

The Challenge of Making Climate Science Policy Relevant

Remarks by William O'Keefe, President of the Marshall Institute,
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I appreciate the opportunity to participate on this panel and want to commend Joel and his colleagues for their attention to the hard task of making information policy relevant.

I have been dealing with the climate change issue for 15 years. On reflection, I believe that this period has been dominated by unproductive advocacy and rhetoric over science, how much we know about the climate system, human attribution and long-term consequences. Far too little attention has been focused on framing the right questions, on what kind of information would help policy makers make wise decisions, and on understanding trade-offs and consequences.

In the process, the public has been confused and bamboozled. Wise policy requires an informed public; not a confused one.

My comments will draw largely on my participation in the Commerce Department's climate science strategic plan workshop and Marshall Institute comments on it.

I have identified a set of principles and concepts that are the foundation for my perspective on our topic and that provide a frame of reference for my remarks.

For information to be truly valuable to policy makers, it is important to be clear on the following points:

- The limits of data, analyses and models,
- What is known, what is unknown but knowable, and what is unknown and unknowable any time soon,
- Science can illuminate our understanding but cannot solve climate change policy problems,
- Policies should flow from our state of knowledge, reflect the reality that actions have consequences and be capable of being adjusted as knowledge increases,
- Creating new knowledge has a high priority and should be driven by the value of information and likelihood of being able to produce it,
- Hedging strategies, reflecting the enormous uncertainties in our understanding of the climate system, have great value but have not been adequately explored,
- Scenarios have value to the extent that they help illuminate implications for capital investments, changes in the capital stock, new technologies and economic and population growth, and finally,
- The time horizon for planning and actions is inversely related to the extent of uncertainty. I will be putting emphasis on this last principle later in my remarks.

I am going to shift from the general to the specific and focus on assessment and decision-making.

The Marshall Institute Policy Outlook series will periodically examine important issues affecting science and public policy. Particularly focused on the use of scientific information in formulating policy decisions, Policy Outlooks will aim to provide clarity and objectivity to policy-relevant discussions.

The first National Assessment was a noble effort that demonstrated the limits of knowledge and the limits of models. It did not help the policy process in my judgment. Two of the best climate models in the world produced conflicting forecasts of climate for many regions. This produced extensive criticisms which were met with a “circle of wagons” defense. The contentiousness has not subsided. Those conflicting estimates should have led to a serious discussion of model limitations, why long-term regional assessments simply cannot be done at this time and what can be done to deal with regional impacts of today’s climate. A “lessons learned” exercise would have been very valuable. The inability to do a long-term national assessment should not have been an embarrassment. Failure can be a valuable learning experience.

In spite of the severe limitations of climate models, they are being made more complex and misused with abandon. A better approach would be to limit their use and to focus on building the knowledge base and the data that could eventually make models policy relevant.

Models that cannot be validated have limited value as policy tools. “Calibrating” them to replicate past temperature is appropriate for research purposes but inappropriate for forecasting the future and for decision-making.

The Marshall Institute believes that modeling should have a much lower priority in the government’s research agenda. We believe that a higher priority should be given to research on key climate variables such as water vapor, feedbacks, cloud formation, solar variability, ocean currents, and aerosols. A better understanding of these variables is critical to gaining insights about natural variability and climate sensitivity. Until we have a better theoretical understanding of these processes and better measurement data, efforts to build and use more complex models will simply squander scarce resources and perpetuate the conflict we have witnessed over the past decade. We need to narrow the differences in the scientific and

policy debates, not enlarge them.

Until we have better and validated models, it will not be possible to do long-term regional assessments. Even with validated models, there will be limits on how far the future can be predicted because some inputs become unknowable as time horizons increase.

Instead of replaying the futile 2000 National Assessment process, it would be more useful to engage the talents of state climatologists, water, ecological and agricultural experts, and other analysts in addressing regional issues and actions that could address current weather extremes and options for dealing with them.

Here are some relevant near term questions:

- What can be done now to mitigate damages from extremes in today’s weather?
- What can be done to make our infrastructure, especially water systems, more robust?
- What kind of crops, including genetically modified ones, would be best suited under a range of likely climate conditions?
- What kind of adaptation—hedging strategies—are cost-effective, given our inability to distinguish natural variability from human influence and to forecast how climate might change?
- What range of regional carbon mitigation actions is cost-effective? and
- What are the current impediments to taking needed actions?

We have the time to pursue these and other questions because we are not facing a near term crisis. Over the next few decades, most scientists believe that modest increases in temperature will produce net benefits for the U.S. As a nation, we are taking a variety of actions that will keep us on the path of continued reductions in carbon intensity and increased energy efficiency. We can debate

whether more should be done, but it is wrong and misleading to claim that nothing is being done as so many advocates claim.

The climate debate, advocacy to the contrary, has never been a choice between action and inaction. It has been about actions consistent with our state of knowledge and consequences associated with them. A debate over how much is enough is a worthy one but that has not been where our energy has been focused.

The questions I have identified are a small subset of the ones that need to be identified, prioritized and resolved. They are all tough and all have large political consequences. Producing solid information would certainly be superior to sophisticated speculation and personal attacks on those who do not accept the prevailing climate orthodoxy.

We need to honestly face up to the fact that our ignorance of the climate system dwarfs our understanding of it. That is not a criticism or an excuse for inaction any more than a worse case scenario is a justification for economically damaging actions. We also need to re-think our approach to research and policy planning.

In the late 1960s, Jim Schlesinger, who at the time was an analyst at the RAND Corporation, wrote a chapter in a book on defense economics dealing with planning in large organizations. He evaluated two types of planning. The first is called “Cook’s Tour” after the well-known travel company. It is useful when the future is sufficiently well known to plan and to chart specific courses of action. For example, an around-the-world trip which can be planned with a high degree of certainty and confidence. The second approach is called “Lewis and Clark” after our famous explorers of the west who knew their objective but not how to achieve it. Theirs was a process of discovery. This approach recognizes that with limited knowledge, alternative courses of action—forks in the road—will be discovered as implementation takes place. At any point of time, it is possible to look back and gain insights that can

be used for adjusting future action. The keys to success are maintaining flexibility and recognizing that only limited confidence can be placed on predictions of what paths will be taken and when.

The climate change issue calls for a Lewis and Clark planning, but has been driven by a Cook’s Tour instead. Policy makers and others have attempted to chart a precise course of action as if they knew the future with a degree of certainty that is beyond human capabilities. Maybe that was unavoidable given the dynamics of domestic and international politics. But, in my opinion, it has resulted in less progress, excessive conflict, confusion and a great degree of nonsense.

Limits on our knowledge and constraints on our ability to radically alter either our economic or energy systems in the short term should have been matched by constraints on our planning horizon. Actions driven by apocalyptic visions of the future rob us of needed flexibility.

Large organizations, government and private, have a hard time achieving and sustaining flexibility and creativity. Problems associated with communications, incentives and cohesion lead to a culture that puts a premium on processes that promote efficiency and maintain order. The inertia in most large organizations makes it difficult to quickly recognize the value of new information, alternative approaches, or the need to change direction. Effective planning should address these problems at the outset. Providing mechanisms to encourage creative tension without promoting chaos and paralysis is one way. Some large organizations, such as CISCO and GE, appear to have found ways to do this. Promoting healthy and constructive dissent is the hallmark of a healthy organization, but it requires an understanding of the need to compensate for organizational orthodoxy, inertia and politicization. Schlesinger suggested institutionalizing a “devil’s advocate” process.

What all of this means for the climate policy and planning process is easier said than done. We need to be more forthright about how little we know and about the limits that ignorance places on our ability to project actions or consequences very far into the future. Unrealistic expectations by either policy makers or the public need to be brought in line with reality. A better-informed public would lead to more informed policy making. Public ignorance and confusion are enablers of politicization.

More attention also should be given to imposing greater discipline on the science agenda and explaining the reasons for such discipline. Potentially fruitful areas of research and analysis are far larger than the resources available to pursue them. The way to invest wisely is to be clear about priorities, objectives, measures of success and mechanisms for ending work that is either no longer promising or doesn't meet expectations set for it. The climate science strategic plan is a step in the right direction.

I want to end by summarizing my major points. The Marshall Institute puts a high priority on theoretical knowledge and empirical information and a low one on models and long-term assessments. Without a stronger theoretical foundation and better observational data, modeling and assessment will waste scarce resources and hinder wise policy.

It should be self evident that until we better understand natural variability, feedbacks,

climate sensitivity, cloud formation, water vapor, solar variability, and ocean currents, we cannot adequately understand the extent of human influence or the appropriate actions to mitigate it. Pretending to the contrary is dangerous and promotes policy gridlock. Policy proposals that fly in the face of economic and energy realities have little hope of surviving long-term. In the end, climate policy is energy policy and has economic impacts.

Until we have better information and analytical capabilities, a higher premium also should be placed on adaptation planning. Nothing we do in the short run is going to change the atmospheric concentration profile over the next few decades. Mitigating the effects of existing climate extremes, infrastructure investments related to water systems, agriculture, and curbing subsidies for excessive water use and development are actions that address current problems, with long-term benefits.

There is much that can be done today to create options for an uncertain future. Hedging and actions that can be adjusted on the basis of new knowledge are at the top of the list. We also should stop pretending that we know more than we do and that we can accurately forecast future climate and its impacts, which we can't. Mark Twain once observed that one of our biggest problems was not ignorance, but the presumption of knowledge. Doesn't that describe how we have approached the climate change issue?



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