

EXECUTIVE OFFICE OF THE PRESIDENT
PRESIDENT'S COMMITTEE OF ADVISORS ON SCIENCE AND TECHNOLOGY
WASHINGTON, D.C. 20502

December 3, 1999

Neal Lane
Assistant to the President for Science and Technology

Dear Neal,

As you requested, we have taken a close look at the interim report of the National Science Board, "Environmental Science and Engineering for the 21st Century." Specifically, you asked our advice on how the NSTC should address the report's recommendation on reevaluating the government's environmental R&D portfolio and on what implications there might be for the overall Federal effort.

With regard to your specific question, doing an adequate job of providing the science we need to respond to the environmental challenges facing the Nation will unquestionably require the involvement of all federal agencies that support such research. We believe that NSF must weigh its responses to the report in the context of the entire federal environmental research portfolio. The resources and processes of the CENR should be used to help NSF optimize coordination, build on existing agency strengths, and minimize conflict. The Board's suggestion that the NSTC reevaluate the portfolio to identify research gaps and set priorities is very appropriate. In fact, this process is already well underway with the development of the "Integrated Science for Ecosystem Challenges" (ISEC) initiative developed for the FY 2000 and 2001 budget requests. As you know, this effort involved dozens of representatives of the CENR agencies in an effort to begin an expansion of ecosystem research to improve the information available to decision makers. The PCAST Environment and Natural Resources Panel has been carefully tracking the development of ISEC and believe that much of the thinking that has gone into the initiative could form a starting point for the development of future priorities.

It is perhaps also an appropriate time to enlist the assistance of OMB to do an evaluation of the status of environmental R&D funding across all agencies to update the budget information that was prepared for the 1995 CENR strategy document, "Preparing for the Future Through Science and Technology." We are well aware that it is no simple task to develop an accurate picture of the environmental portfolio. On the other hand, we do not see how the identification of research gaps and the setting of priorities for expanding the portfolio can be adequately done without accurately determining where we are at the moment, both inside NSF and across the environmental R&D agencies. We would be

happy to work with OMB and the CENR leadership to develop an appropriate taxonomy for such an exercise.

With regard to the NSB report overall, we applaud the Board's recommendation that environmental research be made one of NSF's highest priorities and agree that funding should be substantially augmented, particularly in five specific areas emphasized in the report: interdisciplinary research; environmental education; economic valuation of ecological goods and services; long-term, large-scale research; and improving environmental assessment capabilities. As you know, PCAST has recommended increasing the priority and funding of environmental science in several of our own recent reports. Those of us in the environmental field know that such funding increases are justified; many in policy positions may need to be convinced. Perhaps the Board adding its voice on this issue will tip the balance and gain the attention of Congressional decision-makers in a position to help implement this recommendation.

The funding increase recommended (ultimately an additional \$1 billion per year at the end of a five year period) is very large, equal to about 20 percent of the entire current federal environmental R&D portfolio. We do not disagree that an increase of this magnitude is needed. But we believe, as noted above, that if NSF were to carefully address the integration of its efforts with other ongoing Federal research to ensure minimal duplication of effort, cooperation, not competition for resources, and sharing of expertise and research infrastructure as part of its planning to make effective use of new funding, it would greatly help to justify such an increase.

We strongly agree with the Board's call for increased support for interdisciplinary research. It is clear that, despite many earlier calls for increased interdisciplinary research by numerous prestigious groups, this is a very difficult thing to accomplish in practice. While we do not mean to advocate additional bureaucracy, we do think the "focal point" recommendation must be taken seriously and should be addressed using some creative thinking. We do not believe that the increased emphasis on interdisciplinary activities called for in the report will materialize without the establishment of some mechanism designed to foster such activities.

We also note with satisfaction that the Board has reiterated the need for enhanced attention to work that addresses the interface between ecology and economics, including ecological goods and services and the social, cultural, and economic aspects of the environment. We believe this is an area of study that only NSF can promote at the moment, because there is no other logical focal point in the federal government for such work. As we did in *Teaming With Life*, we urge the Foundation to find a way to make this possible and we appreciate the Board's seconding one of our key recommendations.

We are also pleased to see an added emphasis on issues of larger spatial and longer temporal scales, which is crucial to being able to address emerging problems, such as climate change and loss of biological diversity, and agree that an increased emphasis on "assessment" is appropriate. With respect to the latter, however, we think it is essential for the report to be much more specific about what kinds of "assessment" are included in

the recommendation for increased attention by NSF. We agree that appropriate kinds of assessment include not just synthesis, but also “evaluation and communication of scientific understanding.” The addition of some specific examples of what the Board views as appropriate and inappropriate types of assessment activities for NSF would clarify the recommendation. It would also be helpful in providing reassurance to other CENR agencies about where NSF is likely to be headed as it implements the NSB’s guidance.

In closing, we would like to make one additional comment on NSF’s “Biocomplexity” initiative and its relationship to the recommendations in the report. The NSB indicated to us that “Biocomplexity in the Environment” has now become the descriptor of the full portfolio of environmental science and engineering at NSF. Furthermore, the Board has stated that the funding increases obtained for an FY2000 “Biocomplexity” initiative (\$50 million) represent the beginnings of the increased investment in environmental science called for in the Board’s report. We urge NSF to clarify which of the Board’s recommendations will benefit from the increases this year, as well as those proposed for 2001. Such information will be very important to the CENR for further development of ISEC across all of the agencies.

We very much appreciate having had the opportunity to comment on this important report. We would be happy to discuss our views with you further.

Sincerely,

Peter Raven
Chair
PCAST Environment Panel

John Holdren
Chair
PCAST Energy Panel