

*Note from the editors: We are pleased to have Dev Joslin and Niki Nicholas as guest editors for this special issue of Environmental Practice on environmental decision making. They provided an excellent set of papers, which we are pleased to publish.*

## Environmental Decision Making—Taking Steps toward Improving the Process

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Guest Editors

In the opening article of this special issue on environmental decision making, Lynton Caldwell, one of the original authors of the US National Environmental Policy Act (NEPA) of 1969, raises the question, "Can American society make sound environmental decisions?" Caldwell goes on to ask whether society in the United States is sufficiently coherent in its beliefs and values to reach reasonable consensus, or at least compromise, on environmental solutions. He ponders if public understanding of the issues and the science are sufficient for sound decisions. Finally, he asks whether the current public and private institutions, and decision-making processes associated with them, are sufficient to meet the many challenges to making publicly acceptable and scientifically sound decisions.

The article by Caldwell is essentially the text of an address given at the Second National Conference on Environmental Decision Making, held in Knoxville, Tennessee on April 11–14, 1999. The broad questions he poses summarize many of the major issues that the conference was designed to address. Topics of the more than 50 papers presented ranged from the role of collaboration in environmental decision making to the importance of public knowledge and perceptions of environmental issues; from issues surrounding community sustainability to the role of private industry in environmental decision making. Water quality, public health, forest management, and habitat conservation were among the focus subjects of various sessions. In addition, several sessions were devoted to new

tools and support systems for environmental decision making. Finally, and perhaps foremost, the conference was designed to be a forum for discussion of issues—both within individual sessions and during the final day of "breakout" group discussions.

During the breakout group discussions, participants discussed, in separate groups, five general questions posed by Caldwell. Briefly, the questions asked were: (1) Do Americans have a common understanding of the environment as a focus of policy, and what are their beliefs as to the role of various levels of government in formulating policy? (2) What are the principal issues and obstacles in formulating environmental policies in the United States? (3) What are the principal environmental threats to our future? (4) How does one reconcile high public concern for the environment in opinion polls with rather negative attitudes in the US Congress towards environmental regulation? and (5) Can economic growth, sustainable development, and environmental quality be reconciled, and, if not, what are the consequences?

The results of the conference group discussions are summarized by Bruce Tonn in the second paper of this special issue. After summarizing participants' responses in detail, Tonn considers that, while the public generally supports environmental protection in the United States, the country, as a whole, is far from proficient at dealing with the many barriers to good environmental decision making. Interpreting participants' responses, Tonn asserts that many of the barriers to good environmental decisions do not stem from technical aspects, such as sufficient data collection or adequate tools for processing data. Rather, it is individual citizens' limited understanding of how environmental systems function and of how their own behavior affects both the environment and the environmental decision making process, that creates the greatest barriers. He also maintains that current attitudes toward consumerism and economic

growth conflict directly with environmentally sustainable decisions. Further summarizing others' views, Tonn points out that both political and private institutions and the media often create at least as many barriers as they break down.

Five of the subsequent seven articles in this special issue evolved from papers presented at the conference. Four of these articles used surveys or case studies to focus upon how institutions have in recent years been promoting stakeholder and public participation, with the goal of reaching reasonable compromise solutions that are sustainable. The remaining three papers provide tools and a model for dealing with environmental decision making problems.

One of the four articles on participation by stakeholders (Bauer and Randolph) examines 76 different cases of collaboration in environmental decision making. They conclude that the formation of formal organizations, where information is fully shared, is the essential first step in effective environmental decision making. Bauer and Randolph note that the choices made in these organizations as to whether to share institutional decision-making power with others and whether to allow open discussion, will determine whether stakeholders will view themselves as "rubber stamps" or true participants in the decision making process. The paper by Ryan also considers stakeholder participation, but it focuses on the principal barriers to stakeholder involvement in the environmental decision making process. Stakeholders' lack of resources (chiefly, time, money, and personnel) and their inability to process technical data appeared to be two of the most common reasons for failure to participate in environmental decision making when invited.

Ostermeier et al., after analyzing 31 case studies involving habitat conservation planning, echo the results of the first two studies. They note that the design, control, and sharing of power, roles, and other

decision-making elements are critical for effective and efficient processes. Like Bauer and Randolph, they assert that a strong, well-defined organizational framework and the open sharing of information are key to overcoming barriers created by politics, polarization, and poor communication. Both the analyses of case studies in Ostermeier et al. and the case study of the Clark Fork Settlement presented by Wilson, provide some cause for optimism by describing success stories. Wilson contends, however, that commitment by all active participants towards negotiating compromises to conflicts between economic and environmental goals is essential to success. Wilson's conclusion reiterates a major point of Tonn's earlier summary of the group breakout discussions—that economic development and environmental quality are diametrically opposed to each other.

The three remaining papers provide tools and a model for dealing with special environmental decision making problems. The paper by Merideth and Yaseen describes in depth a method of teaching community members or students an appreciation for the common sources of conflict in environmental decision making through a variety of well-tested simulation games. The paper provides detailed instructions on various uses of this simulation tool, in which participants take on specific roles and value positions, and make decisions based on those roles. This simulation tool has proved use-

ful by providing participants with insights into different viewpoints and into the difficulties involved in reaching consensus solutions. Milton et al., also focusing on public participation, describe a flexible statistical approach capable of categorizing and analyzing public attitudes toward environmental problems and potential solutions. Used astutely, such analyses should assist effective interaction between social scientists and environmental scientists and engineers, in order to achieve workable and socially acceptable solutions.

The final environmental review paper of this special issue addresses an often-ignored but critical problem in many environmental decisions—dealing with uncertainty. Tonn considers tools to address problems ranging from the identification and quantification of sources of uncertainty to the assessment of the impacts of choices over long time periods. The tool based on source-of-uncertainty analysis separates uncertainty into three types—inherent, operational, and use value—and describes their quantification. The life-cycle-analysis tool basically is used to evaluate alternatives by ascertaining both the evaluation criteria and the uncertainty around each evaluation. Finally, the decision-making framework that Tonn presents helps understanding of decision-making processes by categorizing them and by describing how uncertainty relates to each of four components—environmental and social context, planning and appraisal

activities, decision modes, and decision actions. The discussion of these tools, as well as the decision process framework presented by Tonn, offer extensive guidance for anyone dealing with complex environmental and/or long-term future-oriented decisions.

Taken as a whole, the articles in this issue provide considerable insight into the problems involved in incorporating stakeholder and/or public input into environmental decisions. While the solutions to these problems are not obvious or simple, it is seems clear that, in most cases, environmental decisions will not pass the test of acceptability if stakeholder involvement and public participation are ignored. To supplement these insights, some of the tools proposed herein could prove useful in analyzing or modifying public attitudes, or in dealing with ever-present uncertainty issues. Hopefully, the tools and insights provided in this issue will be tested and applied in the real world and eventually provide assistance towards achieving some progress in these difficult tasks.

*Both guest editors served on the organizing committees of this and the previous National Conference on Environmental Decision Making.*

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