

IMPROVING ENVIRONMENTAL DECISION-MAKING THROUGH COLLABORATIVE METHODS

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ABSTRACT

In the past, government agencies with environmental missions rarely allowed public oversight over final decisions. However, faced with loss of control as policy and planning are increasingly carried out by Congress or the courts, some agencies, supported by businesses, communities, and environmental groups, are using collaborative methods in the decisionmaking process. This emerging paradigm for environmental decisionmaking is driven by practical necessity rather than by abstract theory.

This article will demonstrate that collaborative management is a process that broadens the influence of all entities concerned with an environmental decision, and is more likely to: (1) include the needs and opinions of affected parties; (2) bring a dialogue on normative values into the deliberative process; and (3) result in decisions that enhance environmental protection.

New approaches to environmental decisionmaking have emerged in response to increasing complexity in environmental problems, protracted disputes among stakeholders, constrained government budgets, and recent movements toward deregulation and property rights protection. These methods attempt to provide effective, efficient, publicly-accepted decisions. They have been given a variety of labels, including “civic environmentalism,” “integrated resource management,” “ecosystem management,” “watershed management,” and “negotiated agreements,” to name a few. They have several key features: a strong scientific base, extensive involvement of stakeholders, a proactive and holistic approach to issues, and the integration of a wide range of regulatory and non-regulatory solutions. Management decisions are made through a collaborative process involving all stakeholders.

This article addresses this collaborative environmental decisionmaking (CED) process by first tracing the recent evolution and theoretical underpinnings of collaborative decisionmaking; characterizing the method and how it is implemented; and exploring several recent examples to see how the approach can achieve its objectives of conflict resolution and improved environmental decisions.

THE EMERGENCE OF COLLABORATIVE ENVIRONMENTAL DECISIONMAKING

Historical Context

In the 1970s, large government budgets and heavy reliance on prescriptive regulations and tax-supported federal funding programs were the basis for most U.S. environmental policies and statutes, such as the Clean Air Act, the Clean Water Act, and the Endangered Species Act. These “command and control” approaches were appropriate for the time and contributed to the reduction of conventional pollution and to resource conservation. Still, the interests in environmental management seemed to be divided into three separate camps: the regulator, the regulated, and public interest environmental groups. Conflicts among the three usually resulted in litigation -- a protracted, contentious, and inefficient approach to solving problems (John, 1994).

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While most environmental protection policies survived the economic recession and the “conservative revolution” of the 1980s, growing federal budget deficits and a political movement toward deregulation and protection of private property rights meant that effective environmental management could no longer rely on the tools of the past. Public lands agencies engaged in extensive multiple-use resource management planning during the 1980s and found that even with traditional public participation, they were often faced with appeals and lawsuits. Toward the late 1980s, the growth of non-government public interest groups and increasing use of environmental negotiation and alternative dispute resolution, as opposed to litigation, set the stage for greater public involvement and communication in resolution of environmental management issues.

In addition, the 1980s brought increased awareness of the complexity of environmental problems. Most remaining water pollution problems came from diffuse non-point sources, air pollution control turned to diffuse toxic sources, and natural resources management methods were recognized as too fragmented

to protect biodiversity. New, more comprehensive methods were needed to address these highly complex problems effectively. In response, the 1990s have seen new collaborative approaches emerging in nearly every aspect of environmental management -- pollution control, local land use decisions, hazardous facility siting, public land management, ecosystem and watershed management, and international environmental treaties and development projects.

Theoretical Underpinnings

The various parties to an environmental controversy bring different positions, interests, and values to the problem. These ideals are often incompatible and make problem resolution complex. Environmental decisionmaking involves professionals, politicians, and the public in a discourse that usually produces several contested alternative solutions to the problem that reflect a spectrum of interests between economic development and environmental protection. A decisionmaking body is then expected to resolve the inevitable conflicts arising among the proponents of these alternatives in an equitable manner that satisfies the needs of society while still protecting the environment. However, conflicts with complex and competing interests are not well managed by strict, technocratic, decisionmaking processes (Selin and Chavez, 1995). As a result, decisions concerning policy and planning are contested and sometimes end up being resolved by a legislature or judiciary -- entities that are less familiar with, and more remote from, the problems (Selin and Chavez, 1995).

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Disputed environmental issues contain a combination of biological, physical, political, economic and social factors that compound the situation (Daniels and Walker, 1996). Proposed solutions to environmental problems are often limited to technological or economic answers, but these often fail to take noneconomic environmental values into account. They attempt to separate facts from values on the basis that values fall into the political realm and have no place in rational, objective decisionmaking. However, this fact-value dichotomy eliminates

the way some of the stakeholders affected by a decision interpret and experience the world they inhabit (Fischer, 1995). The rationality and objectivism purported to be at the heart of science and technology tend to eliminate meaningful aspects of human association. They repress certain sources of knowledge by placing boundaries of time, space, culture and experience upon solutions (Dryzek, 1990). Further, although science and economics appear to be value-neutral, they are social constructs and reflective of ideological interests (Morrow, 1994). Due to this uncertainty, environmental solutions cannot be limited to technical or scientific answers, and as a result politics and conflict become part of the overall decisionmaking process (Daniels and Walker, 1996).

172 In response to this dilemma, government agencies, businesses, industries, communities, and environmental groups have begun to use discursive methods in the decisionmaking process. The methodology invokes concepts of participatory democracy, using civic dialogue to reach decisions (Dryzek, 1990). Issues are addressed by sharing information, and sometimes the power to make decisions, among the public, government, nongovernmental organizations, and economic interests. The process introduces noneconomic values and emphasizes the sustainability of communities. The goal is to reach decisions that can be supported by all of the parties involved and still reflect scientific principles along with local knowledge. Collaboration reflects an attempt to take collective responsibility for actions and outcomes (Selin and Chavez, 1995).

The approach highlights stakeholder interests. Its roots are in the context of corporate strategic planning, where stakeholder theory was conceived as a way to understand the dynamics of corporations and their interactions among different constituencies and interests (e.g., employees, consumers, suppliers, regulators, communities) (Freeman 1984). The approach seeks enhanced corporate success by balancing the interests of stakeholders and shareholders in business decisions, in contrast to the old management style of improving shareholder benefits by disregarding other interests (Brooks, 1994). In the context of

environmental decisionmaking, the stakeholder approach evolved from public participation and environmental negotiation. The principal difference between the stakeholder approach in corporate and environmental contexts is that corporate management aims to understand and consider stakeholder interests in its decisions, while environmental management involves the stakeholders prior to decisionmaking.

To reach effective environmental decisions that are acceptable to diverse interests, the usual categorizing of parties as adversaries must be changed. To do this, issues can be defined in terms that call for joint problem solving (Pasquero, 1991), and forums for discussion can be provided that permit diverse points of view to be aired (Healey, 1997). Traditional public participation needs to be redesigned with an emphasis on maintaining a sustained dialogue between opposing parties that stresses similarities and promotes a shared vision of the future (Selin and Chavez, 1995). Civic discovery, where opinions can be changed, propositions modified, and common interests determined, provides parties with the opportunity of entering into a dialogue over a future course of action (Reich, 1988). Collaborative discourse, partnerships, and open discussion meetings are techniques that support a mutual understanding; they are more effective at achieving workable solutions than hearings, speeches, and public meetings (Daniels and Walker, 1996; Walker and Daniels, 1996). These latter, more traditional methods of participation and arbitration are based on public input where the agency still makes the ultimate decision. This differs from the collaborative approach which involves a discourse among stakeholders to reach a reconciliation of positions and some form of consensus.

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UNDERSTANDING COLLABORATIVE ENVIRONMENTAL DECISIONMAKING

What is Collaborative Environmental Decisionmaking?

Table 1 lists four basic elements of CED. The first two elements capture the balance of CED between the political basis for decisions

TABLE 1: ELEMENTS OF COLLABORATIVE ENVIRONMENTAL DECISIONMAKING

Stakeholder Involvement	Early engagement of stakeholders in the process of planning and implementation. Stakeholders are those effecting change in the environment and those who perceive they may be affected by it.
Knowledge Based	Strong and sound information exchange by the process participants.
Holistic, Proactive Approach	Holistic or "contextualized" understanding of environmental problems, and proactive efforts to resolve and prevent them.
Sharing of Power	Parties in authoritative positions relinquish some control to other participants.
Joint Responsibility	Participants share credits for success and acknowledgements of failures.
Integrated Solutions	Integration of a wide range of creative solutions to problems, such as flexible regulation, economic incentives and compensation, negotiated agreements, voluntary actions, and educational programs.

174 on the one hand and the scientific basis on the other. If either element is de-emphasized, the effort may not be successful. The third and fourth elements address the need to view environmental problems broadly, to understand the local political and technical context, and to develop appropriate creative solutions.

Why engage in CED?

Table 2 depicts three basic objectives of CED. Most collaborative projects involve some conflicts among stakeholders, and a principal objective of CED is to engage in a process to resolve those conflicts. If the process begins too late, after conflicts have become entrenched, it is difficult for the stakeholders to resolve them.

TABLE 2: OBJECTIVES OF COLLABORATIVE ENVIRONMENTAL DECISION-MAKING

Resolve Conflict	Some collaborative efforts aim to engage stakeholders in a process of resolving conflicts among them through negotiations and mediation.
Develop a "Shared Vision"	Some collaborative efforts intend for the stakeholders to come up with a vision or direction that they can agree to and buy into.
Formulate Creative Solutions	All collaborative efforts hope to use dialogue and group processes to develop creative solutions that may not have emerged from traditional planning exercises.

If conflict has not become entrenched, the process may help develop a “shared vision” of the future and lead to creative solutions.

Where is CED used?

Table 3 depicts two applications of CED, distinguishing between (1) problem solving where a stakeholder group is engaged to come up with a solution or plan to resolve a particular problem, and (2) ongoing management processes where stakeholders may be involved on a continual basis over a long period of time. Some cases have elements of both. In the first case, stakeholders may be engaged for a short time in order to develop a solution or plan. Once completed, the group may become inactive. In the second case, stakeholders are involved in on-going management -- including implementation, monitoring, and evaluation.

TABLE 3: TYPES OF CED APPLICATIONS

Problem-solving or plan development	Some collaborative efforts focus on a specific problem and a decision to solve it; e.g. Habitat for Conservation Plan development Forest Service Management Plan development Brownfields Redevelopment Negotiated regulations
On-going management process	Some collaborative efforts intend to establish an ongoing process of stakeholder involvement and decision-making; e.g. Watershed Management programs Ecosystem Management programs

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How to do CED?

The process and procedures for CED vary with the particular situation. Table 4 depicts two critical components: a planning framework and stakeholder involvement. While the framework resembles a classic rational-comprehensive approach, it incorporates adaptive and participatory elements to tailor the process to the evolving planning context and balances factual information with stakeholder issues.

TABLE 4: CRITICAL COMPONENTS OF CONDUCTING CED

Planning Framework	An adaptive, iterative and open process that balances scientific information and stakeholder participation to achieve objectives: <ol style="list-style-type: none"> 1. Scoping the problem and the stakeholders 2. Gathering and analysing scientific and other information 3. Formulating alternatives 4. Assessing effects of the alternatives 5. Evaluating and selecting an alternative
Stakeholder Involvement	Process of participant inclusion with open dialogue to resolve conflicts, develop a shared vision, and formulate creative solutions.

Stakeholder involvement is the heart of collaborative environmental decisionmaking. As elaborated in Table 5, there are five basic tasks involved in effective stakeholder involvement. The aim of inclusiveness makes the identification of stakeholders important; excluding an important stakeholder can undermine the process. The process works best when well structured -- with a clear schedule, explicit milestones, and the use of small working groups.

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TABLE 5: STAKEHOLDER INVOLVEMENT: THE HEART OF CED

Stakeholder Identification	A critical first step is to attempt to identify all stakeholders; additional stakeholders may be identified during the process and should be included.
Commitment and Authority	To foster commitment and engagement, all stakeholders must be given the opportunity to participate in the entire process. When stakeholders are also given authority for action and responsibility for implementation they take ownership in the process.
Process	Care must be taken to design a process that <ol style="list-style-type: none"> a. gives stakeholders the opportunity to participate b. has milestones and deadlines; and c. divides the group into subgroups to achieve a working scale
Trust	Trust among stakeholders is critical to the success of the effort and should be established early; trust is built on respect and understanding, and social functions can be useful to foster team-building.
Leadership	Some "quiet leadership" is required in the form of facilitator, convener, or negotiator, depending on the situation.
Collaborative Learning	Through collaborative learning, stakeholders overcome barriers and link theoretical knowledge to practical knowledge.

One of the greatest challenges of a stakeholder group is achieving trust, especially among a group with diverse interests. The respect and understanding necessary for trust can be facilitated by getting to know one another and fostering “team-building” through social functions. Collaboration is a process in which the group as a whole must be self-governing and in which all participants are equally represented in the making of joint decisions. Still, an effective leader must guide and coordinate that decisionmaking process (London, 1995).

The main goal of stakeholder involvement is collaborative learning. Through commitment, trust, openness, and responsibility, groups are able to rise above initial perceptions to learn from one another and develop creative solutions to problems. Articulating perceptions and hidden agendas can lead to identification of shared values, a new problem statement, and creative solutions (Selin and Chavez, 1995; Healey, 1997).

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To achieve collaboration, a number of conditions or prerequisites are needed (Table 6). Good information is essential. Collaboration takes significant time and often financial resources to support participants’ time and expenses. More important is the commitment and willingness of stakeholders to participate, to be open to new information and perspectives, and to learn. Conversely, the lack of any of these conditions serves as a barrier to collaboration.

TABLE 6: PREREQUISITES FOR, AND BARRIERS TO, SUCCESSFUL CED.

Prerequisite for CED	Barriers to CED
Good information	Misleading information
Time to participate, to build trust, to learn, to resolve disputes, to create solutions	Immediate problem, no time to deliberate
Commitment of participants	Lack of commitment by participants
Willingness to learn	High level of advocacy; entrenched positions
Responsibility to affect and implement decision	No responsibility given to stakeholders
Resolution of the problem is the goal	Litigation or precedent is the goal

Misleading information presented in an adversarial nature, insufficient time, lack of commitment and responsibility, entrenched positions, or uneven authority can undermine the collaborative process. In addition, if litigation or legal precedent is a goal of certain stakeholders, collaboration will not work.

APPLICATIONS OF COLLABORATIVE ENVIRONMENTAL MANAGEMENT

Since the emergence of collaborative environmental decisionmaking has been manifested primarily in practice, perhaps the best way to illustrate the process and promise of the approach is through real case examples. The following cases, diverse in scale and participants, are divided into the two categories introduced in Table 3: problem-solving or plan development and ongoing resource management.

Solving Problems Collaboratively

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Oregon Dunes. In 1993, a collaborative process was used to develop a management plan for the Oregon Dunes National Recreation Area. A draft environmental impact statement was produced in conjunction with that management plan and released for public comment. Due to the size of the response, the U.S. Forest Service decided to use some innovative techniques in an effort to include all interested parties in the review process. Workshops were held where biological, ecological, and other information was provided to the people attending. Then, rather than use the traditional methodology where viewpoints are presented and the agency is expected to make a decision based on the arguments presented by the various sides, the stakeholders were encouraged to discuss and debate the issues among themselves.

The various groups that used the Oregon Dunes National Recreation Area -- off-road vehicle users, campers, hikers, environmentalists, and others -- entered into a dialogue that resulted in several changes, additions, deletions, and modifications to the management plan. The result was a sophisticated strategy that included

such actions as phased goals and local community development. The revisions did not reflect the opinions of any one stakeholder, but rather the collective values of the various parties. They also achieved improved protection for the dunes and vegetation of the Recreation Area (Daniels and Walker, 1996).

San Diego County Habitat Conservation Planning. In San Diego County, California, a comprehensive habitat conservation planning program was developed to comply with both the federal Endangered Species Act and California law. This Multiple Species Conservation Program (MSCP) was designed to preserve wildlife habitat and to enable private landowners to obtain economic use of their lands, such as habitat-compatible development. The idea was to avoid lawsuits concerning the private property “takings” issue whereby individuals have sued government agencies for violating the 5th Amendment of the U.S. Constitution (e.g. *Dolan v. City of Tigard*; *Lucas V. South Carolina Coastal Commission*). This was accomplished by preserving some lands, by reducing restrictions on future development on others, and by decreasing the costs of legal compliance. The San Diego County MSCP was developed in cooperation among local governments, state and federal wildlife agencies, property owners, and representatives of both developers and environmental groups (MSCP, 1996). The partnership resulted in preserving native vegetation and providing habitat for rare, threatened and endangered species, while still providing economic benefits to private landowners. Shared responsibility is a primary feature of the Plan, with local jurisdictions, the state and federal governments, and private landowners each accepting obligations for land acquisition and management. The values of environmentalists and developers were expressed in the final Plan, and over 200 endangered, threatened, or rare species were afforded protection (California Resources Agency, 1996).

St. Johns Marsh. Approximately 150,000 acres of wetlands encompassing the St. Johns Marsh in Florida have been restored or enhanced through a collaborative effort involving farmers, environmentalists, citizens, and the state and federal government. As

a result of many decades of encroachment on the marshlands by farmers and orchardists, this area, comprising the headwaters of the St. Johns River in Indian River County, had been completely drained. It is now one of the largest wetland restoration efforts ever accomplished. Yet, when farmers first learned of the state's plans, they feared the loss of their lands and began an organized fight against the project.

180 However, the St. Johns River Water Management District had already decided to work directly with the farmers and declined to use coercive or forced methods such as condemnation proceedings. The District established an advisory board comprised of farmers, environmentalists, local citizens, and government officials to help with decisionmaking. The board members worked together to create a process where, in the end, all of the parties walked away feeling they had gained. The results are thousands of acres of protected wetlands, clean water, an abundance of wildlife, and an irrigation water supply. The open dialogue among the parties enabled all of the various parties' needs to be met while creating environmental benefits (Grimison, 1997).

U.S. Forest Service Planning in Virginia. Under the terms of the 1976 National Forest Management Act, the U.S. Forest Service (USFS) is required to develop Land and Resource Management Plans for all of the nation's National Forests. The experience in Virginia's George Washington and Jefferson National Forest illustrates the evolution of the collaborative approach in USFS planning. In the mid-1980s, the USFS developed a management plan for the George Washington section of the Forest (GWNF) with minimal public involvement. Public outcry and appeals led the national headquarters to direct the GWNF Supervisor to scrap the entire Plan and start over. To its credit, GWNF initiated a negotiation process involving a dozen diverse interest representatives, from timber production groups to local landowners to Earth First and other environmental organizations. The final Plan they came up with reflected many of the principles of collaborative ecosystem management and was accepted without appeal.

Currently, the Forest Service is revising the plan for the Jefferson section of the Forest using a “collaborative planning and stewardship approach.” They describe the technique as planning that is local, brings together communities of place and interest, honors normative values, holds all stakeholders responsible for success, and requires all parties to begin the process by educating one another and discovering common ground. With no one leader and with no one excluded from the table, the group is to envision the future and create a plan to realize that vision. This collaboration is intended to help defuse polarization and start discussing issues in conference rooms instead of courtrooms. But it is neither quick nor easy. The Forest Service has had to reach out to people, build trust, seek common ground and compromise, and forge integrated solutions (Randolph and Rich, 1998).

Negotiated Regulation: Rulemaking for Reformulated Gasoline. Negotiated regulation has emerged as another example of collaborative decisionmaking. This has taken two forms: negotiated rulemaking and negotiated air and water permitting at specific facilities (discussed under the Merck case). With regard to rulemaking, since its inception EPA has struggled to develop regulations in a fair, effective and efficient manner, only to be confronted with legal challenges and conflicting technical information. An estimated 80% of all major rules issued by EPA have been litigated, and rarely has the agency been able to promulgate rules within statutory deadlines (Weber and Khademian, 1997).

As early as 1983, EPA began experimenting with regulatory negotiations (or neg-regs). A good example of successful neg-reg came in the 1991 negotiation of a regulation for reformulated gasoline as a means to reduce urban smog under the 1990 Clean Air Act Amendments. Despite considerable potential conflict among stakeholders, through a collaborative approach, EPA was able to develop and implement a consensus-based rule within the deadline imposed by the Act. In a study of this case, Weber and Khademian (1997) conclude that its success hinged on three elements: strong

leadership, credibility and trust of the lead agency, and formal binding rules.

Negotiated Regulation: Merck & Co. Project XL Agreement. In recognition of some of the deficiencies of strict “command and control”, President Clinton announced his Reinventing Environmental Regulation initiatives in March 1995 to test negotiated regulation strategies. Perhaps the flagship initiative is the “XL for Communities” program, which is designed to give “the regulated community the opportunity to demonstrate eXcellence and Leadership...through locally-designed and directed alternative environmental management strategies which achieve greater levels of environmental quality” (USEPA, 1997).

182 One of the first pilot XL projects to achieve final agreement involved Merck & Co., Inc.’s Stonewall pharmaceutical plant near Elkton, Virginia. The plant, which employs 800, will invest \$10 million to convert its coal-burning power to natural gas, cutting its overall emissions by 20 percent. The company will cap emissions below current actual levels, to reduce sulfur dioxide and nitrogen oxide emission to protect visibility and reduce acid deposition in nearby Shenandoah National Park (USEPA, 1997).

In exchange, Merck will not need prior approval from EPA or the Virginia Department of Environmental Quality for changes that cause emission increases so long as they stay below the caps. The project involved a stakeholder team including representatives from EPA, VDEQ, the communities of Elkton and Rockingham County, the National Park Service, and regional environmental organizations. Public involvement was facilitated through newsletters; briefings for the public, national environmental groups, and Merck employees; public meetings and hearings; and a public comment period on EPA’s proposed site-specific rulemaking. The final rulemaking was published in the Federal Register in October 1997 (USEPA, 1997).

Brownfields Redevelopment. Brownfields are idled or abandoned industrial and commercial sites and facilities where expansion or redevelopment is complicated by real or perceived environmental contamination. Strategies of EPA's Brownfields Initiative include funding pilot programs and other research efforts, clarifying liability issues, entering into public-private partnerships, developing job training programs, and addressing environmental justice concerns relating to brownfields. To succeed in returning brownfields to productive use, governments, industry, and citizens must all collaborate (USEPA, 1998).

One of EPA's sixteen Brownfields Showcase Communities is southeast Florida's Eastward Ho! Brownfields Partnership, which aims to redirect future growth back to the east to the region's urban core and away from the threatened Everglades ecosystem (Westward Whoa!). The strategy hinges on the in-fill redevelopment of approximately 2100 brownfields sites that have been identified in the 155 mile corridor stretching through five counties. The partnership involves EPA, Florida Department of Community Affairs, the Miami-Dade County Brownfields Task Force, Citizens for a Better South Florida, the Sierra Club, and Model City Advisory Councils (USEPA, 1998).

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Managing by Collaboration

Chesapeake Bay Program. In 1983, the states of Virginia, Maryland, and Pennsylvania, the District of Columbia, the U.S. Environmental Protection Agency, and the Chesapeake Bay Commission signed the Chesapeake Bay Agreement, creating a regional approach "to improve and protect water quality and living resources of the Chesapeake Bay estuarine system." This collaborative effort now involves all levels of government, the private sector, landowners, and citizens. More than 700 citizen groups all play an active role in the restoration program, and more than 50 subcommittees and work groups ensure all interests are represented (Randolph and Rich, 1998).

In passing the 1988 Chesapeake Bay Preservation Act, Virginia's General Assembly realized that local governments must play a leading role in protecting the Bay. To assist local governments in implementing land use controls, the Act established the Chesapeake Bay Local Assistance Board, with staff support from a new Chesapeake Bay Local Assistance Department. The Virginia program has been effective in working with localities to achieve compliance by providing non-regulatory technical assistance and implementation grants for localities to finance their compliance. This effective partnership involves the state, planning districts, local governments, and the development community in a continuing dialogue with respect to the parties' values, how they influence land use, and how that ultimately affects Chesapeake Bay (Randolph and Kerns, 1997).

184 *Applegate Partnership.* In the Siskiyou Mountains of Oregon, residents sought a non-litigious way of resolving the old growth forest versus jobs conundrum. They wanted to preserve both the environment and the traditional economic lifestyle of their rural community. Sixty residents, including ranchers, farmers, environmentalists, loggers, community groups, and government officials formed a coalition and developed a vision, goals, and objectives. A consensus process was used to make decisions. The coalition was successful in replacing gridlock with positive relationships between formerly polarized groups, opening up bureaucratic processes, and generating innovative ideas.

The Partnership currently maintains support for the management of the watershed through community involvement and education. The group's nine member "Board of Directors" continues to meet once a week. It resolves local problems and disputes by keeping the parties talking -- in face-to-face communications -- in an effort to find common solutions. As a result, relationships have developed among former adversaries. The weekly meetings are open to the public, and all people are assured equal access to power and information.

The Partnership continues to encourage landowners and loggers to practice long-term ecological and economic management. It is currently leading an assessment of the Applegate River watershed (Yaffee et al., 1996; Rolle, 1999).

Merrimack River. In 1992, the Merrimack River Water Consortium was held for two reasons: to define issues with respect to the Merrimack River's watershed in New Hampshire and Massachusetts, and to reach out to all potential stakeholders. This meeting was followed a year later by a conference at which 200 people attended and contributed to the draft of a watershed management plan. A management committee and four subcommittees were formed to address continuing environmental problems from a holistic viewpoint. Further collaboration includes a watershed advisory group, a citizen environmental monitoring network, resource assessment, information access network, and a business-government forum.

The subcommittees addresses issues of water quality, instream flow, information management, and resource uses and values. They have performed a resource inventory of the watershed, water quality assessments, hydrologic analyses, two pilot subwatershed studies, hydrographic coding, and created GIS base maps (USEPA, 1995).

Negrito Project. A group of citizens recognized that the Negrito River in New Mexico was undergoing severe stress due to overgrazing, fire suppression, and erosion. They approached the U.S. Forest Service and asked for help in producing an ecologically-oriented pilot study to address the watershed's problems yet maintain resource-based employment and grazing. A working group of representatives from government agencies, conservation groups, industry, educational institutions, and the local community was then formed to develop projects to reach the proposed solutions. This group develops small watershed improvement projects that are carried out by non-agency personnel - the group wants to maintain the community basis of the project. All

planning and decisionmaking is done by consensus at facilitated meetings (Yaffee et al., 1996).

Some Simple Lessons

186 In the Oregon Dunes example, stakeholders were brought into the process late, but they became actively engaged in providing input that was used in planning and decisionmaking. This is in contrast to the San Diego County Multiple Species Conservation Plan, the Applegate Partnership, and the Negrito Project where stakeholders were a driving force behind the initiation of the process. The St. Johns River Water Management District actively sought stakeholder involvement from the start, as did the EPA in the Merrimack River example, and had the stakeholders make decisions through representation on decisionmaking boards. In the National Forest example, stakeholders are engaged in the process of devising or drafting plans, while in the Chesapeake Bay and situation, most of the emphasis is on partnerships among federal, state, and local government agencies, non-profit organizations, and private industry and land developers. While empowerment varies among these examples, they indicate a clear trend toward immersion of stakeholders in planning and decisionmaking.

In many instances, stakeholders must rely on scientific or other information being provided to them by "experts." This is evident in the Oregon Dunes, San Diego County, and Chesapeake Bay examples. In the National Forest, Applegate Partnership, Negrito Project, and St. Johns Marsh examples, stakeholders primarily relied on information they brought to the process or used their own normative values in planning and making decisions.

In all of the cases, a holistic understanding of the problems is used to come up with solutions. All of the examples provide for both environmental protection and economic development in their planning. In doing so, the stakeholders utilize a wide range of creative means to resolve the dilemmas they face. Most importantly, it is meaningful to bear in mind that this is but a handful of the literally

hundreds of situations where collaborative processes are being put to practical use.

CONCLUSIONS

Collaborative environmental decisionmaking requires overcoming institutional and situational obstacles. The current culture of government agencies still hinders the process, as does the centralized rational comprehensive planning under which most agencies operate. Nongovernmental organizations often look at attempts to collaborate as a dilution of their objectives, especially when litigation can bring high visibility to their positions. Traditional policy-making, standard public "participation," and dispute resolution processes can discourage civic discourse by implying an attitude of "we know what is best for you." Personal concerns, commitments, objectives, and fears among stakeholders -- especially fears of material or social loss -- can all create conflicts. When a powerful economic or political entity controls how the issues are constructed and how debates are conducted, conflict is likely (Healey, 1997).

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Achieving collaboration requires the parties to be open and willing to learn from one another. The movement from individual rights to shared power in environmental problem solving requires collective action rather than personal gain. The rights and responsibilities of all parties must be considered and a climate of trust created through the development of common values. All parties must recognize the interdependence of their interests (Pasquero, 1991).

Public decisions about the environment should reflect the character of a society. Attitudes about the environment are expressed by people in economic, ethical, and aesthetic terms that are laden with deep emotions; intensely held, complex values link humanity to the Earth (Caldwell and Shrader-Frechette, 1993). Yet, these noneconomic environmental values are rarely reflected in environmental decisions. Collaborative decisionmaking may hold the key to reaching solutions that integrate the needs of participants while

still providing environmental protection. Opening up a dialogue that demonstrates the parties share some core values may be a means to achieving an end that all participants can live with. The aim of collaborative environmental decisionmaking is to engage stakeholders in the process of environmental planning and decisionmaking, to resolve disputes before they become entrenched, and to formulate creative solutions. Collaboration implies a joint decisionmaking approach to problem resolution where power is shared and stakeholders take responsibility for their actions.

Utilizing collaborative environmental decisionmaking requires that a balance is reached among: scientific information, institutional directives, and stakeholder values and interests; equity, effectiveness, and efficiency in solutions; and the authority and resources of the stakeholders. Both research and practice need to address these and other issues, and key actors must be educated about the processes and benefits of the approach if collaborative decisionmaking is to achieve its promise.

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