Research as Action on Climate Change

After declining to participate in the Kyoto Protocol last year, the administration of U.S. President George W. Bush focused its attention on climate change science. Last fall the administration released a draft Strategic Plan for its Climate Change Science Program (CCSP), the new umbrella structure for the 13-year-old U.S. Global Change Research Program (GCRP) and the year-old Climate Change Science Initiative.

The Strategic Plan will be finalized in April 2003, after an exhaustive process of public and expert input, including a 3-day workshop last December, attended by more than 1,000 people (mostly government and academic scientists), and a formal review by the National Research Council.

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In such arenas, policy-makers accept lack of certainty as a condition of life, and while they may call upon scientific and technological research, it is not to reduce uncertainties to some theoretical point that would resolve political disputes.

On the contrary, policy-makers need research to increase the range of plausible choices available to them in the present.

Given the role of science in sustaining the political gridlock over climate change, the scientific community is in a position to make a difference. If scientists are serious about wanting to do research that supports decision-maker needs, then they could insist on a systematic and rigorous assessment of such needs as primary input to setting research priorities, and then modify priorities accordingly.

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Both have been severely neglected. Public and private investment in energy research and development has declined by almost two-thirds, in real dollars, since the late 1970s.

In a recent article in Science, Martin Hoffert and colleagues conclude that mitigation of climate change, even if politically accepted, faces significant technological hurdles that cannot be overcome without considerably more attention to advanced energy research.

If nothing else, the focus on reducing uncertainty has distracted from the fact that there are plenty of certain reasons to improve energy policy, not least of which are the national security benefits gained from energy independence, the environmental and health benefits of clean fuels, and the long-term economic efficiencies that can be delivered by renewable energy sources.

At the same time, a large body of research on natural hazards, adaptive ecosystem management, and decision-making in the context of climate variability tells us that understanding and reducing vulnerability is the focus of knowledge with the most value for decision-makers seeking to increase societal and environmental resilience to future changes in climate. Yet vulnerability reduction remains at best a minor focus of the CCSP.

The best way to make the CCSP more useful to decision-makers would be to in-
land-atmosphere dynamics and year-to-year variability.

This research agenda has directly reflected the priorities of the science community, for example, through the deliberations of National Research Council committees. Fully half of the GCRP research budget has been devoted to space-based observation hardware, and the resulting data streams have also played a key role in determining research directions. In contrast, the needs and capabilities of decision-makers who in fact must deal with climate change have played little part in guiding research priorities.

In the late 1980s, policy-makers figured out that the way to survive the intense political battle over climate change was to accept the idea that science could resolve policy uncertainties about the future and thus obviate the need for action in the present. This explains why in 1990, then President George H.W. Bush joined a Democratic Congress in support of the legislation forming the GCRP. For politicians, research itself served as action.

At the time, proponents and opponents of greenhouse gas emission reductions had not need additional weapons of mass destruction: oppose research when its funding is justified on a claim that effective action on climate change depends upon reducing uncertainties.

The effect in both cases would be to remove science as a cause of gridlock and make viable new lines of research that would better support the needs of society.

Such a quixotic response is of course unlikely not simply because it would require scientists to argue against their own professional self-interest, but also because it would reveal the amazing incoherence of our current approach to connecting climate policy and science.

Put simply: the types of knowledge emphasized in the GCRP and now in the CCSP, despite their significant scientific value, are not those we will most need in dealing with the challenge of climate change. It is as if the National Institutes of Health focused its research on making better projections of when people will die, rather than seeking practical ways to increase health and life expectancy.

Two examples illustrate the point: research on energy and on climate impacts involve the decision-makers, in whose name the program is justified, in structuring, implementing, and evaluating its research.

Practically, this would mean shifting control over resource allocation decisions in the program to the agencies whose day-to-day business actually involves decisions related to climate, such as the Federal Emergency Management Agency; Agriculture, Interior, Energy and Transportation Departments; and Health and Human Services.

We recognize that this approach would represent a fundamental shift in the science and policy of climate, and would likely result in a significant change in scientific and budgetary priorities for climate research.

But if the public, rather than the scientific community, is to be the primary beneficiary of the nation’s commitment to climate research, then this is the direction we must move.

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