iraq and Afghanistan and return the globe to a stable and peaceful state. Then I believe that oil prices will promptly fall back to long-run values of about $50 per barrel.” He says the skyrocketing prices have been caused mainly by “wars and hostilities in virtually every oil-producing country.”

Mendelsohn supports a role for government in curbing or preventing environmental damage, so he favors regulations on emissions. In fact, he says, economic analysis suggests that greenhouse gases and other pollutants, such as particulates and sulfur dioxide, should be more tightly regulated than they are now. The tightened regulations could come in the form of taxes on emissions or cap-and-trade regulations, in which a government authority would set a cap on total emissions and companies would either buy or be given pollution credits. Companies that pollute more would need to buy credits from those that have successfully reduced their emissions and, therefore, have “extra” credits to sell.

Exploration for new oil and other energy sources is better left to the market, says Mendelsohn. “The more the government interferes in these choices, the worse off society is likely to be.” For example, he says, “CAFE standards are mostly wasteful regulations. If the price of gas is very high, people are not going to buy cars with poor mileage. It’s happening now, and it didn’t require regulation.” (Corporate Average Fuel Economy standards were first put in place after the 1973 Arab oil embargo and were revised for the first time in 2007 to require an increase in fleetwide gas mileage to 35 miles per gallon by 2020.)

Daniel Esty, Hillhouse Professor of Environmental Law and Policy and director of the Center for Business and the Environment at Yale (CBEY), says a mix of market incentives and regulation will probably be necessary to bring about a clean-energy future, with the emphasis on the carrots of innovation. “The centerpiece of any regulatory strategy will have to be some kind of price signal, most likely a cap-and-trade allowance system.” It may make sense, he adds, to supplement that with some sort of “stick” to make people pay directly for their destructive impacts on the environment. He also proposes some “old-style mandates” to set standards for green building, including higher-efficiency air conditioning and heating systems, better lighting, more insulation and higher-efficiency windows in both residential and commercial buildings.

Bryan Garcia ’00, program director for CBEY, says that ongoing production tax credits and investment tax credits for renewable sources of energy are critical to nurturing their development and survival, adding that Congress’ inability to pass them prevents continuous investment in wind, solar, biomass and other forms of renewable energy. He notes that the production tax credit is especially helpful because it is generation-based, meaning the more power produced from a renewable source like wind or solar, the bigger the credit. “Extending investment tax credits and expanding them to technology like fuel cells and photovoltaic cells, would give the market the sense that the federal government is committed to these technologies,” he says, “because the fits and starts cause investors to say, ‘All right, the United States isn’t committed to this, so we’ll move to other markets.’”

Chertow advises a multipronged approach for a long-term energy policy, focusing on conservation. “Every time we burn a fossil fuel conventionally to make electricity,” she notes, “two-thirds of the energy value is lost as waste heat.” For transportation, it’s all about miles per gallon, improving fuel-efficiency standards. At this point we’re not doing it through regulation, we’re doing it through people’s pocketbooks, and I think it’s important to have a plan.” She adds that the plan would not necessarily involve regulation. “It could be incentives to drive less. For example, ridership on passenger rail and buses need only increase by 15 percent to 30 percent in order to allow service to be expanded geometrically in most regions. With
more and better service, the attractiveness of mass transit will have profound impacts on development and lifestyles in the next generation, even if the current population only slightly alters its lifestyles. We won’t become a European-style transportation culture overnight or perhaps ever, but if Dallas and Denver begin to look more like New York and San Francisco from a sustainability point of view over the next 10 years, America will have changed for the better.

Chertow favors “unleashing” entrepreneurs, because “Americans resist regulation and being told what to do, but when it comes from the business sector it’s often a positive force, creating jobs and reducing dependence.”

Robert Bailis, assistant professor of environmental social science, sees a need to increase government oversight of business in pursuit of a viable energy strategy. “The government needs to be a little less business-friendly or at least needs to promote different businesses than it has in the past, like mining and petroleum.” He supports rolling back some tax breaks on drilling and says that such support should go instead to renewable energy.

Garcia says any successful government energy strategy “can’t leave consumers out of the picture. We often establish policies at the federal and state levels that ignore consumers, and by that I mean they don’t let consumers know there are incentives for them that they can take advantage of and, in so doing, change their own behavior to be part of the solution.” For example, he says the federal government and some state governments, including Connecticut, provide thousands of dollars in incentives for homeowners who install renewable energy systems in their homes.

“So this can’t just be the government taking care of us; this has to also be about the government getting people to take responsibility themselves for their actions and providing them a carrot or an incentive to, in fact, do that,” says Garcia. “Consumers can actually be the solution providers; we have to engage them.”

Garcia also recommends “taking a hard look at the importance of all federal national labs that are dealing with energy and demonstrating a commitment to science,” a commitment that many environmentalists and scientists charge has been undermined by the Bush administration. “Federal labs like Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory are vital resources for the advancement of clean energy in the United States. They provide technology test beds for companies seeking to “prove out” the reliability of their technologies. They provide lab facilities to design and develop the next generation of solar technologies. And they provide a useful national resource focused on advancing clean and renewable sources of energy. “We should look at them with an eye toward greater support with more strategic focus, for example, by helping the nation achieve the goal of energy independence.”

Chertow also calls for more research and development on energy issues. “The U.S. government spends about a billion dollars a year less than it did 10 years ago on energy research and development at a time when so many of the issues we face, from the Middle East to our own economy, are so affected by energy choices and prices. We aren’t doing the basic R&D work that could turn a big problem into a solution that creates jobs, reduces dependence and reduces global tensions.”

Arnulf Grubler, professor in the field of energy and technology, says that in talking about energy policy, one has to worry about import dependence, CO2 emissions and local air pollution because of smog. “Now, all these problems are proportional to the amount of energy used; so before we talk about drilling our way out of oil import dependence—and you cannot, obviously—you need first to try to reduce the demand as much as possible, because the lower the demand, the easier it is to address the other energy challenges. And this, unfortunately, is not a very popular message and, in most debates, is ignored.

“When my students first come into class,” he says, “they talk about renewable energy and biofuels for cars without ever questioning whether it makes sense to have biofuels in an inefficient car. Does it make sense, as my countryman Arnold Schwarzenegger has done, to have hydrogen—an alternative fuel and incredibly expensive—and use it in a Hummer? Now, Arnold has sold his hydrogen Hummer, but my point is that you need to look first at the demand and the efficiency of energy.” Then, he says, other issues can be discussed within that context, such as oil imports, increased domestic drilling and development of alternative-energy technologies.

Esty says leadership is critical to shifting America toward a clean-energy future. “The key to doing that will be a president who brings the country together around a clean-energy agenda, galvanizing the public and then really working the Congress to bring Democrats and Republicans together on a shared vision of the way forward.”

All photos by Harold Shapiro except Dan Esty (Gale Zucker) and Karen Seto.

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