

## Chapter 1:

# Reporting on the State of the Nation's Ecosystems

### A Clear Need

Americans' support for sound environmental policy is strong, nonpartisan, and consistent,<sup>1</sup> reflecting recognition of the high cost—both monetary and otherwise—of a damaged environment. But the costs of ensuring a clean, safe, and healthy environment are also significant. In 1994, the last year for which government estimates are available, the United States spent more than \$120 billion on pollution abatement and control—nearly 2% of the nation's gross domestic product<sup>2</sup>—and this amount is only a part of the total cost of ensuring a clean, healthy, and vibrant environment.<sup>3</sup>

Each year, the federal government alone spends more than \$600 million collecting environmental data and, through regulatory requirements, imposes additional costs on the private sector, for monitoring of emissions and effluents.<sup>4</sup> State and local government and environmental organizations also devote considerable resources to environmental monitoring, as does the private sector, above and beyond what is required for simple compliance. These efforts, reported in a host of individual documents and Web sites, provide crucial information without which this project would not have been possible. They do not, however, provide the high-level, comprehensive account on the state of the nation's ecosystems that is the goal of this project.

Given the importance and cost of environmental protection, it is hardly surprising that the need for a periodic report on “how we are doing” in our environmental management efforts has been recognized for at least three decades. In 1970, the Council on Environmental Quality noted in its first annual report to Congress that the efforts of that time did “not provide the type of information or coverage necessary to evaluate the condition of the Nation's environment or to chart changes in its quality and trace their causes.”<sup>5</sup> Since then, virtually every comprehensive study of national environmental protection has called for more coherent and comprehensive information on the state of our environment. The National Academy of Sciences and the National Academy of Public Administration are among the many organizations that have recognized this need.<sup>6</sup>

But despite some excellent syntheses of data on specific problems and places, there is no periodic, comprehensive, and reliable compilation of essential information about the overall state of the nation's environment.<sup>7</sup> As a result, policymakers and other stakeholders are swamped by increasing volumes of data that nonetheless seem to neglect important issues. Society all too often ends up arguing not about the issues, but about the relevance and validity of the data on which the prospects for a substantive policy debate depend.

For a nation deeply committed to protecting the environment, this is an unacceptable state of affairs. It is as though we would seek to develop sound economic policy without having reliable measures of the nation's GDP, unemployment, or inflation rate, relying instead on idiosyncratic reports from individual firms, sectors, unions, and local chambers of commerce. We cannot know whether our current environmental policies and practices are sound, and we cannot make new policy with confidence, without a similar set of generally accepted measures of fundamental properties of the environment.

### Origin, Principles, and Process

Late in 1995, as part of its review of federal environmental monitoring efforts, the White House Office of Science and Technology Policy (OSTP) asked The Heinz Center to create a nonpartisan, scientifically grounded report on the state of the nation's environment. Acknowledging the relatively sophisticated reporting that already existed on many physical and chemical components of the environment (e.g., air quality, stream flows), OSTP proposed that The Heinz Center focus on ecosystems—that is, on the nation's living resources and the landscapes and waters they inhabit.

In undertaking this effort, The Heinz Center and its collaborators were guided by a fundamental conviction that, to be useful, *The State of the Nation's Ecosystems* must

- **Be scientifically credible.** Too many earlier efforts were disregarded because they were perceived as willing to accept any data available, or because their conclusions were not based in sound science. The report's content must benefit from input and review from a wide range of scientific and technical experts.
- **Be nonpartisan, both in content and in process.** Too many previous reporting efforts failed because they were perceived to be politicized or because they seemed to promote the perspectives of particular interests. Any hope for greater success requires that this effort be seen as fair and unbiased by a broad cross section of political interests.
- **Engage the expertise and experience of the nation's environmental monitoring programs and professionals.** Any attempt to characterize the state of the nation's ecosystems will fail without the cooperation of those who are engaged full time in the exacting and important profession of ecosystem monitoring and reporting.
- **Benefit from experimentation and learning.** No effort as ambitious as this could be expected to get everything right the first time around. Any hope for success depends on the ability to learn from the inevitable mistakes and to incorporate new data and understanding as they become available.

To implement these principles, the Center developed a funding strategy that depended upon joint support from government, industry, and private foundations. It assembled a small in-house staff and a large team of part-time collaborators drawn from government, the private sector, environmental organizations, and academia. A Design Committee, with members drawn from all of these groups, oversaw the entire project and made crucial decisions regarding approach, indicator selection, content, tone, and format of the overall document. Technical Work Groups, also representing a cross section of societal perspectives, were assembled to provide expertise in particular ecosystems. Their members identified the indicators included in this report, selected and assessed the data sources we relied upon, and drafted much of the descriptions and technical materials. Finally, a group of senior advisors and the Center's own Board of Trustees reviewed the project's strategic directions, with special attention to ensuring broad and balanced representation. Overall, nearly 150 individuals have participated in the project as committee and group members, with many more involved as contributors, reviewers, and advisors. (See p. x for a listing of committee members and p. xvii for additional acknowledgments.)

The Heinz Center established its working committees and began working intensively in late 1997. The project reached a key milestone with the release in late 1999 of a prototype report for public comment, covering three ecosystems: forests, farmlands, and coasts and oceans. This prototype was revised significantly in response to comments, and three additional ecosystems (fresh waters, grasslands and shrublands, and urban and suburban areas) were added. The process concluded with an extensive external review of a draft version of the present text in late 2001. Nearly 100 sets of comments were received from reviewers in business, environmental, government, and academic institutions. The end result of these steps—the first full report on *The State of the Nation's Ecosystems*—is presented in the chapters that follow.

### Next Steps

This first edition of the *State of the Nation's Ecosystems* is issued simultaneously in a print version, published by Cambridge University Press, and in a Web version available at [www.heinzctr.org](http://www.heinzctr.org). Subsequent reports in this series will incorporate new data and understanding, as well as comments, criticism, and suggestions from users of this initial edition. The Heinz Center actively solicits feedback, either by mail or through the *State of the Nation's Ecosystems* Web site.

This report is the first in what is intended to be a regular series of reports on the state of the nation's ecosystems. A variety of activities will be needed to produce the next edition. These include filling data gaps and improving the consistency of both data and indicators, consulting with key scientific communities in order to refine and clarify certain indicators, working with public and private agencies to regularize the provision of data in the form needed for national reporting, and strengthening the linkages between this project and others concerned with ecosystem reporting. The Heinz Center plans to undertake such activities following publication of this first report and is currently seeking the resources to do so, in anticipation of publishing the next report in the series in 2007.

One of the needs for the immediate future is to create the mechanisms for producing and updating the report on a regular basis. New editions will be issued in print and on the Web every five years; these will incorporate new understanding of the performance of ecosystems and of the most appropriate indicators and monitoring techniques to track that performance. Between these major new editions, substantial revisions—for example, to incorporate new data sets that become available—will be issued in an annual update to the Web version, with minor updates and corrections published on the Web as necessary.

Regular production of the report will require both long-term stable funding and an appropriate institutional “home.” While no decision has been made about whether The Heinz Center should continue to host the effort after the 2007 edition, what is clear is that the institutional and funding arrangements that support the project must ensure its continued independence and scientific credibility. Finally, besides what is required to produce the next report, it is likely that additional resources will need to be marshaled in order to fill some of the data gaps identified here.

### Meeting the Need

This document responds to a clearly defined need—periodic information, worthy of trust, about the condition of our nation's lands, waters, and living resources. Where it is possible to do so, the extent, condition, and use of these precious assets are described. Where it is not possible, we have provided a road map to guide future efforts. These are valuable steps, but the true and lasting value of this project will be realized only if the effort is repeated regularly and is accompanied by significant enhancement of the base of scientific understanding and by continuation and improvement of high-quality monitoring programs.

### The Structure of this Report

The remainder of Part I summarizes the findings of this project. Chapter 2 describes the reporting framework developed by the Design Committee for characterizing the state of the nation's ecosystems. Chapter 3 summarizes the overall findings of the report, including both what can be reported now and those gaps in data and understanding that will have to be filled before a fully comprehensive account of the state of the nation's ecosystems is possible.

Part II presents the indicators that characterize the state of the nation's ecosystems. Chapter 4 presents the core national indicators, which cut across the six ecosystems, and chapters 5–10 present the indicators that describe the state of the individual ecosystems that the project identified—Coasts and Oceans, Farmlands, Forests, Fresh Waters, Grasslands and Shrublands, and Urban and Suburban Areas.

An appendix describes in greater detail the data gaps identified in this document (see page 199).

Finally, the extensive technical notes (pp. 207–270) provide the technical foundations for the indicators. They include not only information on data sources and access, but also discussions of how the data have been manipulated and comments on their quality.

### Notes and References

1. S.P. Hays. 1989. *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985*. Cambridge, UK: Cambridge University Press.  
The following sources provide polling data that demonstrate the nature and depth of public opinion on the environment: The Polling Report, Inc. Multiple polls, including Gallup, ABC News, Newsweek, Harris. Accessed at [www.pollingreport.com/enviro.htm](http://www.pollingreport.com/enviro.htm) on April 26, 2002.  
League of Conservation Voters Education Fund. Multiple polls from 1999 and 2000. Accessed at [http://www.voteenvironment.org/media\\_debunking\\_env\\_myths\\_data.html](http://www.voteenvironment.org/media_debunking_env_myths_data.html) on November 21, 2001.
2. Christine Vogan. *Pollution Abatement and Control Expenditures, 1973–94*. Survey of Current Business, Bureau of Economic Analysis, U.S. Department of Commerce. <http://www.bea.doc.gov/bea/an/0996eed/maintext.htm>; accessed August 8, 2001.
3. Note that costs of compliance with wetlands, endangered species, and similar regulatory programs, plus voluntary actions by the public and private sector, are probably also significant as well, but are not included.
4. Executive Office of the President, National Science and Technology Council, Committee on Environment and Natural Resources. *National Environmental Monitoring and Research Workshop Proceedings*. February 25, 1997.
5. Council on Environmental Quality. 1970. *Environmental Quality: The First Annual Report of the Council on Environmental Quality*, p. 237. Washington, DC: U.S. Government Printing Office.
6. National Academy of Public Administration. 1995. *Setting Priorities, Getting Results: A New Direction for the Environmental Protection Agency*. Washington, DC: National Academy of Public Administration.  
National Research Council, Committee to Evaluate Indicators for Monitoring Aquatic and Terrestrial Environments. 2000. *Ecological Indicators for the Nation*. Washington, DC: National Academy Press. <http://www.nap.edu/catalog/9720.html>.
7. This situation exists in spite of several efforts to prepare and sustain periodic reporting on indicators and trends. For example, the Council on Environmental Quality published two major reports on environmental indicators and trends, one in 1981 and one in 1989, and the Conservation Foundation, a nonprofit organization, prepared three major reports (in 1982, 1984, and 1987) on environmental indicators and trends:  
Conservation Foundation. 1982. *State of the Environment 1982: A Report from the Conservation Foundation*. Washington, DC.  
Conservation Foundation. 1984. *State of the Environment: An Assessment at Mid-decade*. Washington, DC.  
Conservation Foundation. 1987. *State of the Environment: A View toward the Nineties*. Washington, DC.  
Council on Environmental Quality. 1981. *Environmental trends*. Executive Office of the President, Washington, DC.  
Council on Environmental Quality. 1989. *Environmental trends*. Cosponsored by the Interagency Advisory Committee on Environmental Trends, Executive Office of the President. Washington, DC.