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Evaluation of a Collaborative Model: A Case Study Analysis of Watershed Planning in the Intermountain West

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ABSTRACT / Collaborative planning processes have become increasingly popular for addressing environmental planning issues, resulting in a number of conceptual models for collaboration. A model proposed by Selin and Chavez suggests that collaboration emerges from a series of antecedents and then proceeds sequentially through problem-setting, direction-setting, implementation, and monitoring and evaluation phases. This paper summarizes an empirical study to evaluate if the Selin and Chavez model encompasses the range of factors important for the establishment and operation of collaboration in watershed planning from the perspective of the planning coordinator. Analysis of three case studies of watershed based planning efforts in the Intermountain West suggests the model realistically describes some of the fundamental collaborative elements in watershed planning. Particularly important factors include the involvement of stakeholders in data collection and analysis and the establishment of measurable objectives. Informal face-to-face dialog and watershed field tours were considered critical for identifying issues and establishing trust among stakeholders. Group organizational structure also seems to play a key role in facilitating collaboration. From this analysis, suggestions for refining the model are proposed.

Watersheds have been identified as a suitable planning unit for addressing many natural resources issues such as water quality, water supply, and fish and wildlife habitat (Williams and others 1997). These issues often require cooperation and coordination among various entities in the watershed because the watershed may cross several jurisdictional boundaries (McGinnis and others 1999, NRLC 1996). Traditional participatory planning processes such as public hearings and comment periods have been criticized for not creating a planning environment suitable for addressing these issues because they: restrict information sharing; reinforce stereotypes; limit public involvement in plan development; and promote win–lose solutions (Blahna and Yonts-Shepard 1989, Friedmann 1973, Maser 1996, Susskind and Cruiskshank 1987, Wondolleck and Yaffee 1994). In addition, results from these processes may not have the public support to be implemented and are often challenged through litigation (Bingham 1986, Urban Land Institute 1994, Witkowsky 1995). In contrast, proponents of collaboration-based planning suggest that this approach can produce holistic, equitable solutions that have the support necessary to be implemented (Carpenter 1991, Gray 1989, Potapchuk 1991, Susskind and Ozawa 1985, Wondolleck and Yaffee 2000). Table 1 illustrates some of the fundamental differences between collaboration-based planning versus participatory planning as defined in this paper. Although there is continuous and important debate on the appropriateness and success of collaborative planning, evidence suggests that a collaborative approach may offer some tangible benefits: relationships between stakeholders may improve; risk of impasse may be minimized; broad analysis of the issues may improve the quality of the solutions; parties often retain ownership of the solution; and willingness to implement may increase (Belsten 1996, Blahna and Yonts-Shepard 1989, Carpenter and Kennedy 1988, Chamberlin 1998, Gray 1989, Selin and others 1997, Wondolleck and Yaffee 1994).

Watershed planners need to understand the fundamental elements of collaboration to decide if and how they might incorporate collaboration in their planning effort (McGinnis and others 1999). With increasing interest in collaboration, a number of conceptual models proposed for collaboration-based planning have emerged (Banner and others 1989, Carpenter 1991, Friedmann 1973, Gray 1989, Logsdon 1991, McCann 1983, Moote and others 1997, Selin and Chavez 1995, Urban Land Institute 1994, Waddock 1989). These models offer planners a simple, but effective, way to understand potential steps involved in collaboration. Although consensus does not exist on all of the potentially important elements involved in collaborative processes, there may be general agreement on the basic

KEY WORDS: Collaboration; Case study; Public participation; Watershed planning; Natural resources

Table 1. Characteristics of collaboration-based and participatory planning

Collaboration-based planning	Participatory planning
Interdisciplinary approach—cross-disciplinary integration	Multidisciplinary approach—compartmentalization of disciplines
Stakeholders educate each other	Education is believed only to be necessary for the public
Informal face to face dialogue among stakeholders	Overreliance on public hearings and other formal input methods
Continuous stakeholder participation throughout the planning process	Participation of stakeholders only requested at certain points in the planning process
Stakeholder participation encouraged to create a holistic plan	Stakeholder participation generally encouraged only to create support for a plan
Joint information search used to determine facts	Science used to buttress positions and refute other parties data
Generally, consensus is used to make decisions	Generally, voting is used to make decisions

Adapted from Gray (1989), Moote and others (1997), Urban Land Institute (1994).

fundamental elements (Gray 1989, p. 57). Building upon these fundamentals, Selin and Chavez (1995) developed a conceptual model identifying potentially key components in collaboration-based planning. As with all such proposed frameworks, empirical evaluation is needed to assess how well the model reflects real-world conditions.

This paper summarizes an empirical study to evaluate if the Selin and Chavez model encompasses the range of considerations important for the establishment and operation of collaboration in watershed planning from the perspective of the planning coordinator. This particular model was selected for assessment because it addressed collaboration through the full range of planning activities from initiation to implementation, in contrast to other models dealing only with a few select planning activities or collaborative processes (Logsdon 1991, McCann 1983, Moote and others 1997, Urban Land Institute 1994). The purpose of this study is not to advocate or evaluate the success of collaboration-based planning but instead to assess the usefulness of the Selin and Chavez model for coordinators to understand potential steps involved in collaboration and make informed decisions about using this approach.

Collaborative Model

The following section provides a brief description of the Selin and Chavez conceptual model (Figure 1). Sources cited in the development of the model were reviewed to provide greater detail on the different components. In some cases, the terms and organization of the model were modified to better reflect terminology familiar to planners. The author of this paper accepts responsibility for any misinterpretation of the Selin and Chavez model that may have occurred in this review.

Antecedents

It is suggested that antecedents such as financial incentives or a crisis often serve as the catalysts for collaborative planning (Waddock 1989). The importance of antecedents is sometimes overlooked in traditional environmental planning methodologies because planners usually cannot wait until antecedents become ripe for collaboration (Steiner 1991). Planners, however, should be aware of what may instigate a collaborative planning effort and, in some cases, may be able to create the conditions necessary to move the planning effort forward.

Problem Setting

In the problem-setting phase, stakeholders are identified and consensus is supposed to be obtained on who has a legitimate stake in the issues. Stakeholders presumably begin to recognize the interdependencies that exist among them, developing awareness that problem resolution will require collective action (Logsdon 1991, Wood and Gray 1991). Stakeholders will generally participate in the planning effort if the issues are perceived as important and benefits are believed to outweigh the costs (Fisher and Ury 1991, Selin and Chavez 1995). During this phase, a coordinator is suppose to be selected who can effectively guide stakeholders through the collaborative planning process (Gray 1989).

Direction Setting

Stakeholders attempt to develop a common sense of purpose during the direction-setting phase (Gray 1989, McCann 1983). Selin and Chavez (1995) suggest that ground rules be set, goals established, and subgroups organized to examine specific issues. Stakeholder participation in information gathering theoretically helps the groups reach agreement on the scientific data underlying

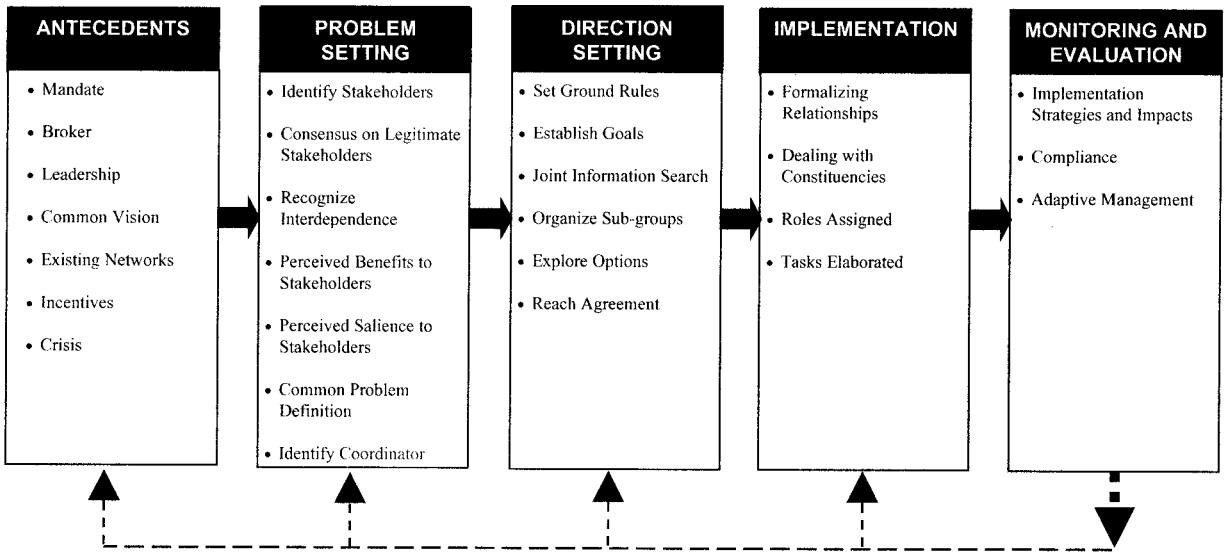


Figure 1. Collaborative model for environmental planning.

the issues and proposed solutions (Ozawa 1996). When planning options are explored, compatible concerns and interests may be determined. Plan alternatives based upon this common foundation presumably can be developed that provide mutual gains for all stakeholders (Fisher and Ury 1991, Urban Land Institute 1994). Consensus is suggested for reaching agreements and selecting the preferred plan alternative, increasing the probability for successful implementation (Carpenter and Kennedy 1988, Potapchuk 1991).

Implementation

During implementation, the model suggests that groups adopt some formal organization (e.g., task force or watershed council) to guide the group's collective action (Gray 1989, McCann 1983). To create a sense of responsibility for implementation, it is recommended that specific roles and tasks be assigned to stakeholders (Carpenter 1991, Potapchuk 1991). Constituencies not directly involved in the planning effort are supposed to be continually informed of the group's efforts and the rationale leading to the preferred alternative, to prevent surprises and lack of support from the larger public (Carpenter and Kennedy 1988).

Monitoring and Evaluation

During this phase, the model recommends that stakeholders monitor and evaluate their implementation strategies to determine if these strategies are achieving the group's objectives. Methods of ensuring compliance with the plan are supposed to be developed that are acceptable and realistically enforceable (Carpenter and Kennedy 1988, Gray 1985). The complexity of ecological and social systems suggests an adaptive management approach where information gained from monitoring and evaluation is funneled back into the planning process to adjust the problem definition, objectives, and plan components as necessary (Friedmann 1973, Grumbine 1997).

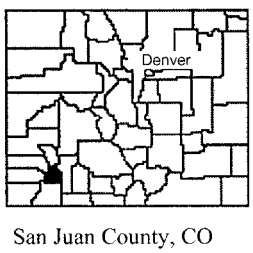
Methods and Study Sites

A case study approach was selected to evaluate the Selin and Chavez model because case studies are a preferred strategy for exploring phenomena in a real-life context (Yin 1994). A multi-case study research design was used to provide an evaluation of the model's applicability and usefulness in different settings and at different spatial scales. Criteria used to select case studies included: groups had incorporated collaborative elements, stakeholder participation was voluntary, key issues involved water-related resources, and location in the Intermountain West region of the United States. General information was collected on 12 watershed-based planning efforts in the Intermountain region through a literature search and recommendations provided by various planning professionals. From this initial sample, three planning efforts were selected for case studies (Figure 2).

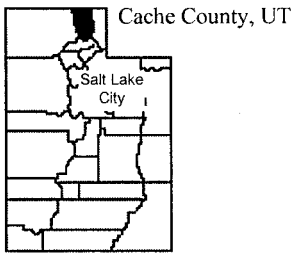
The Animas River Stakeholder Group in Colorado, USA, is primarily focused on water quality issues related to heavy metals leaching from historic mines in the area (Broetzman 1996). This group is in the process of

Issue	Animas River Stakeholder Group	Little Bear River Group	Willow Creek Project
Year Started	1994	1989	1996
Project Initiators	CO Dept. of Health and Environment	Blacksmith Fork Soil Conservation District and Bear River RC&D	Private Landowner Pacific Rivers Council
Coordinators	1 full-time coordinator – non agency	1 full-time coordinators – agency	No employed coordinator
Watershed Size	100,750 ha in upper watershed	79,495 ha	16,454 ha
Land Use	Cropland-10%, Forestry-45% Grazing-25%, Pasture-10% Mining-5%, Urban-5%	Cropland-40%, Forestry-10% Grazing-40%, Pasture-10%	Cropland-5%, Grazing-90% Pasture-4% Mining-1%
Land Ownership	Federal-88%, State-1%, Private-11%	Federal-15%, State-5%, Private-80%	Federal-70%, State-2%, Private-28%
Population[1]	560	12,000	50
Major Focus	Water quality	Water quality	Watershed restoration and education
Primary Problems	Heavy metals from historic mines	Streambank erosion, nutrients and bacteria from animal feeding operations	Sediment inputs, degraded riparian condition
Secondary Focus	Wildlife habitat, recreation, fisheries	Wildlife habitat, recreation, fisheries	Water quality
Financial Support	Local-20%, State-10%, Federal-50%, Private-20%	Federal-70%, Private-30%	Federal-40%, Private-60%
Major Stakeholders	5 federal agencies, 3 state agencies, 2 local agencies, 2 mining companies, 2 environmental groups, other stakeholders	4 federal agencies, 4 state agencies, 4 local agencies, 3 environmental groups, other stakeholders	2 federal agencies, 2 state agencies, 1 local agency, 1 environmental group, other stakeholders
Amount Spent[1]	$2 million	$5 million	$123,000

[1] Approximate Number



San Juan County, CO



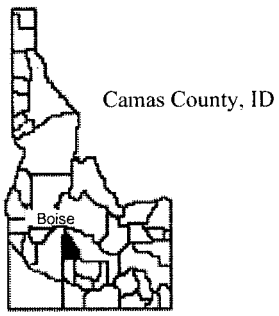


Figure 2. Case study characteristics.

developing water quality standards for the Animas River and a cleanup strategy for abandoned mine sites. The Little Bear River Group is addressing water quality problems resulting from outdated agricultural practices (Allred 1993). This group is using cost-share incentives and education programs to encourage landowners to adopt best management practices to improve water quality. Stakeholders in the Willow Creek Project are

working towards improving aquatic and riparian health through watershed restoration (Williams 1997). Additional detail on these case studies can be found in Bentrup (1999).

During 1998, I visited each watershed to collect data on the collaborative planning effort. Sources of data were derived from meeting summaries, newspaper articles, letters, planning documents, and interviews with the coordinators of each planning effort. Interviews instead of surveys were determined to be the most effective data collection method to capture the range of factors that watershed coordinators perceived to be important in collaborative planning. A total of four interviews were conducted, each lasting an average of 60 minutes. This interview approach was deemed appropriate since this research focused on issues that most directly affect a person coordinating a watershed planning effort. Because coordinator's viewpoints can be biased, future empirical study should also build upon the existing body of research on stakeholders' viewpoints in order to complete a comprehensive picture of collaboration-based planning (Beltsten 1996, Carr and others 1998, Chamberlin 1998, Richardson 1998).

Analysis techniques included content analysis, triangulation, and pattern matching. Written documents were reviewed for content and elements influencing collaboration were ranked based on frequency of occurrence. Multiple sources of information allowed for triangulation or cross-referencing of data, which helped verify conclusions and control for possible biases caused by the researcher being the sole observer (Miles and Huberman 1984). Pattern matching involves comparing an empirically based pattern with a predicted one (Miles and Huberman 1984). The data derived empirically from the case studies was compared with the predicted pattern suggested by the Selin and Chavez model. If the patterns coincided, the results strengthen the validity of the model to represent that particular element of collaboration. To document the analysis process, each model variable was organized in a matrix and correlated to the multiple data sources.

Results and Discussion

Despite the diversity among the case study groups reviewed, common elements were present, reconfirming the hypothesis that there are fundamental factors in collaborative watershed planning. Based on these case studies, the Selin and Chavez model seemed to encompass the range of considerations important in collaboration. Table 2 provides a summary of the findings based on the analysis of the selected case studies. Key considerations are discussed in greater detail in the following section.

Antecedent Considerations

Based on these case studies, at least five antecedents were necessary to initiate a watershed planning effort, indicating that a variety of factors must converge before an environment conducive to collaborative planning can begin to evolve. Analysis of these studies also revealed two additional antecedents not previously identified in the model: lack of data and threat of regulations. Lack of data creates a sense of uncertainty, which can pull people together. In the Animas River case study, the Colorado Water Quality Control Division wanted to impose strict water quality standards without a clear understanding of where the primary sources of pollution were located in the watershed. The stakeholders in the Animas River watershed decided to work together to resolve this critical data gap. Threat of regulatory action can also encourage stakeholders to work together to avoid being penalized. However, in the Little Bear River Group, the motivational stimulus provided by state water quality regulations was strongly diminished when the regulations were never enforced.

Problem-Setting Considerations

All three coordinators stated that coming to agreement on the problems and issues was the most significant task in the problem-setting phase. Informal face-to-face dialog during the problem identification stage was necessary to reduce stereotypes and establish trust among stakeholders in each of the case studies. As one of the Animas River stakeholders noted, 'Getting to know people, that's an important part of the process too. It's hard to get mad at a guy when you've sat and had beer and dinner with him and talked about his kids' (CCEM 1995, p. 67). This appears to be in direct opposition to typical planning processes that rely on formalized public hearings and other similar methods, which do not facilitate true dialogue (Friedmann 1973). Face-to-face dialogue can avoid the pitfalls that occur when stakeholders are not communicating directly with each other, such as leveling (simplification of information) and sharpening (exaggeration of details) (Clark and Reading 1994). The coordinators believed this dialog allowed stakeholders to inform each other of their viewpoints from which a common definition of the issues was created. As Friedmann (1973, p. 185) suggested, 'the planners and stakeholders learn from each other—the planner from the stakeholders' personal knowledge, the stakeholder from the planner's technical expertise.'

Significant time was also spent in the field looking at

Table 2. Summary of results based on the three case studies

Model	Important considerations
Antecedents	Several antecedents are required to initiate a collaborative effort. Leadership is a key antecedent that may always need to be present. The higher the number of initial antecedents, the stronger probability that the group will have impetus to move forward and remain committed to the effort.
Problem setting Identify stakeholders Consensus on legitimate stakeholders Perceived benefits to stakeholders Perceived salience to stakeholders Common problem definition Identify coordinator	Seeking consensus on stakeholders may only be necessary if the issues are contentious. Identification and integration of stakeholders is an on-going process. Face to face dialog and watershed field reviews are essential for problem identification.
Direction setting Set ground rules Establish goals Joint information search Organize sub-groups Explore options Reach agreement	Ground rules may only be necessary in high-conflict situations. Measurable objectives related to the specific problems and issues are essential. Develop planning processes that facilitate joint information search. Create an overall management plan to avoid haphazard implementation of projects.
Implementation Formalizing relationships Dealing with constituencies Roles assigned Tasks elaborated	Start the process of formalizing relationships earlier in the planning effort. Create an organizational framework that promotes characteristics of collaborative planning. Respond to the need for information by constituents who are not directly involved in the planning process. Ensure that roles and tasks are shared by a majority of stakeholders to build ownership and accountability.
Monitoring and evaluation Implementation strategies and impacts Compliance Adaptive management	Establish an accurate baseline of key parameters prior to implementation. Create a monitoring program capable of assessing individual plan elements to determine what elements were successful and which ones should be modified or discarded. Develop a multi-tiered compliance program that incorporates both voluntarism and other more formal methods of accountability. Establish an effective monitoring and evaluation program to provide useful data for adaptive management.

the watershed issues and problems. All three coordinators cited this as a critical step because it removed the issues from an ambiguous context and placed them in a real setting. The Willow Creek Project coordinator explained that the site visits drew stakeholders into the process. She noted that grazing permittees even brought their range riders, who manage the permittees' livestock, to the field reviews because it was apparent that the riders were not doing their job by allowing prolonged grazing in some places. The coordinators also believed that the watershed field reviews reduced the level of contention among stakeholders, which suggests that traditional planning processes may need to be modified to allow for this type of interaction.

Direction-Setting Considerations

Observations by the coordinators suggest that stakeholder participation in gathering information provided valuable insight into the issues and helped stakeholders agree upon the data. The coordinator for the Animas River Stakeholder Group noted that initially when only one agency was responsible for water quality monitoring, conflict over the data ensued. However after the coordinator included six different agencies and organizations in water quality monitoring, stakeholders were able to agree upon the data. In contrast, typical stakeholder involvement in other planning processes is often only encouraged during scoping and at the end when comments are requested on the various alternatives, resulting in plans that may not have the support necessary to be fully implemented (Bingham 1986, Maser 1996, Moote and McClaran 1997). Watershed planners need to recognize these issues and may need to adjust their planning procedures accordingly.

The coordinators acknowledged, that exploring options and selecting plans are at the crux of the direction-setting phase although just ensuring that these tasks are collaborative does not necessarily guarantee good results. The group must not overlook the task of creating an overall management plan. This guiding plan will help prevent haphazard implementation of projects that only address symptoms and not the real causes of the problem. Without an overall watershed plan, the Little Bear River Group was ineffectively lo-

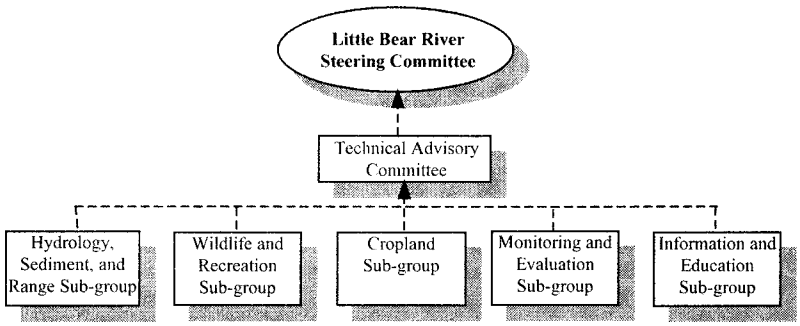


Fig. 3a Little Bear River Group

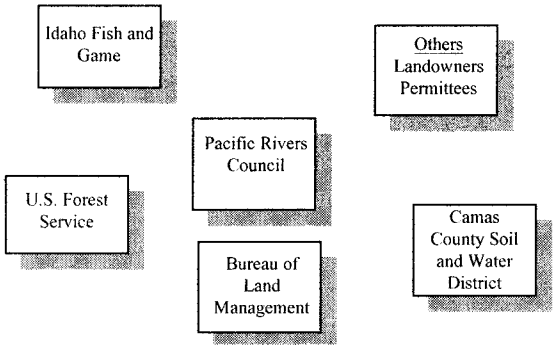


Fig. 3b Willow Creek Project

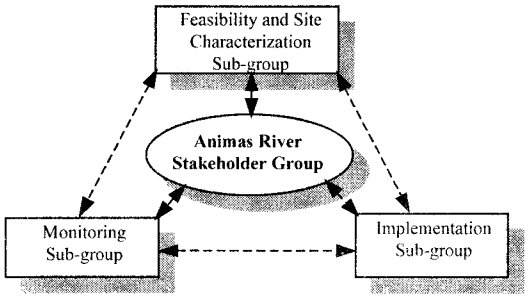


Fig. 3c Animas River Stakeholder Group

Figure 3. Watershed group organization structures.

cating and implementing standard conservation practices such as riparian filter strips. The coordinator of the Little Bear River Group expressed frustration over the lack of a comprehensive watershed plan, citing intense pressure to focus on projects and not planning. This pressure was the result of agencies supplying funds for on-the-ground measures and not for other planning tasks such as inventory and analysis.

Implementation Considerations

Based on these case studies, the issue of formalizing relationships should be reexamined. The Selin and Chavez model placed formalizing relationships in this phase because they viewed this task as creating a contract between stakeholders to ensure that plans are implemented. Although this purpose is important, formalizing relationships also served several other key purposes in these case studies, such as demonstrating to the general public that these were organized groups of stakeholders with specific functions, helping maintain a sense of shared direction among participants; and was often necessary for acquiring grants and other sources of funding. In the Animas River Stakeholder Group and Little Bear River Group, creating a formal organization was one of the first steps that occurred after the stakeholders began to meet.

While a formal organization may be necessary, a bureaucratic structure should possibly be avoided because many steps in collaborative planning may not thrive in a rigid organization. An example of this is informal face-to-face dialog during problem identification. The organizational structure in the Little Bear River Group seemed to be too rigid and hierarchical to allow for informal dialog or creative interdisciplinary problem solving (Figure 3a). Interaction between the subgroups was not facilitated or promoted. By contrast, the Willow Creek Project was a loose coalition with no apparent structure or organization (Figure 3b). Although this loose framework helped create a nonconfrontational environment, the lack of a more structured organization created some ambiguity over who was responsible for carrying out the group's tasks. Ironically, stakeholders in the Willow Creek Project initially wanted to create a structured watershed council but were unable to due to a lack of support by federal agencies. The Animas River Stakeholder Group appears to have achieved the best balance between a rigid and flexible organizational structure (Figure 3c). The

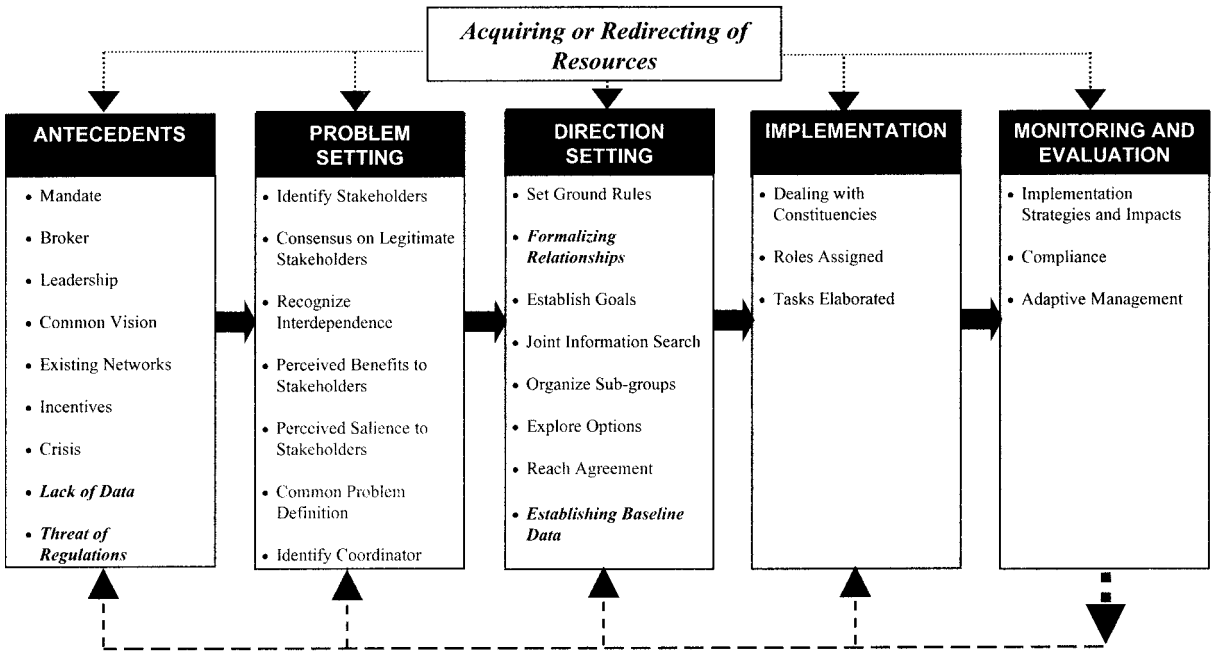


Figure 4. Revised collaborative model for environmental planning.

use of subgroups within a nonhierarchical framework provided enough structure to facilitate carrying out tasks efficiently, without creating a cumbersome planning process. Planners need to be aware of the impacts that group organizational structure can have on the collaborative planning effort.

Monitoring and Evaluation Considerations

All of the coordinators believed that the monitoring and evaluation phase was the most difficult area for the groups to adequately address. When the Little Bear River and Willow Creek groups reached this phase, they lacked an adequate baseline on which to build the monitoring and evaluation program. Early in the planning process, stakeholders did not seem to perceive the importance of having accurate baseline data for future monitoring and evaluation efforts. There was also considerable impetus in these groups to begin implementation prior to the establishment of baseline data because the groups strongly desired the sense of accomplishment that comes from implementing projects. Another barrier preventing effective monitoring programs was the lack of measurable objectives. Although the Little Bear River Group was focused on water quality problems, none of their objectives included water quality parameters such as nitrogen or fecal coliform levels.

Model Refinement

Based on these case studies, a few adjustments (shows in italics) are proposed for the model (Figure 4). Lack of data and threat of regulations are added as additional factors in the antecedent phase. Formalizing relationships was moved from the implementation phase to the direction-setting phase as discussed in the preceding section. Establishing baseline data is a step added to the direction-setting phase to emphasize the necessity of having a solid database on which to build the monitoring and evaluation program.

Acquiring or redirecting resources is an another step added to the overall structure of the model. This component was added to highlight the importance of acquiring funding and other types of resources throughout the entire planning process. As some of the case studies illustrated, funding may be available for implementation tasks but not for other planning tasks. In other situations, acquiring new sources of funds and other resources will not be necessary. Redirection of existing resources may occur if more efficient alternatives are proposed. In the case of the Animas River Stakeholder Group, funds that were normally earmarked by mining companies for environmental litigation were now being redirected toward proactive mine land remediation. In addition, the use of volunteers was a resource that these groups often used to minimize costs.

It is important to note that all three case studies were

primarily restoration projects, which most likely influenced the results of this study. In general, restoration is popular and attracts public support, therefore making collaboration more feasible (Williams and others 1997). Other types of watershed planning efforts may not be as conducive to collaboration and may follow a different sequence of steps than outlined in the Selin and Chavez model.

Conclusion

The purpose of this research was to evaluate the effectiveness of the Selin and Chavez collaborative model for application in watershed planning efforts. Based on three case studies, the Selin and Chavez model appears to be a useful starting point for coordinators considering collaborative processes in their watershed planning efforts. Future research should assess this model in other types of watershed planning efforts to evaluate its' applicability. As with any model, it is only an abstract representation of key planning elements; planners should be flexible when considering applying this model. Furthermore, other research should continue to address the issues of success and failure in collaborative processes to build awareness of where collaborative planning may and may not be appropriate.

Ensuring that a planning effort is collaborative will not necessarily guarantee that good watershed planning will result. Careful attention still needs to be given to the technical aspects of environmental planning. Inadequate resource inventories and analysis and unimaginative synthesis will still result in poorly developed plans even in a collaborative environment. Proponents of collaborative planning espouse improved dialog as a main measure of success of these efforts. While improved civility and dialog are important intangible measures of success, the acid test will be if these efforts can improve management of natural resources in an equitable manner. While evidence from these case studies seems to suggest that this is possible, we must not be blinded by our optimism but instead must continually critique and improved upon these efforts.

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Literature Cited

Allred, M. 1993. Little Bear River hydrologic unit. Pages 359–363 *in* B. Tellman, H. Cortner, M. Wallace, L. DeBano, and R. Hamre (eds.), Riparian management: Common threads and shared interests. General Technical Report RM-226. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Banner, R., M. Barney, C. Johnson, R. Harrison, and J. Jensen. 1989. Utah coordinated resource management and planning handbook and guidelines. Utah State University Extension, Logan, Utah.

Belsten, L. 1996. Collaborative environmental decision-making. Dissertation. University of Denver, Denver, Colorado.

Bentrup, G. 1999. Evaluation of a collaborative model using a case study analysis of watershed planning in the Intermountain West. Thesis. Utah State University, Logan, Utah.

Bingham, G. 1986. Resolving environmental disputes: A decade of experience. The Conservation Foundation, Washington, DC.

Blahna, D., and S. Yonts-Shepard. 1989. Public involvement in resource planning: Toward bridging the gap between policy and implementation. *Society and Natural Resources* 2(3):209–227.

Broetzman, G. 1996. Animas River collaborative watershed project 1995 status report. Colorado Center for Environmental Management, Denver, Colorado.

Carpenter, S. 1991. Solving community problems by consensus. Program for Community Problem Solving, Washington, DC.

Carpenter, S., and W. J. D Kennedy. 1988. Managing public disputes Jossey-Bass Publishers, San Francisco, California.

Carr, D., S. Selin, and M. Schuett. 1998. Managing public forests: Understanding the role of collaborative planning. *Environmental Management* 22(5):767–776.

CCEM. 1995. Technology regulatory integration project: Implementation manual. Colorado Center for Environmental Management, Denver, Colorado.

Chamberlin, K. 1998. Collaborative natural resource management in three western communities. Thesis. University of Wyoming, Laramie, Wyoming.

Clark, T., and R. Reading, 1994. A professional perspective: Improving problem solving, communication, and effectiveness. Pages 351–369 *in* T. W. Clark, R. P. Reading, and A. C. Clarke (eds.) Endangered species recovery: Finding the lessons, improving the process. Island Press, Washington, DC.

Fisher, R., and W. Ury. 1991. Getting to yes: Negotiating agreement without giving in. Houghton Mifflin Company, New York.

Friedmann, J. 1973. Retracking America: A theory of transactive planning. Anchor Press, Garden City, New York.

Gray, B. 1985. Conditions facilitating interorganizational collaboration. *Human Relations* 38(10):911–936.

Gray, B. 1989. Collaborating: Finding common ground for multiparty problems. Jossey-Bass Publishers, San Francisco, California.

Grumbine, R. E. 1997. Reflection on what is ecosystem management. *Conservation Biology* 11(1):41–47.

Logsdon, J. 1991. Interests and interdependence in the formation of social problem-solving collaborations. *Journal of Behavioral Science* 27(1):23–37.

Maser, C. 1996. Resolving environmental conflict: Toward sustainable community development. St. Lucie Press, Delray Beach, Florida.

McCann, J. 1983. Design guidelines for social problem solving interventions. *Journal of Applied Behavioral Science* 19(2):177–192.

McGinnis, M. V., J. Wolley, and J. Gamman. 1999. Bioregional conflict resolution: Rebuilding community in watershed planning and organizing. *Environmental Management* 24(1):112.

Miles, M., and A. M. Huberman. 1984. Qualitative data analysis. Sage Publications, London.

Moote, M., and M. McClaran. 1997. Viewpoint: Implications of participatory democracy for public land planning. *Journal of Range Management* 50:473–481.

Moote, M., M. McClaran, and D. Chickering. 1997. Theory in practice: Applying participatory democracy theory to public land planning. *Environmental Management* 21(6):877–889.

NRLC (Natural Resources Law Center). 1996. The watershed sourcebook: Watershed based solutions to natural resource problems. University of Colorado School of Law, Boulder, Colorado.

Ozawa, C. 1996. Science in environmental conflicts. *Sociological Perspectives* 39(2):219–230.

Potapchuk, W. 1991. New approaches to citizen participation: building consent. *National Civic Review* (80)2:158–168.

Richardson, K. 1998. Perceived fairness and effectiveness of rangeland collaborative processes. Thesis. Utah State University, Logan, Utah.

Selin, S., and D. Chavez. 1995. Developing a collaborative model for environmental planning and management. *Environmental Management* 19(2): 189–195.

Selin, S., M.A. Schuett, and D.S. Carr. 1997. Has collaborative planning taken root in the national forests? *Journal of Forestry* 5:25–28.

Susskind, L., and J. Cruiskshank. 1987. Breaking the impasse: Consensual approaches to resolving public disputes. Basic Books, New York.

Susskind, L., and C. Ozawa. 1985. Mediating public disputes: Obstacles and possibilities. *Journal of Social Issues* 41(2):145–159.

Steiner, F. 1991. The living landscape: An ecological approach to landscape planning. McGraw-Hill, New York.

Urban Land Institute. 1994. Pulling together: A planning and development consensus-building manual. Urban Land Institute, Washington, DC.

Waddock, S. 1989. Understanding social partnerships: An evolutionary model of partnership organizations. *Administration and Society* 21 (1):78–100.

Williams, C. D. 1997. Willow Creek watershed restoration and education project: Bring back the natives project #96-0092-028 programmatic report. Pacific Rivers Council, Eugene, Oregon.

Williams, J., C. Wood, and M. Dombeck (eds.). 1997. Watershed restoration: Principles and practices. American Fisheries Society, Bethesda, Maryland.

Witkowsky, K. 1995. Montana under the gun. *Planning* 61(8): 4–9.

Wondolleck, J., and S. Yaffee. 1994. Building bridges across agency boundaries: In search of excellence in the United States Forest Service. School of Natural Resources and Environment, Ann Arbor, Michigan.

Wondolleck, J. and S. Yaffee. 2000. Making collaboration work: Lessons from innovation in natural resource management. Island Press, Covelo, California.

Wood, D., and B. Gray. 1991. Toward a comprehensive theory of collaboration. *Journal of Applied Behavioral Science* 27(2):139–162.

Yin, R. 1994. Case study research: Design and methods. Sage Publishers, London.