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Authors
Innes, Judith E
Connick, Sarah

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Consensus Building as a Policy Making Strategy for Water Resources Management
Submitted by Judith E. Innes and Sarah Connick
Institute of Urban and Regional Development
University of California
104 Wheeler Hall #1870
Berkeley, CA 94720

ABSTRACT

Collaborative processes offer possible means to resolve public policy disputes that administrative, regulatory and/or judicial processes have failed to solve, thus breaking the gridlock that results when governmental agencies don't work effectively. The use of collaborative processes and collaborative policy making have produced important results in natural resources management in California, as illustrated by three cases.

INTRODUCTION AND PROBLEM STATEMENT

Why is it so difficult for government agencies to accomplish their missions? What can be done to improve the ways in which these agencies develop policies and carry them out? These questions affect agencies and administrations of all kinds as they face increasingly complex and interconnected problems. Difficult, bitter disputes persist despite the use of existing administrative, regulatory, and judicial proceedings.

Throughout the United States, many agencies and organizations have been developing and experimenting with collaborative processes for planning and policy making.[1] Nowhere has experimentation with collaborative policy making processes been greater than in the area of natural resources management, where problems typically involve complex scientific and technical issues, and numerous interested parties with deep-seated differences. Often participants pursue these processes with the expectation that they will produce decisions that are more durable, less likely to be challenged or blocked, and possibly less costly. Despite the increasing use of and enthusiasm for collaborative processes, they are only just beginning to be recognized by academics and practitioners as a new phenomenon in policy making. To date relatively little research has been conducted that examines how such processes have worked and what kinds of results they actually have produced.

With collaborative processes being used increasingly in policy making, it is important to understand how they work and the implications of their use. For example, critics of collaborative processes have argued that consensus-building leads to "lowest common denominator" agreements, while proponents have claimed they lead to "win-win" solutions. Similarly, critics have claimed that collaborative processes are time-consuming and result in continued inaction, while advocates have claimed they are the

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[1] Such processes have been applied in the areas of education, transportation, reg-neg . . . See Lawrence Susskind, Sarah McKearnan, and Jennifer Thomas-Larmer, eds., *The Consensus Building Handbook: A Comprehensive Guide to Reaching Agreement* (Thousand Oaks, CA: Sage Publications, Inc., 1999).

only hope for breaking through policy gridlock. Knowledge about what kinds of conditions produce what kinds of outcomes should help inform this debate and enrich our understanding of the role of collaborative processes in policy making.

OBJECTIVE

What kinds of outcomes do collaborative policy making processes produce? What kinds of process characteristics tend to produce those outcomes? The answers to these questions will help us better understand what these processes can achieve, and by extension, give us insight on what are realistic expectations for such efforts and when they are likely to be effective. The answers are also important to a wide range of academics and practitioners. For example, resource managers, agency administrators, and stakeholders increasingly are being called upon to devote tremendous amounts of time and energy to these efforts. Presumably information regarding the kinds of results the processes can produce and the conditions under which such results are likely to be produced will provide useful guidance to these professionals. Similarly, this information will be useful to researchers working in this area, and in further informing the underlying theory with analyses drawn from practical experiences.

Definitions

First, some definitions, as the terms "collaborative process" and "policy making" mean different things to different people. In this report, "collaborative processes" refers to efforts to bring together most, if not all, of the parties, or their representatives, having an interest or stake in an issue, for the purpose of doing something about that issue. Parties having an interest in an issue and their representatives are referred to as "stakeholders," in acknowledgement of the "stake" these individuals or organizations have in whatever actions may occur around a particular issue. "Collaborative processes" refers to a range of possible ways in which stakeholders can be brought together to address issues of mutual concern. At one end of the spectrum, collaborative efforts can resemble elaborate public involvement exercises.

For example, a collaborative process may be devised simply to explore the various stakeholders' interests with an aim to informing other decision makers about their views. More often, however, stakeholders in collaborative processes aim to develop agreements among themselves, and their broader constituencies, in regard to the issues at hand. Most often, the issues being addressed are ones over which there has been significant and continuing conflict, and a perception among the parties that other means of conflict resolution have been ineffective. At this end of the spectrum one finds "consensus-building processes."

Although many people use the terms "collaboration" and "consensus building" interchangeably, the latter has a more specific meaning. Consensus building is a deliberate, agreement-seeking process involving

> a good-faith effort [on the part of all participants] to meet the interests of all stakeholders. Consensus has been reached when everyone agrees they can live with whatever is proposed after every effort has been made to meet the interests of all stakeholding parties. … Participants in a consensus building process have both the right to expect that no one will ask them to undermine their interests and

the responsibility to propose solutions that will meet everyone else's interests as well as their own.[2]

Consensus building entails face-to-face discussions among participants, joint learning, and the development of a shared understanding of the problems faced. It involves interest-based negotiation, cooperative problem-solving, and agreement on policies and actions that, in aggregate, parties consider to be at least as good as those they could achieve by other means. As such, consensus-building practices fill a specialized niche in the spectrum of collaborative processes.

"Policy" has a range of meanings from general principles to specific plans. Policy is an anticipatory term, in that it refers to present guidelines about how to act in regard to future conditions, whether those conditions are going to occur in the immediate future or over a longer timeframe. Policies are ubiquitous in our lives, whether as specified in "policies and procedures" manuals, articulated in legislation, or unspoken but commonly understood, as evidenced in everyday actions. Everyone has policies that guide their conduct, whether written or not, including businesses, governmental agencies, nonprofit organizations, and individuals. The policies that are of interest in this report are those of governmental agencies that affect the distribution of benefits in our society. "Policy making" in the context of this report refers to the suite of activities undertaken by governmental agencies in furthering their missions regarding a related set of issues.

Collaborative policy making is a process where agencies work together or with stakeholders to develop policy, sometimes through consensus building, but always through collaborative dialogue. Collaborative policy making processes have gained the widest attention in the field of environmental management. Among the first of these kinds of initiatives applied in the environmental sector were negotiated rulemakings.[3] More recently, a variety of collaborative approaches have been applied in natural resources management. For example, in numerous areas, particularly in the western United States, communities have sought to address resource management issues through the formation of watershed initiatives.[4] Many of these community-based initiatives seek to bring together local landowners, businesses, environmentalists, and other residents, to develop plans for improving local environmental resources. Although these kinds of efforts often involve some participation on the part of relevant resources agencies, and may even receive technical or financial support from them, such agencies are generally not a part of the group decision making process. One of the most notorious of these kinds of groups—The Quincy Library Group—for example, explicitly excluded the U.S. Forest Service from its deliberations, although the group's central focus was to develop a plan for managing the local national forest land.

At the same time, larger-scale collaborative efforts have been undertaken by government agencies to address complex resource management problems. These efforts are also designed to resolve more immediate conflicts and anticipate potential future conflicts in the development of long-term resource management plans. Under the U.S. Environmental Protection Agency's National Estuary Program, groups of diverse

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[2] Susskind 1999, p. 6.
[3] Kenny, Douglas S. "Arguing About Consensus: Examining the Case Against Western Watershed Initiatives and Other Collaborative Groups Active in Natural Resources Management." (Boulder, CO: Natural Resources Law Center, University of Colorado School of Law, 2000).
[4] See for example, Natural Resources Law Center. *The Watershed Source Book*. (Boulder, CO: Natural Resources Law Center, University of Colorado School of Law, 1996).

agencies and stakeholders have been brought together in estuarine regions to develop long-term comprehensive resource management plans. Federal-state partnerships with extensive stakeholder involvement have been developed in the Everglades, Columbia River Basin, South Platte River Basin, and the Sacramento-San Joaquin Delta to address broad concerns associated with water management and ecological restoration.

The typical institutional framework for natural resources management in the United States is fragmented across jurisdictional boundaries that do not correspond to ecological units—across levels of government, from federal to state to local, and in laws that separate the regulation of land, air, and water. Frequently, multiple agencies have responsibilities—some overlapping and some distinct—for natural resources within a region, such as a river basin or estuary. At the same time, many other parties have interests in how these resources are managed—including private individuals and businesses, other governmental agencies, and non-governmental interests—which often bring them into conflict with one another and the resource management agencies. The range of interests involved, combined with the uncertainties inherent in managing the natural environment leads to extremely complex and conflictual policy settings.

Conflict and California Water

Nowhere have resource conflicts become more pronounced than in water management, especially in California where water wars are the stuff of legends.[5] Mark Twain is said to have observed, "In California water is for fighting and whisky is for drinking."

Despite this reputation, in recent years a number of the combatants have called truces in attempts to put an end to their conflicts. In a number of settings, warring parties—agricultural and urban water users, and environmentalists—have concluded that years of lawsuits, counter suits, and other piecemeal actions have failed to achieve the kinds of reliable water supplies or resource protections they have been seeking. Similarly, governmental agencies have seen their decision-making discretion and ability to act increasingly constrained by lawsuits, court orders, and regulations. Despite the disputants' best efforts, many fishery and related resources continued to decline, attempts to develop new water supplies to meet growing regional needs were blocked, and the trajectory into the future pointed to more of the same, only worse.

Faced with deep conflicts and difficult resource management problems, some disputants have turned to collaborative processes as a way to seek coordinated, long-term solutions to their problems. Agencies have encouraged parties with an interest in the outcomes of their work to engage with them in a variety of ways. Together they have designed processes for developing information, assessing available options, and coming to agreements in face-to-face discussions.

The research detailed in this report examined three cases in which collaborative processes were used to develop water policy in California: the San Francisco Estuary Project, the CALFED Bay-Delta Program, and the Sacramento Area Water Forum. These processes took place over 10 years and collectively represent at least 18 years of experience with collaborative processes for making water policy in California. Each of these processes was large, complex, addressed multiple resource issues, and had many

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[5] See for example, *Cadillac Desert*, *Rivers of Empire*, *Rivers in the Desert*, *Thirst for Growth*, *Western Times and Water Wars*, *Water and Power*, *The Great Thirst*, and *Storm Over Mono*.

subparts. Participants interacted in a variety of ways, made use of diverse kinds of information, and deliberated about the consequences of their various possible actions. These cases were similar in that they all were well-funded and staffed; all dealt with water in California, were connected to the Delta region, confronted similar legal and political frameworks, and involved many of the same stakeholder interests. They were complex, long-term, and multifaceted processes involving multiple working groups, and attempted to develop packages of actions addressing a wide range of interrelated water issues.

These cases provided the opportunity to examine outcomes over more than a decade. They offered diverse examples of collaboration and consensus building, with different sets of players and different ways of initiating and managing the groups. Their commonalties allowed for a focus on differences in design and management of the processes and their consequences. The cases were to some degree interlinked, involving some of the same agencies, interests, and resources, offering the potential to determine the extent to which early outcomes have influenced later stage policy and consensus building. These processes resulted in remarkable agreements and other kinds of accomplishments. They have produced high-quality information, comprehensive approaches to resource management, and functional working relationships among parties who previously "would not be seen in the same room together unless it were in a courtroom."[6] Together these cases provided rich material for an empirical examination of outcomes and process characteristics.

In each of these cases, collaborative planning and policy making processes served to profoundly transform the ways in which decisions are made about resource management. In the process, the participants succeeded in fundamentally changing the trajectory of their common future. For example, these processes produced surprising alliances. In 1996, agricultural and urban water interests and environmentalists united in their support of Proposition 204—a bond initiative that provided funding for environmental restoration in the Sacramento-San Joaquin Delta. Not only was the bond initiative approved by two-thirds of the voters, it was the first statewide bond issue to have passed in a number of years. In the Sacramento region, environmentalists, water purveyors, taxpayers' groups, and developers—parties who have frequently engaged in bitter disputes—recently came together in support of new water projects and improved fishery protections along the lower American River. In 1993, the San Francisco Estuary Project, which involved numerous state and federal agencies and diverse stakeholders, developed an innovative water quality indicator, which has since been adopted as key criterion for managing water quality.

The San Francisco Estuary Project

The San Francisco Estuary Project (SFEP) was a five-year process designed to bring all the stakeholders in an estuarine system into a consensual agreement on the state of the estuary and a plan for its restoration and management. The scope and complexity of the issues addressed by the SFEP, the size of the affected area, the range of technical information needed, the number and diversity of players, and the political and economic powers engaged by the process presented major challenges for the process and its participants. Conducted under the auspices of the National Estuary Program, the SFEP

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[6] Sacramento Water Forum signing ceremony.

involved a management committee of nearly 50 stakeholders and several working committees on issues such as wetlands, water flows, and aquatic life. In 1993, the SFEP adopted a consensus-based Comprehensive Conservation and Management Plan (CCMP), which recommended numerous actions for improving the health of the estuary. Other results of the process included agreements on technical descriptions of the estuary and methods of measuring water quality, new networks of relationships among participants, and the education of participants about the estuary and each other's responsibilities.

At the time of the signing of the CCMP, there were complaints that the consensus was "thin" and the prospects for implementation were uncertain. In the nine years since the plan's adoption, however, significant progress has been made on a number of the CCMP recommendations, and numerous projects and monitoring activities can be traced back to the work of the SFEP. Perhaps most importantly, the SFEP appears to have spawned a number of additional consensus building processes, including ones on dredging management, water quality indicators, and wetlands protection. Stakeholders and agencies that had little interaction prior to the SFEP continue to collaborate on an array of issues, including a recent effort to review progress and priorities.

The CALFED Bay-Delta Program

Following the development of the CCMP, the federal and state agencies with water-related responsibilities engaged in a series of collaborations, which in conjunction with participation from other stakeholders resulted in the 1994 Bay-Delta Accord and the CALFED Bay Delta Program. The CALFED program is a collaborative effort involving some 18 state and federal agencies with management, regulatory, and research responsibilities in the Sacramento-San Joaquin Delta. Its purpose is to jointly coordinate the State Water Project with the federal Central Valley Project, administer a restoration grants program, and to develop a long-term solution to the conflicts. By design, the agency deliberations were informed by parallel stakeholder deliberations under the auspices of Bay Delta Advisory Council (BDAC), a federal advisory committee, and its various subcommittees. BDAC and its subcommittees included in their membership stakeholders from urban and agricultural water interests, business, environmental organizations, and fishing interests. These parallel processes were developed in part because of the requirements of the Federal Advisory Committee Act, which limits when and how federal agency staff may meet with private players in decision processes.

To date, the CALFED process has produced a number of significant outcomes. It has produced innovative ideas, including a special account for managing water for environmental purposes (known as the Environmental Water Accounts), and new, agreed-on measures of agricultural water use efficiency. The CALFED proposal includes plans for a unique federal-state-stakeholder commission to oversee future restoration and management activities in the Delta watershed. CALFED has produced significant changes in thinking about water management, including a proposal for regional groundwater management and measurement of water use. Working together, stakeholders have developed and promoted two successful bond initiatives, raising nearly $2 billion for environmental restoration and water projects, in a state where until only very recently few bond measures have been approved by voters. CALFED has also developed a 30-year plan for restoring the Bay-Delta ecosystem and improving the reliability of water supplies derived from the Delta. The plan was produced through a

series of agency and stakeholder meetings, and includes actions in eight interlinked areas—storage, conveyance, conservation, restoration, watershed management, flood control, water transfers, and water quality. CALFED has become a powerful coordination mechanism among state and federal agencies concerned with wildlife, agriculture, and water quality. CALFED's scope is more comprehensive and far-reaching than earlier water policy making done by individual agencies working alone.

The Sacramento Area Water Forum

The third case—the Sacramento Area Water Forum—celebrated the completion of its 30-year plan in April 2000. This effort was initiated and funded by the city and county of Sacramento to resolve conflicts between environmental, development, and water interests over groundwater and surface water supplies. Water diversions on the lower American River have been the subject of more than 20 years of litigation among environmentalists and water interests. With nearly 20 water purveyors in the region, previous efforts to stabilize the groundwater or develop a regional water plan had been unsuccessful. These conditions resulted in a contentious climate in which there was a high degree of uncertainty over the future of the fisheries and water supplies. At the same time it was certain that the unprecedented growth the region was experiencing would continue well into the future. The Water Forum stakeholders included water purveyors in Sacramento and adjoining counties, environmental groups, developers and other business interests, and citizens' groups. Also engaged in the process were the federal Bureau of Reclamation and a large urban water utility from outside the region that will also use American River water.

In addition to the Water Forum Agreement, the Water Forum process resulted in a number of other significant accomplishments. In particular, agreement has been reached on the management of the groundwater basins, and a new management authority was established for the northern basin in 1998. As a result of unanimous support from the Water Forum stakeholders, Congress approved funding for a temperature control device on the Bureau of Reclamation's dam, which will make it possible to operate more efficiently. Stakeholders in the process have developed new relationships and now seek one another out on other issues that concern them. Many of them also apply the interest-based approaches they learned in the Forum process in other parts of their jobs. In addition, the City Council and County Board of Supervisors have been so pleased with the success of the Water Forum effort, they are now pursuing a similar approach to addressing regional transportation problems.

METHODOLOGY

The objectives of this study—to identify and characterize the outcomes of collaborative water policy making processes—necessitated the use of qualitative research methods. They called for the study of actual processes in which participants were attempting to collaborate in the development of water policy, to develop an understanding of actual practice in this policy realm. The research design entailed the development of three in-depth case studies of collaborative processes, which served as the basis for analysis. The research process was exploratory and open-ended to allow the opportunity to identify variables and the patterns among them. This later design element was particularly important because there exists little previous research and few

conceptual frameworks on which to build models for testing. Given the ground breaking nature of the inquiry, an exploratory research approach was needed to meet the study objectives and to identify additional avenues for future research on collaborative policy making processes.

The nature of the research objectives and characteristics of the processes being studied lend themselves to in-depth, qualitative inquiry. From the outset of the research process, it was clear that few of the variables that were likely to be of interest were readily measurable in quantitative terms, and that attempts to quantify them would result in the loss of crucial nuances, reducing the robustness and usefulness of the information. A qualitative approach allowed the examination of events and participants' subjective understandings of the processes and outcomes in rich detail. These policy making processes are nonlinear and extremely complex. The critical relationships and patterns within the cases are not amenable to statistical analysis, but become visible through the analysis of patterns within and across the cases. Further, each of the processes had its own historical and socio-political context, which meant that it was important to understand the presence or absence of variables in the context of the case and its dynamics as a whole.

Case Selection and Development

The three cases—the San Francisco Estuary Project, the CALFED Bay-Delta Program, and the Sacramento Water Forum—were chosen because they provided excellent opportunities to conduct in-depth case study research on the individual processes. Each case was complex, with many subparts, which also allowed for a robust comparison of different subprocesses within each case. In addition, the cases were all sufficiently related that they provided an excellent opportunity to make comparisons across the cases.

The original documentation of the San Francisco Estuary Project case was conducted by Judith Innes in 1994.[7] Subsequent research on the outcomes of that process was conducted by Sarah Connick, based on reviews of documents, interviews, and observations of follow-on meetings. Research on the CALFED Bay-Delta Program and Sacramento Area Water Forum involved meeting observations and document reviews conducted by Innes and Connick, and interviews conducted by Connick. Together, this research forms the basis of Connick's forthcoming doctoral dissertation, as well as a working paper by Innes and Connick titled "Outcomes of Collaborative Water Policy Making" (IURD 2001-8)

The selection of cases with a focus on water policy in the Bay-Delta region was driven by a variety of considerations. Water supplies in this region profoundly affect the entire state. Thus, these policy making processes and their outcomes are intrinsically important to California water policy. The three cases are similar in that they all were well-funded and staffed, dealt with the same resource, confronted the same legal and political framework, and involved many of the same stakeholders. They all were complex, long-term, multifaceted processes involving multiple working groups, and attempting to develop packages of actions dealing with a wide range of interrelated water

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[7] Innes, Judith, Judith Gruber, Michael Neuman, and Robert Thompson. "Coordinating Growth and Environmental Management through Consensus Building." A Policy Research Program Report, California Policy Seminar (Berkeley, CA, 1994, pp. 115-145).

issues. These similarities allowed investigators to focus on differences in the design and management of the processes and the consequences for the process outcomes. The cases collectively offer an array of approaches and objectives involving different sets of players and different ways of initiating and managing the groups. These differences within and across the cases allowed for comparisons of the various approaches, and provided a robust sampling of processes and outcomes. The interconnectedness of the cases provided the opportunity to examine the extent to which the outcomes of one collaborative policy making process might influence the development and functioning of another.

Each of these processes had been in place a substantial period of time prior to initiation of this research project in the spring of 1997, which meant that there had been ample opportunity for evidence of results to emerge. Finally, substantial foundational research had already been conducted on two of the cases by Innes—the SFEP and the Water Forum—providing the opportunity to build on existing research. Figure 1, attached as Appendix 1, shows the timeframe for each of these processes and the periods during which research was conducted.

Data for each of the cases was collected through extensive observations of meetings over a period of several years, review of documents, and in-depth interviews with key informants, including stakeholders and staff. The information gathered for each case varied somewhat depending on what phase of the process was ongoing and researcher access to meetings. Based on the information collected, researchers developed narrative case descriptions describing the genesis of each collaborative policy making process; the structure and workings of the process; important events, controversies, and agreements; and the range of outcomes that resulted from each process.

The details of how the research methods were implemented are presented in the following sections. Further details specific to each case are presented in the sections subsequent to the description of the basic methods.

Meeting Observations

Researchers attended and observed meetings of many types relating to each of the three processes. (In the case of the SFEP, there were several follow-on meetings during the course of this study.) These observations provided the opportunity to see the events as they unfolded, to hear how the participants communicated with one another around the table, to discover how facilitators and meeting chairs used different techniques to manage discussions, and to watch new ideas emerge as participants wrestled with the issues.

For any meeting that was not open to the general public, investigators obtained permission from the meeting convenor and participants in the process, in accord with the requirements of the UC Berkeley Committee for the Protection of Human Subjects (CPHS). In these cases, the participants were informed that researchers were conducting research on collaborative processes, that their notes were confidential, that their reports on the process would mask the identities of the participants as necessary, and that names would be given for quotes only with permission. Researchers normally sat near the back of the room and took notes on a laptop computer, nearly verbatim to the extent possible, to capture as well as possible the actual language used by participants and the content of their verbal exchanges. Researchers also frequently mapped the room and made seating charts to assist in keeping track of who was saying what, and to note the extent to which participants from different interest groups intermingled. When there was no electrical

outlet to use with the laptop, or when it appeared that taking notes on the computer might be too disruptive, handwritten notes were taken and later transcribed. Note taking stopped whenever the meeting facilitator or any participant requested such action.

The raw notes taken in these meetings were sprinkled with abbreviations, misspellings, and incomplete phrases. At the end of a meeting, researchers reviewed and edited the raw notes into what were as closely as possible to transcripts of the meetings. Recollections regarding the events were added, such as whether the atmosphere in the room was lighthearted as participants shared a moment of laughter, or tense as they struggled with a particularly difficult issue. Notes, in combination with whatever written documents were available in connection with the meeting, comprise meeting data records.

In the course of these meetings, researchers frequently became involved in conversations with the participants and other observers. Many of them were quite curious about the research. Often participants shared their impressions of the meeting and overall process, and talked about why they thought certain things were happening. The language of these processes is quite specialized, and researchers often used these casual conversations as an opportunity to clarify what was happening in a particular discussion or inquire about a participant's views on a particular issue, documenting these informal conversations along with the meeting notes.

In-Depth Interviews

Researchers conducted in-depth interviews with staff and participants who had been deeply involved in the processes. Key informants were selected based on their roles in the process, and in a range of perspectives reflecting the diversity of those engaged in the processes.

Researchers developed a list of interview questions to guide the discussions, but generally conducted the interviews as open-ended conversations about the processes in which the interviewees had been involved, often probing beyond the initial query. It was not difficult to get any of the interviewees to talk about the collaborative policy making processes in which they were involved. Most were eager to share their experiences and sometimes appeared appreciative of the opportunity to reflect on their work.

Each interview, approximately one-and-a-half to three hours in length, began with a summary of the research purpose and a restatement of the conditions of confidentiality surrounding the interview data which was outlined in the CPHS letters and follow-up phone calls. All the interviewees granted permission for researchers to record the sessions and take notes. Two interviewees asked during certain segments of their interviews that the tape recorder be stopped and note taking cease. No one terminated any of the interviews early.

Upon completion of each interview, researchers prepared rough transcripts using the tapes to supplement notes. These transcripts, along with any papers shared during the course of the interview, comprised the record of conversations with the interviewees.

Review of Documentation

Each of the three collaborative policy making processes involved volumes of written materials that investigators reviewed to better understand the nature of the policy issues with which participants were struggling. These materials included meeting

agendas, supporting documentation for meeting discussions, policy proposals, technical documentation, draft and final reports, meeting summaries, budgets, media advisories, environmental impact statements, and agreements. Many of these materials went through a number of iterations as participants worked through the details of technical and policy issues, and sought to find workable agreements.

Additionally, researchers tracked media reports on the processes, comprised primarily of newspaper coverage. Secondary historical information on California water policy also provided additional background and context for the cases.

San Francisco Estuary Project

The objective of the San Francisco Estuary Project process was to develop what became the Comprehensive Conservation and Management Plan (CCMP) for the San Francisco Bay. The five-year process began in 1987 and involved a management committee of that grew to nearly 50 agency and nongovernmental stakeholders, along with a number of working committees on issues such as wetlands, water flows, and aquatic life. The initial study on this project was conducted by Judith Innes and Michael Neuman, as reported in Innes et al. 1994. The researchers interviewed 12 participants and staff members who had been deeply involved in the process. They also attended meetings and reviewed documents relating to the case, including reports, memoranda, policy and planning documents, and analyses. Their study ended when the CCMP was adopted in 1992.

Building on this research, in 1998 the present study sought to find out what had resulted from the work of the SFEP in the six years since the CCMP had been completed. Researchers revisited materials from the previous research, including interviews with the key participants, then began reviewing documents produced as a part of a continuing effort under the SFEP. Investigators conducted two two-hour interviews with the key SFEP staff and the former co-chair of the management committee. Researchers also attended several public meetings that took place as follow-on activities to the SFEP, including two conferences at which information was exchanged relating to the implementation of the CCMP, and meetings of stakeholder representatives involved in tracking implementation progress. Based on the information obtained, researchers identified specific outcomes of the SFEP that had emerged in the years since the original research was conducted.

CALFED Bay-Delta Program

The CALFED Bay-Delta Program was designed to resolve long-standing disputes regarding water supplies, water quality, fisheries, habitat, and flood control in the Sacramento-San Joaquin Delta and San Francisco Bay system. The process involved some 18 state and federal agencies having responsibilities related to resource regulation and management in the Delta watershed. Collaboration among these agencies was achieved through a variety of types of meetings. The Policy Group was composed of agency leaders, and provided overall direction to the CALFED effort. Numerous other multiagency groups were formed to address nearly every issue that arose. CALFED also engaged stakeholders from a variety of interests, including agricultural and urban water users, environmentalists, Native American tribes, and various watershed communities. Stakeholder representatives provided input to CALFED through a variety of mechanisms,

including a 35-member federal advisory committee—the Bay Delta Advisory Committee (BDAC)—several BDAC work groups, public meetings, workshops, and hearings, and numerous other meetings with agency staff. Over the course of the five-year planning process, thousands of people—agency staff, consultants, stakeholder representatives, and individuals—participated in CALFED.

Given the size and scope of the CALFED effort, research focused on the policy-making process at the level of the Policy Group and BDAC. This approach gave as comprehensive a view as possible of the whole program, and provided the opportunity to observe as key decisions were made. In addition to observing these groups, researchers attended select meetings of other groups working on issues that were of particular importance.

Researchers first obtained permission to observe the Policy Group meetings in the fall of 1997. After they attended one meeting, some group members expressed concerns about the presence of the researchers and their note taking. These objections led to a year-long break in research as these issues were worked out with the agency staff. Researchers, under a University of California research grant establishing an agency contract, resumed observing the CALFED Policy Group meetings under the condition that no notes be taken nor any documents removed from the meeting. Over time, as the group became more comfortable with researchers' presence, these latter two conditions were relaxed. Following each meeting a written summary was prepared based on researchers' recollection of events, and notes, if taken. Beginning in August 1999 and thereafter, the Policy Group meetings were held in public, enabling researchers to take notes as a matter of course.

Investigators spent a tremendous amount of time observing CALFED meetings, which included monthly and sometimes biweekly Policy Group meetings, monthly BDAC meetings, various BDAC work group meetings, as well as several high-level sessions that were not publicly announced, but which included numerous stakeholders. These last were co-chaired by a member of the governor's staff and the Secretary of Interior or his deputy. Researchers also attended several staff-only meetings of the Management Team, which consisted of the agency staff that reported directly to the members of the Policy Group, and a meeting of the Environmental Water Caucus, a group that formed to coordinate among the environmental stakeholders.

In the course of these meetings investigators got to know some of the regular participants and members of the various groups, engaging in informal conversations about the process during breaks, and before and after the meetings. CALFED and agency staff worked long hours, were constantly under intense deadlines, and did not have much available time for in-depth interviews.   Through the informal contacts made at the meetings, researchers were able to track individuals' perceptions of the process and see how they sometimes changed over the course of time and events. Particularly with CALFED and agency staff, researchers were able to get answers to many questions, track viewpoints, and understand the reasoning underlying changes that were made to the process. Whenever possible, this information was included in the meeting notes.

In late spring 2000, prior to the release of the Record of Decision, which marked the end of investigators' research into the CALFED process, researchers conducted a lengthy in-depth interview with one of the key CALFED staff members who had been involved in Policy Group and BDAC meetings from nearly the inception of the program. This interview served to fill in information on the process that had occurred prior to the initiation of the research, confirmed many observations, and provided some additional

insight into the CALFED staff perspective on collaboration, consensus building, and stakeholder involvement processes.

Researchers reviewed volumes of material produced in the CALFED process. Each of the Policy Group and BDAC meetings had substantial meeting packages with letters, memos, reports, and other supporting material associated with the various agenda items. CALFED produced numerous documents and reports on the work that was being accomplished in the program. In addition, news media reports on CALFED and reviewed publications produced by various stakeholder groups were followed. Together, the meeting observations, interviews with participants, and reviews of documentation provide the basis for the CALFED case study.

Sacramento Water Forum

The bulk of research efforts in this study focused on the Sacramento Area Water Forum, the process that came closest to meeting the conditions of an ideal consensus-building process. The Water Forum was a nearly seven-year process involving a wide array of stakeholders concerned with regional ground and surface water supplies and the ecological health of the lower American River. The Water Forum's 45-member Working Group was the key decision-making body. Its membership included representatives of water purveyors in Sacramento and adjoining counties, environmental groups, business interests, and a variety of civic organizations. The stakeholders were organized into five caucuses of like interests—including business, environmental, public, Sacramento County water, and foothill counties water interests—several of which met together regularly. A number of smaller groups having representatives of each caucus held hundreds of meetings to work through numerous conceptual and technical details. The Water Forum was well-staffed, with a full-time facilitator, and administrative and technical staff and consultants.

Researchers attended Water Forum meetings from spring 1996 through the end of 1999, more than 75 meetings of various types, including the Working Group, Surface Water Team, Groundwater Team, Water Conservation Team, environmental caucus, purveyors caucus, and staff meeting planning and debriefing meetings, among others. Investigators attended as many types of meetings as possible, but followed most closely the Surface Water Team and the Working Group because they dealt with the most critical issues. This allowed researchers to track the evolution of the dialogues.

As with CALFED, researchers got to know a number of the staff and participants in this process. Over the course of the three years that this process was followed, researchers checked in regularly with several of the staff members to get progress updates and additional information that rounded out information learned by observing the meetings. Researchers conducted 11 in-depth interviews with key stakeholders from each of the caucuses, key staff, and the facilitator. These interviews ranged in length from one and a half hours to as long as three hours, and touched on a breadth of topics regarding the process, its management, participants' experiences, and outcomes.

As with the other two cases, the study of the Water Forum process involved review of a substantial quantity of written materials. Each meeting had a full agenda and supporting materials. As the participants moved toward agreements they crafted language that reflected those agreements that was discussed thoroughly and frequently went through innumerable iterations. News media reports on the Water Forum were followed, as well as related reports and memoranda. Meeting observations, formal and

informal interviews with participants, and reviews of documentation provide the basis for the Water Forum case study.

Case narratives focused on outcomes that were identified by participants in these processes as well as those identified in the researchers' analyses. After reviewing the narratives, lists of outcomes from each process were developed, then examined to see if patterns could be identified among them. Researchers found outcomes of similar types, categorized them accordingly, then analyzed these categories and found that some were related and that some that had several facets fell into more than one category.

Outcomes were then reviewed by category to see if there were characteristics that distinguished them from the policies that preceded them. Given that this was case study research examining live processes, there were no case control processes with which to compare them. Instead, the researchers focused on whether the outcomes identified had characteristics that distinguished them either as outcome types that had not occurred previously in California's water policy environment.

OUTCOMES

Whether viewed in aggregate or as individual cases, it is clear that the three collaborative policy making processes—the San Francisco Estuary Project, CALFED Bay-Delta Program, and Sacramento Area Water Forum—produced remarkable results. Each process arose in a setting around which there were conflicts so difficult that many believed them to be impossible to resolve. Yet each produced many areas of agreement among agencies and stakeholders, along with significant on-the-ground improvements. More importantly, these processes have produced new ways of managing resources, new kinds of standards, new institutional arrangements, and new collaborations on other policy issues, many of which would have been impossible and even inconceivable in the policy environments that preceded these collaborative processes.

When talking and writing about the outcomes of collaborative policy making processes, many people—participants and researchers alike—tend to focus on the formal agreements produced. While such agreements are important, and the ones produced in the process studied here have noteworthy features, collaborative processes produce an array of other results that are of at least as much, if not of greater, importance, as other research has suggested.[8] Further, it is possible to distinguish many of these outcomes from ones that result from other types of policy making processes because they have characteristics that are based on principles of collaborative action. These outcomes involve joint action across diverse stakeholder interests and the application of collaborative techniques in other settings.

Researchers identified 12 outcome types resulting from these collaborative processes, which do not normally result from conventional, non-collaborative policy making conditions.

- ▪ *New learning and knowledge.* New learning and knowledge involves (1) basic learning wherein participants working together improve their understanding of the issues at hand and one another's interests; (2) shared knowledge wherein participants

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[8] See Judith E. Innes and David E. Booher, "Consensus Building and Complex Adaptive Systems: A Framework for Evaluating Collaborative Planning," *Journal of the American Planning Association*, Vol. 65, No. 4 (Autumn 1999), 412-423.

working together produce jointly constructed understandings of the problems and their solutions; and (3) conceptual transformations in problem definition, wherein participants engaging in collaborative dialogue develop completely new ways of thinking about their problems.

- *Agreed-on, high-quality and useable information.* Participants in collaborative processes work together to evaluate information and identify new information needs. In working together they are able to jointly address the concerns different participants may have in regard to the data's accuracy or the assumptions underlying a technical analysis, and thus develop extensively reviewed and high-quality information. Through the process of coming to agreement on information, participants also develop a robust understanding of the limits of the information and its applicability to the resource management context, and thus frequently develop and present information in a manner that is useful for decision making purposes.

- *Innovations in regulation.* Participants in these processes produced new regulatory approaches that are significantly different from the ones used previously. These approaches were designed to incorporate flexibility to accommodate variations in environmental conditions, and frequently involve multistakeholder collaboration to oversee implementation.

- *Innovations in environmental management.* Participants in these processes developed collaborative approaches to water management that involving stakeholders. In complex resource management settings, in which existing decision rules sometimes conflict, diverse interests evaluated real-time conditions and determined water management needs.

- *Comprehensive agreements.* Participants produced formal signed agreements that provided comprehensive plans for resource management in a variety of interrelated areas and across multiple agencies. These agreements all envision a continuation of extensive collaboration and cooperation among an array of diverse governmental agencies and stakeholder interests.

- *Early agreements and actions.* Participants often agreed and acted on issues long before a comprehensive agreement was produced. Rather than holding up any action until there was a signed comprehensive agreement, participants sought to move forward where possible. Many of these actions would have been significant in and of themselves even if the participants were not successful in reaching a signed comprehensive agreement.

- *New institutions for implementation and long-term decision making.* Participants in each process developed mechanisms for continued collaboration so that participants could provide one another assurances that commitments will be met in the future, and that when unanticipated conditions or new conflicts inevitably arise, they would have a ready-made forum in which to address such problems collaboratively.

- *Mechanisms for tracking ecosystem health.* Participants developed monitoring and research efforts as a way to track progress toward resource goals and to provide new

information needed for management. These ongoing efforts are integral to the overall long-term resource management planning, and involve collaborations across multiple agencies. The indicators measured were identified as ones needed to meet specific management needs.

- *Spin-off processes.* The collaborative policy making processes tend to spawn new collaborative processes on other pressing topics. In these cases, participants and observers have been so pleased with their experience with collaboration in one setting that they seek to use it to address conflicts over other resources.

- *Use of collaborative techniques in other settings.* A number of participants in these processes reported they found collaborative techniques they had learned in these processes were very helpful to them in dealing with other situations they encountered in other aspects of their jobs, particularly in addressing potential areas of conflict.

- *New and Improved Relationships.* Collaborative processes provide a setting at the outset in which competing, and frequently warring, stakeholders can develop new personal and professional networks among themselves and as a result change the dynamic within the dialogue as well as outside it. In these processes, participants find a basis for dialogue that evolves into a personal mutual respect, and new and improved relationships. In effect, they build social capital.

- *Political Capital.* Each of these processes produced significant political capital. When diverse participants went to elected officials and voters speaking with one voice, they were able to obtain significant resources and backing to undertake their agreed-on plans of action.

Each of these types of outcomes represents a significant change in the policy making environment in which the three collaborative policy making processes studied here took place. The following sections discuss these outcomes along with examples drawn from the case studies and explanations of how the outcomes emerged from the collaborative processes. Many, if not most, of these outcomes are unlikely to have resulted from other, commonly used types of policy making processes that are characterized by adversarial relationships, including legal decisions, bureaucratic decision making, and legislative law making. Rather, most of these outcomes have characteristics that are fundamentally collaborative, and could not occur or even be conceived of without a shared sense among the diverse and often competing stakeholders that policies could be based on their continuing cooperation. More importantly, taken as a whole, these outcomes create a pattern of action that is fundamentally transforming the way in which water policy is made in California.

New Learning and Knowledge

Each of the processes also produced new learning and knowledge of three different types. Participants engaged in basic learning, wherein people simply learned more about the resource, the problems, and each other's perspectives. Participants also developed knowledge jointly, through dialogue. Together they created shared understandings of the resource problems and what needed to be done, and together they

created a shared narrative around the issues. The third kind of learning and knowledge came about in a number of conceptual transformations that took place in these processes. In these instances, participants developed completely new ways of thinking about the resource.

Basic Learning

In each process participants learned things they did not know before. In the Estuary Project, participants reported that they got to know one another, and learn about each others' concerns and responsibilities. Some laypersons acknowledged having learned some science, and some technical people reported having learned more about policy. In the Water Forum, the whole first year was dedicated to education about the water supply and the environment. In addition, stakeholders had to examine their own interests and explained them to the rest of the group. One stakeholder who represented environmental interests reflected,

> I think I have a more detailed understanding of the regional issues, but I don't think I've changed my approach to these or basic take on the big picture situation. I think that some stakeholders, that for some stakeholders this was a much more significant learning. Some stakeholders really had to learn a lot, I don't think that I learned very much, you know, other than the details . . . That's actually the whole purpose of the Forum process is to bring the stakeholders up to a common set of understandings so they could be competent negotiators . . . It took really a couple of years, and I think that was done fairly well.

Basic learning also took place as the stakeholders worked together to find solutions to their problems. One water purveyor explained,

> What we learned was an enormous amount of information about the whole technical side of the nature of the watershed here and the importance of the role [our agency] . . . has or at least has the potential to play, depending on how we operate our system.

Through the Water Forum process, this purveyor learned much more than he had known before about the water supply operations of other purveyors in the watershed, and thus developed a much richer understanding of how the actions of his agency could affect others. Similarly, others learned things they did not know about that purveyor's agency and how they could cooperate to each other's benefit.

Basic learning also took place in CALFED. There were, however, only a few areas where the learning was designed into the process as explicitly as it was in the Water Forum. The BDAC Governance Work Group, for example, held a one-day symposium on governance at which it heard from experts in governance and from people who were involved in other similar undertakings elsewhere in the United States. The symposium provided for dialogue among the speakers and stakeholders, and later the speakers and work group members met with several Policy Group members for further discussions. In CALFED, joint learning did not take place extensively among the non-governmental stakeholders. Other opportunities for basic learning were more informal. The Policy Group—especially after the new state administration came in and before the meetings

were opened to the public—provided a forum in which members freely exchanged information. When the new state administration officials joined the group, it provided an opportunity for the officials to ask basic questions. Following a presentation on the south Delta agricultural barriers, for example, one new member asked some basic questions— "What is this solving?" and "Why is it called an 'ag barrier'?" Following a more comprehensive discussion about the nature of the problem, in which Policy Group members were asking and answering each others' questions, one federal official exclaimed, "this is so much more informative than what we had the last two years, no offense intended." It is unlikely the Policy Group members would have had the opportunity to engage in this kind of give and take with one another, and develop the level of understanding they did without the CALFED process, which required them to focus on these issues, and without the Policy Group meetings that brought them together.

Shared Knowledge

These processes also produced jointly constructed understandings of the problems and their solutions. At the beginning of the Estuary Project there was considerable disagreement regarding the role of fresh water flows in the health of the ecosystem. By the middle of the process, however, the participants had concluded that they could not continue without addressing the flows issue. By the end, they all agreed that flows were critical to the ecosystem's health, although they continued to disagree about what should be done.

Similarly, in the Water Forum, the stakeholders constructed a shared narrative of what needed to be done. Although they had come together to solve the region's water supply problems, it was only after more than a year of learning and discussion that they were able to articulate as the co-equal objectives their goal to protect the river and provide reliable water supplies. Working together and with staff and consultants they synthesized what they were learning about flows and fish biology, and developed a joint understanding of how an improved pattern of flows could benefit the fish while meeting water supply needs. The narrative that emerged from this process was that during wet years, the purveyors could increase their diversions, but during dry years they would "get off the river by going to groundwater."

An overarching shared narrative for the CALFED program has yet to fully emerge, although joint learning has produced shared knowledge and narratives in several parts of the program, particularly those around which multi-agency teams were organized. Perhaps the most striking example is that of the CALFED Environmental Water Account gaming effort, in which agency staff and stakeholders ran water operations models under various scenarios to see how well the system could be operated to meet various fisheries, water deliveries, and water quality objectives. Working side-by-side, water system operators, biologists, water users, and environmentalists simulated dry years and wet years using different management strategies. The modeling exercises proved to be a very useful way to develop a better understanding of a very complicated system. One engineer explained, "It's like playing three-dimensional chess all day long."[9] A biologist observed, "It's been immensely educational for everyone."[10] The

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[9] Ron Ott, a CALFED staff member and water resources engineer, as quoted in "The Game's Up," *Estuary*, Vol. 8, No. 3 (June 1999).

engineer explained that the work that followed each gaming exercise was where the real learning took place.

> For every eight hours of gaming, it takes another 12 hours to figure out if you did any good. Did we do better than a standard? Did we make more water? Did we use it more efficiently? How many fish did we lose?[11]

In answering those questions, the team developed a better understanding of how existing and proposed facilities could be operated, and under what conditions fisheries, water deliveries, and water quality objectives could be met. For example, they learned that the development of a water storage facility in the Delta would be very helpful because it could be used immediately, whereas water stored in upstream reservoirs could not be delivered as quickly. Similarly, they learned that groundwater cannot be readily used for environmental purposes, but that it provides good collateral for exchanges with water agencies. They also discovered that it can actually be more difficult to manage water in wet years than dry years because more fish are present. In working together, the participants developed a much richer and more coherent shared understanding of the water system. The narrative they developed was also useful to the CALFED decision makers, who, for example, included in-Delta storage in the list of projects CALFED plans to pursue next.

Another kind of shared knowledge occurs when stakeholders disagree. In some instances, stakeholders disagree, but do not agree on what they disagree about. In others, however, where shared learning has taken place, the stakeholders agree on what they disagree about, and have a shared narrative about the disagreement. In the Water Forum, for example, the purveyors and environmentalists disagreed about who was responsible for the projected environmental impacts. Many of the purveyors felt the impacts were not theirs, but resulted from the Bureau of Reclamation's Folsom Reservoir. Once the stakeholders figured out exactly what it was on which they disagreed, however, they were able to move forward with the Water Forum EIR while acknowledging their specific disagreement. Similarly, a number of the Water Forum stakeholders disagreed on the issue of whether Auburn Dam should be constructed. They all agreed, however, that regardless of whether or not the dam was constructed, there needed to be a regional approach to water supply. Thus, they agreed to set aside the Auburn Dam issue for the purposes of their work in the Water Forum. Having worked through and developed an understanding of their areas of disagreement enabled the stakeholders to move forward in those areas where they could find common ground.

Conceptual Transformations in Problem Definition

The third type of learning that took place in the three cases involved conceptual transformations where participants, through collaborative dialogue, were able to develop completely new ways of thinking about their resource. These conceptual transformations are much like what other researchers have identified as innovations, but they refer

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[10] Bruce Herbold, an EPA fish biologist, as quoted in "The Game's Up," *Estuary*, Vol. 8, No. 3 (June 1999).

[11] Ron Ott, a CALFED staff member and water resources engineer, as quoted in "The Game's Up," *Estuary*, Vol. 8, No. 3 (June 1999).

specifically to the conceptual understanding of the problem. In the Estuary Project, for example, the use of salinity as a surrogate measure for flows transformed the way people thought about the water quality problem. This innovation allowed people to move away from the concept of volumetric measurement of fresh water flows to a more direct measure of ecosystem productivity and health.

In CALFED, the Expert Panel on Agricultural Water Use Efficiency had a similar conceptual transformation. Prior to the Panel's formation, the CALFED plan for water use efficiency in the agricultural sector had been modeled after ones commonly used for urban water conservation. The plan was the subject of much criticism from the urban and agricultural stakeholder communities, which were highly polarized around the issue. The CALFED management brought in a mediator skilled in the resolution of technical disagreements to conduct an expert review process to address the stakeholders' concerns. The process designed by the mediator included experts from within and outside California, and included substantial stakeholder involvement. Through this process, the parties were able to identify common ground, and as a result reshaped the focus of the agricultural water conservation program. They recognized that agricultural water use is fundamentally different than urban usage, and therefore requires a different approach. Rather than simply focusing on how well certain best management practices can perform, the group recommended CALFED use a "flow path" strategy that would shift the focus onto specific points in the agricultural water use where water savings could be achieved. Given that at the outset of the collaborative process used for addressing water use efficiency, the stakeholders were mired in disagreement, it is unlikely that this kind of approach would have emerged without the intervention of a collaborative fact-finding effort in which they and the experts they trusted were involved.

Agreed-on, High-quality and Useable Information

Each of these processes produced agreed-on information that was of high-quality and useable. Although high-quality and useful information is generated in multiple settings outside of consensus-building processes, it often is not in a form that is readily useable by decision makers, or there may be disagreements surrounding the basic data and/or assumptions used, and thus the validity of the information. The collaborative processes studied here each produced syntheses of information that were understandable to laypersons, and presented in a form and context that made it useful to participants and decision makers as they worked through resource management issues. In addition, the information produced in these processes was reviewed and evaluated by all parties involved providing for a high level of confidence in the quality of the information being used.

In the San Francisco Estuary Project, participants labored over the production of status and trends reports. Although no new research was done and the basic technical information in the reports was not new, participants sorted through, organized and assembled the existing information so that it could be understood and used. Scientists and managers, working together, produced reports that were based in science and useful for management purposes.

The problem of how to present technically accurate and relevant information is ever-present in policy settings, and one with which participants struggled in all three processes. In the CALFED Policy Group, members often sought information on the context of what was being presented to them. The executive director frequently prefaced

clarifying remarks with the statement, "Maybe I should provide some context here." In one exchange regarding the funding of ecosystem restoration projects, a frustrated Policy Group member commented, "the numbers of projects are important, but those pie charts are useless in terms of explaining what we're doing." As a result, new charts were developed that provided the information in the context that illustrated the impact of the program in different areas. In the Water Forum staff worked with the technical consultants in advance to make sure their presentations would be understandable and useful. The facilitator explained,

> We worked with the consultants on their presentations so they were user friendly and it was coherent. I would be in these discussions with these fish biologists and say, "if you can't explain it to me, then you can't explain it to the surface water team." And I know the surface water team is smarter than I am about these things, but I was the litmus test. Can I understand this? I'm smart, but I'm not a water wonk. So we would struggle on that.

One staff member explained how they worked with the consultants to help identify and explain what the implications were of the error discovered in the hydrologic model they were using.

> These models are extremely complex, extremely complex. They have hundreds of thousands if not millions of lines of code. They're built on thousands of algorithms and assumptions, many of which are accepted because everyone else accepts them but they may not be understood . . . We worked intensely with the consultants, who are very credible consultants but also techno-geeks themselves. And they would go to very detailed levels because they have to. For instance, what's the setting of the KSYG switch is incredibly important. Or what's the MCP flow assumption? To the rest of the world this makes no sense whatsoever. So we worked extensively with them to convert to the English language what the key issues were in the assumptions, in the modeling, and in the computations that folks needed to know to understand how the models worked.

In addition to producing information that is in context and therefore useable by participants, these processes produced new information that met high standards. When the Water Forum's consultants discovered the error in the Bureau of Reclamation's hydrologic model, the Bureau was at first reluctant to correct it. From their perspective, the error was within an acceptable range. For the Water Forum members, however, the error translated to very real on-the-ground impacts. "Close enough" was not good enough. The Water Forum started working with the Bureau and consultants to fix the model. A staff member explained,

> Why is the Water Forum mediator mediating among federal modelers to fix their model? Because it needed to be done. You know it cost us money, but if it hadn't been done, the model wouldn't be fixed, there would not be credible data, and people couldn't come to agreement.

Similarly, when the Water Forum purveyors were preparing their project-specific environmental impact reports, the environmentalists insisted on analyses that went

beyond those normally prepared in these types of reports. As a result, the cumulative impact analyses in each of the purveyor's project-specific EIRs show the full impact of all the planned diversions, not just the incremental impact of the specific project. Further, these analyses are all consistent with the Water Forum EIR. In these cases, the Water Forum established a higher standard for information than had been held previously.

CALFED also has examples of setting higher standards for the quality of information produced and used. At the insistence of stakeholders, CALFED convened an independent scientific review panel to review the Ecosystem Restoration Plan. Subsequently, at the recommendation of the panel, it appointed a core team of independent scientists to help guide continued development of the plan. In addition, CALFED is planning to establish an Independent Science Board "to provide oversight and peer review for the overall program,"[12] and additional review panels for specific program elements and activities. In establishing independent scientific review as an integral component of the CALFED program, CALFED is creating opportunities for increasing the quality and credibility of the information it produces and uses.

These examples demonstrate how these collaborative processes have produced information that is of high quality and useable. Managers and technical experts worked together to develop and present information in a contextually useful manner. In addition, meeting the multiple needs of multiple stakeholders often meant improving the quality of information developed. Together, the information that was well-contextualized and that met high standards, provided credible information on which stakeholders felt they could make sound decisions.

Innovations in Regulation

Innovations in regulation also emerged from each of these processes. Participants in the Water Forum developed a water flow standard for the lower American River that was substantially different from other flow standards at the time. Rather than simply setting minimum flow levels and disregarding flows above that level, the new standard was tailored to the temperature and flow needs of the fish throughout their life-cycles. In addition, it provided for real-time management, so that rather than specifying a flow level according to the calendar date, flows are adjusted depending on a suite of factors including exactly when fish begin to migrate, the volume of the cold water available, and the type of water year. The real-time operating decisions were to be made by an operations group that includes biologists and engineers from the Bureau of Reclamation and stakeholder groups. The flow standard had an extremely novel provision for the driest of the dry years, wherein it requires the stakeholder parties to get together with the agencies to figure out what to do. The group came to refer to these years as "conference years." As the Water Forum facilitator explained,

> It's very different, a very policy-oriented flow standard that will call for people to pull together in conference years and figure out what to do. Well, that's an interesting way of writing a standard, that thou shalt talk, thou shalt get together and figure out what you're going to do in conference years.

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[12] CALFED Bay-Delta Program, "California's water future: A framework for action." (CALFED: Sacramento, CA, June 9, 2000, p. 36).

The salinity measure developed in the San Francisco Estuary Project was later adopted for as a standard for protecting water quality. In the suite of agreements that led to the CALFED Bay-Delta program, federal and state regulators, and agricultural and urban water users, and environmental stakeholders agreed to the adaptation of this measure as an interim water quality standard. Although a permanent water-quality standard has yet to be set by the State Water Quality Control Board, it is highly likely the salinity measure will again be used, with some adaptations resulting from new information that has been developed based on experience using this measure over the last nine years.

Neither of these results were likely to have occurred outside of the collaborative process, because they represented radical departures from the usual practice and required substantial agreement across players to be accepted. In the case of the salinity indicator, scientists representing all the stakeholder interests were brought together in a facilitated process. Although many of the participants had worked on Bay-Delta fisheries and flows issues for years, it had been in the context of providing dueling scientific information to support their various constituencies' positions, rather than in a collaborative problem-solving mode aimed at identifying the levels of flows needed to protect the Bay-Delta ecosystem.

In the case of the new flow standard for the lower American River, another process may have produced a similar type of standard. In fact, the team that developed the Bureau of Reclamation's Anadramous Fish Restoration Program flows for the lower American River developed a similar approach independent of the Water Forum, but also using a process that engaged stakeholders. However, the actual implementation of the Water Forum's standard relies on continuing collaboration for making real-time operational decisions and for addressing resource needs in the most severe drought years. It is very unlikely that the parties involved would have come up with a long-term solution to their problems that required working together if they had not already had some experience in working together through the Water Forum process.

Innovations in Environmental Management

These processes also produced innovations in environmental management, moving away from a top-down command-and-control approach toward a cooperative management approach that is responsive to real-time conditions. For example, the Sacramento Water Forum developed the lower American River flow standard, which as described above involves the use of continuing collaboration to effect a flow regime that is more responsive to the fishery needs while also providing for water supply reliability. The Water Forum also developed the Sacramento North Area Groundwater Management Authority to manage groundwater supplies in the northern part of Sacramento. Unlike other groundwater management authorities in the state, which entail centralized management often by a court-ordered water master, this one is managed using a joint-powers agreement that the user agencies jointly developed and entered into voluntarily. All of the member agencies and districts have agreed to share their authority to manage groundwater so that together they can manage the basin more effectively, and provide for a more reliable regional water supply over the long-term. When the SNAGMA members drafted their bylaws, they incorporated many of the collaborative decision making principles they had used in the Water Forum.

In the CALFED process, a collaborative approach was developed for managing the operations of the state and federal water projects. Water system operators, regulatory biologists, and technical experts from stakeholder organizations worked together in the Operations Group and several subgroups to meet water delivery requirements and endangered species protection needs. By working cooperatively, managers were able to respond to real-time conditions and address conflicts between fishery and water supply needs directly.

For example, in November and December of 1999, dry conditions in combination with record high tides and the onset of a salmon out-migration produced a very complex and difficult water management situation in the Delta. The actions that were required to protect the fish also resulted in the degradation of water quality, threatening water exports to southern California. Over the five weeks during which these conditions prevailed, two subgroups—the Data Assessment Team and No Name Group—held consultations almost daily. With the input from these groups that based on up-to-the-minute monitoring data, the Operations Group managed the situation on a day-to-day basis. These resource managers were able to make key decisions at the lowest levels possible, elevate unresolved issues quickly, and keep all the agencies and stakeholders informed about the situation. The decision making was quick and effective, and provided a much more nuanced response than the agencies had been able to provide without this kind of close collaboration.

In this situation, the resource managers were dealing with several trigger-based regulatory requirements that conflicted with each other. Unlike the way decisions were made prior to CALFED, the regulatory agencies all were involved in the decision making, along with the resource managers and stakeholders, so that together they were able to work out a management solution to the problem. Prior to CALFED, as soon as one of the conflicting regulatory requirements was exceeded, a stakeholder typically would have filed a lawsuit. In this case, even though some water purveyors felt the management decisions had been flawed and favored the environmental concerns over water supply needs, they also were at pains to say that was the right decision making process had been used and that they supported it. They wanted to continue working together to improve on the collaborative process.

The Environmental Water Account is another example of an innovative approach to environmental management that arose from the CALFED process. The idea emerged when one stakeholder scientist wondered "what if there were a water agency for the environment?" This wondering led him, along with others, to develop the concept of an EWA consisting of assets—money, water, and possibly operational facilities—that would be managed cooperatively to provide water for fisheries protection on a real-time basis above and beyond what is already required by existing regulations. The idea was that by providing water for fisheries exactly when and where it is needed the water can be used more efficiently, and that by taking a preventative fishery protection approach, new regulatory measures would not be necessary. These results in turn would improve the long-term reliability of water supplies to urban and agricultural users.

This idea was a novel one that had not been tried before in California. While one of the members of the group is credited with the basic idea, the concept itself would not have been viable in the first place or even imaginable without the trust and cooperation of the stakeholders. Moreover the details could not have been worked out without the stakeholders. Agency personnel and stakeholders from agricultural and urban water interests and environmental groups spent hundreds of hours working through various

scenarios to test how the approach could be used, before recommending that it be implemented as a part of the overall CALFED program. The EWA concept is important because it incorporates real-time adaptation into the management of water supplies and natural resources, depends on collaborative management among state and federal agencies and stakeholders, and is an anticipatory approach that seeks to prevent future problems.

Comprehensive Agreements

A hallmark of each of the three processes has been the development of comprehensive agreements for resource management that address the many interlinked aspects of resource management for which multiple public and private parties are responsible. The Estuary Project's Comprehensive Conservation and Management Plan, CALFED's Framework for Action, and the Water Forum Agreement are all complete packages that address all aspects of the resources with which they are concerned. Rather than addressing each aspect piece-by-piece, each agreement fully reflects the complex interrelationships among their program elements. These agreements provide for the physical and institutional interdependencies among the various program elements, and at the same time contain contingency provisions for addressing future uncertainties so that the failure of one element would not erase commitments in other areas.

The SFEP's CCMP was the loosest of the three agreements—at the time of its signing, a number of participants lamented it lacked "teeth," meaning it contained no legal requirements that would compel implementation of the plan. Despite these concerns, progress has been made in all the program areas of the CCMP. Many of the recommendations are being implemented, mostly because they were thought to be good ideas by the players.[13] The CCMP addresses, and articulates goals and recommendations for nine interlinked program areas: aquatic resources, wildlife, wetlands management, water use, pollution prevention and reduction, dredging and waterway modification, land use, public involvement and education, and research and monitoring. In each case, the plan addresses the interconnectedness of the resources of concern as well as the relationships among the agencies that have jurisdiction over the resources, and many of the recommendations require cooperative action. The CCMP notes, for example,

> . . . the problems facing the Estuary are interrelated, linked in a web of interacting chemical, physical, and biological processes. Acknowledging these interactions is critical to developing effective actions to address the issues.[14]

> Today, a complex array of agencies, plans, regulations, and laws govern activities in the Estuary region. A one-mile stretch of shoreline may be affected by the decisions of up to 412 government bodies with differing mandates and jurisdictions.[15]

The CCMP recognizes and seeks to incorporate the complexity and difficulty of addressing problems across multiple resources and overlapping jurisdictions. These

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13 Reference SFEP case study, p. 138.
14 SFEP CCMP, p. 64.
15 SFEP CCMP, p. 63.

relationships and interdependencies are built into the recommendations of the CCMP. For example, the document states,

> Acknowledging these interactions is critical to developing effective actions to address the issues. It makes little sense, for example, to try to lower the pollutant-related impacts of dredging without also reducing the quantities of pollutants that find their way into sediments in effluent and runoff. Similarly, it would be unwise for public entities to spend large sums of money to protect particular wetlands and then to allow incompatible land uses on adjacent uplands.[16]

Like the CCMP, the CALFED Framework for Action provided commitments to action in a variety of interlinked program areas, including: ecosystem restoration, watersheds, water supply reliability, storage, conveyance, water use efficiency and conservation, water quality, water transfers, levees, monitoring and science, and governance. These commitments were further detailed and cemented in the signing of the Programmatic Record of Decision by all the participating CALFED agencies in August 2000. The CALFED agreement sets forth a remarkably comprehensive and integrated policy approach that addresses the interdependencies among these various program areas:

> All aspects of the CALFED Program are interrelated and interdependent. Ecosystem restoration is dependent on supply and conservation. Supply is dependent upon water use and efficiency and consistency in regulation. Water quality is dependent upon improved conveyance, levee stability and healthy watersheds. The success of all the elements is dependent upon expanded and more strategically managed storage.[17]

Like the CCMP, the CALFED agreement recognizes the need for continued multi-agency coordination to address the resource conditions.

At the same time, the CALFED agreement goes beyond the model of the CCMP. It includes specific provisions for long-term accountability to stakeholders and the general public, and sets forth a framework for addressing future problems if the program goals are not being met. The agreement requires annual reporting on progress toward the program objectives, coupled with continuous monitoring and data collection, with stakeholder involvement. The CALFED agreement also contains recognition that things may not go as planned and that it is not possible to make all decisions for the future today. Thus, the agreement incorporates and provides a process for conducting "science-based adaptive management," wherein scientific data and management decisions will be reviewed through a process involving agencies, stakeholders, and an independent board of scientific experts.

The structure of the CALFED agreement also reflects the resource management reality that the future is uncertain. While the plan is comprehensive in its breadth, and sets forth a vision for the next 30 years, it divides that future into three stages, of which the first stage is seven years. The work plan laid out for Stage 1 includes specific projects and actions to be accomplished during that period, as well as the development of

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[16] SFEP CCMP, p. 64.
[17] "A Framework for Action," pp. 2-3.

additional information needed to make decisions regarding what actions should be included in Stage 2. This staged decision making approach is novel in government resource management programs in that it inherently reflects our uncertainty in regard to future conditions, and explicitly builds in a system for learning from previous actions as a responsible way to proceed.

Like the CCMP and the CALFED agreement, the Water Forum Agreement consists of a highly interlinked set of program areas, and involves coordinated as well as independent implementation actions on the part of a large number of agencies and organizations. The Water Forum Agreement contains seven elements of "an integrated package of actions," including increased surface water diversions, reductions of diversions in drier years, improved fishery flows, habitat management, water conservation, groundwater management, and the successor effort. In addition to these elements, the Water Forum Agreement section titled "Assurances and Caveats" details how the parties to the agreement will assure they all meet their commitments over the long term. It also provides for "changed conditions" so that if for unforeseen reason one party or another is unable to meet its commitments, there are procedures for altering the agreement. One environmental stakeholder described the Water Forum Agreement as a complex "mutually bounded web of agreements," in which the interlinked commitments of the parties create for the assurances that the provisions of the agreement will be met. The facilitator explained that many water purveyors had additional motivation to fulfill the Water Forum Agreement. It was not just that they could proceed with the projects that were covered by the agreement, but that it would also bring the benefits of an improved resource and a reputation for being a "good citizen."

> Everything was linked to everything . . . if you were a good citizen around the river and whatnot, . . . even though you're doing it for the Water Forum Agreement, in the end it's going to have even broader consequences in terms of people respecting that, and actually in terms of the resource being improved so that people are going to leave you alone a little bit.

Early Agreements and Actions

Early agreements and actions are those things that participants agreed on and acted on *before* a complete agreement was developed. These outcomes took place because everyone involved in the process agreed that they should, regardless of the form of the final agreement, and that there was no reason to postpone them. Frequently, these outcomes were important to the continuation of the process because they demonstrated to participants and observers that the process could produce concrete results. Participants saw that by working together, they could help further their shared interests. They also saw that those with whom they were collaborating were committed to the process, which helped to build trust.

One of the earliest outcomes of the Sacramento Water Forum occurred when the purveyors agreed to support the new flow pattern that been developed by the Bureau of Reclamation as a part of its Anadramous Fish Restoration Program (AFRP). The Bureau announced its new AFRP proposal as the Water Forum members had nearly finished developing their own proposed flow pattern and were starting to develop the dry-year alternatives. Although the AFRP was more similar to than different from the proposal the Water Forum was developing, the adoption of the AFRP flows by the Bureau meant

the Water Forum's baseline conditions would change. That is, the environmental impact analyses that had to be prepared under the California Environmental Quality Act (CEQA) would include the AFRP flows as a preexisting condition. Even though the Water Forum had planned an improved flow pattern on its own, it would not be able to take credit for its benefits in the environmental analyses. In a sense, the purveyors were taking a risk, although not a big one, in supporting the AFRP flows. Under the AFRP flows their existing diversion abilities would not be affected, just the Water Forum's baseline.[18] As the facilitator explained,

> We had to go through this whole thing that if we support the AFRP, then that's giving the environmentalists a give that they didn't have at the beginning. And so they were getting something before they even agreed to doing what they had to do . . . That was a very heavy thing for the negotiation . . .

> We did it and life just went on from there. But when we would come back in 1998 and talk about the impacts, and the environmentalists would be upset about the impacts, the purveyors did have to remind the environmentalists that there are impacts, but they are impacts to a higher baseline.

The next significant set of early agreements and actions came later in the Water Forum when several of the purveyors needed to move forward with their water projects before the Water Forum Agreement was finished. The basic elements of the agreement had been worked out, however, the environmental analysis and a number of important details remained. In a series of difficult, project-by-project negotiations, the stakeholders came to agreements under which five purveyors were able to move ahead with support from the environmentalists. A key staff member explained that when all the purveyors had signed on to the AFRP flows, "the environmentalists thought, well, that's interesting," and their trust in the purveyors went up a notch. He noted that for the purveyors, their support was "an investment and a risk." Similarly he said when they were able to come to terms under which the purveyors could move forward with their projects,

> The environmentalists saw they could get things that they felt were important— the City of Folsom committed to water meter retrofit before they had to, they committed to the funding for this and that and the other. The purveyors saw that their projects could move ahead. And many of them were really out there they felt at the end of a limb, a fairly shaky limb, going to their city councils saying, yeah, we think you should spend another $15 million for alternative water supplies, plus more money for meters, plus a long-term commitment to the habitat program and the successor effort, and we think we're not going to get opposed because we've been in a lot of meetings with people. When their projects actually moved forward without opposition, it really changed the dynamic.

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[18] In addition, even if the purveyors objected to the Bureau's AFRP flow proposal, the Bureau likely would have adopted it anyway.

This early agreement increased the participants' confidence in the process and provided encouragement to other purveyors who were concerned about their own projects. The same staff member explained,

> The staff would go around to all of the other water purveyors saying, "See, it works. Now finish off your deal." It created more of a sense of importance and urgency by the other water purveyors that it's good to be inside rather than outside.

Other Water Forum early agreements and actions included the establishment of the Sacramento North Area Groundwater Management Authority in 1998, and the congressional authorization of funding for the temperature control device in 1999. Both of these events were critical to the eventual success of the Water Forum Agreement, yet both also made sense in their own right. The groundwater management authority would facilitate the conjunctive use program, and provide a means for stabilizing the groundwater basin. The temperature control device would allow for better management of the cold water pool in Folsom Reservoir. Although both of these made sense in their own right, the purveyors' wholehearted support for these actions demonstrated to the environmentalists that they were committed to the goals of the Water Forum, and willing to extend themselves to help make those things happen. The Water Forum staff took care to celebrate these events as a way of reminding the stakeholders that they were making progress through working together and that their time was being well-spent.

Most of the early agreements and actions in the CALFED Bay-Delta Program centered around the early ecosystem restoration program. All the stakeholders agreed from the outset that a substantial and expensive environmental restoration program was needed. In 1996, the stakeholders' Funding Coalition formed to move the Bay-Delta Act through Congress and to get Proposition 204 passed by the California electorate, providing state and federal funding for ecosystem restoration. In this case, the stakeholders' joint efforts did not serve so much to increase their trust in one another, but served to demonstrate to them that working together they could accomplish something significant. Later, when they attempted to put together another state bond initiative, they were unsuccessful. The water users had wanted the bond to include funding for storage and conveyance options that CALFED was considering, but that the environmentalists opposed. On their next try, the Funding Coalition produced Proposition 13, which provided funding only for environmental restoration, storage, and conveyance types of projects on which all the stakeholders agreed. Thus, while the funding outcomes were significant ones for CALFED, they did not serve to increase trust among the stakeholders, but reflected more of a sense that the funding was needed to make CALFED work, and CALFED was their opportunity to make progress on resolving the issues that have divided them.

The ecosystem restoration program was an important marker of progress for the CALFED agencies, however. The Policy Group members were keenly aware of the need to demonstrate that the program was making progress, and the awarding of grants for restoration projects that would produce on-the-ground results was a good example of something actually happening. In advance of announcing one round of funding, a Policy Group participant observed, "there are a lot of noodles here," and suggested that the Governor and Secretary of Interior should make the announcement. These early

agreements demonstrated to participants and observers that they could accomplish things by working together.

Strategies for Implementation and Long Term Decision Making

Stakeholders in each process also developed mechanisms for continued collaboration and addressing future conflicts and unanticipated changes. In each case, participants recognized that even once they had developed agreements, there would be a need to track progress on how their plans were being carried out, and there would be plenty of unfinished business on which they would need to continue to collaborate. In each case, the design of the entity established to carry out these functions mirrored the types of relationships that had been built in the process.

The San Francisco Estuary Project, for example, assembled an Implementation Committee that has representation from interest groups and governmental agencies. As a relatively loose confederation of parties involved, the Implementation Committee serves primarily a coordinating function, that continues to maintain a focus on the issues relating to the health of the San Francisco Bay and the implementation of the CCMP. The Implementation Committee meets biennially and tracks issues related to plan implementation. Every several years, the Committee produces a workbook that tracks the progress of each recommendation in the CCMP. The work of this group primarily focuses on getting resources directed toward implementation projects. In addition, the San Francisco Estuary Project has a small staff that coordinates the work of the Implementation Committee, writes grant proposals for implementation projects, and puts on the State of the Estuary Conference every two to three years. The result of this continuing forum for collaboration on the SFEP is an ongoing focus on achieving the goals of the CCMP, and the ability to address new issues in a collaborative manner.

The Water Forum created the Water Forum Successor Effort to provide a venue in which participants could continue to address issues relating to the implementation of the Water Forum Agreement. In addition, the plan itself contained several issues, which could not be resolved prior to the signing of the agreement, that specifically were left to the Successor Effort to resolve. As happens with any kind of complex plan, the Water Forum Agreement explicitly recognized that the participants could not accurately predict the future, even if they were all in agreement about how things should go. Inevitably unforeseen circumstances would arise that would result in what the Water Forum participants came to refer to as "changed conditions." In those cases, the Successor Effort provides a forum in which the participants can adapt to the changes and craft new solutions on which all parties agree. The Successor Effort provides an agreed-on forum in which the parties can carry out one of the Water Forum principles: "mediate before you litigate."

By acknowledging that conditions will change and that those changes will need to be addressed, the Water Forum participants built resilience into their agreement. That is, when something does change in the future, rather than simply invalidating the entire agreement, that change will trigger a need for new negotiations, in the same vein as those conducted in the Water Forum.

The proposed CALFED Commission would provide a unique new governance body that would be overseen by federal and state agency leaders, appointed representatives of agricultural and urban water users, environmental interest groups, and Indian tribes. The need for a new entity to carry out the job of implementing the

CALFED program was one of the first major issues on which all the stakeholders agreed. The stakeholders argued that a formal body was needed to continue a high level of cooperation among the CALFED agencies in the long term. In addition, they argued, a commission would maintain a long-term focus on the water problems in the Delta, preventing agencies from shirking on CALFED-related projects as other problems within their jurisdictions arise.

The proposed commission would oversee a program similar to that which had been conducted under CALFED. While it would have some authority to carry out some real estate transactions on behalf of certain federal and state agencies, it would not have any regulatory authority, nor would any authority held by any existing agency be transferred to the Commission. Rather, the Commission would carry out a priority-setting and coordinating function among the member agencies for carrying out the CALFED program.

Each of these entities was designed for the specific purpose of continuing to address resource conditions in a collaborative mode. The establishment of each of these new entities was explicitly envisioned as a way to monitor implementation and progress and address new problems, and did not involve the establishment of any new kinds of regulatory or oversight authorities. Even the most elaborate of these entities, the proposed CALFED Commission, was conceived so as to not take away any of the statutory authorities that would continue to reside within each of the member agencies. Thus, the process for decision making within these entities will continue to be collaborative and based in cooperation. It is very unlikely that the participants in these processes would choose to develop these new collaborative institutions if they had not already discovered that they could work together effectively in the SFEP, Water Forum, and CALFED and produce results that met their needs.

Mechanisms for Tracking Progress

Participants in each process developed mechanisms for tracking their progress into the future. They specifically developed ways to track changes in resource conditions through environmental monitoring programs, and to track progress on implementation tasks. The San Francisco Estuary Project, for example, tasked the San Francisco Estuary Institute to carry out long-term monitoring of ecosystem conditions with financial support from multiple public and private industry sources. The Institute's monitoring programs and data are reviewed by scientists in government, industry, and environmental groups, and considered by these organizations as producing high-quality, credible information that is critical to evaluating changes in the health of the ecosystem. The Estuary Project's periodic Workbook reports on progress made in implementing the recommendations of the CCMP. Using charts that combine graphical representations with text, the Workbook tracks policy, planning and managerial level progress, such as the establishment of an interagency team to address the problems associated with getting permits to install fish screens on water diversions, as well as actual on-the-ground improvements, such as when, where, and how many fish screens have been installed. The Workbook was recognized by the U.S. Environmental Protection Agency's National Estuary Program office as a valuable tool for tracking and communicating information on progress, and has since been adopted by a number of other estuary programs around the country.

CALFED developed the Comprehensive Monitoring, Assessment, and Research Program to provide information on progress in improving environmental conditions, as

well as to inform future management decisions. This interagency research and monitoring program serves to coordinate the actions of the various federal and state agencies involved in CALFED, and provides a focal point for setting research and monitoring priorities. The research and monitoring program is peer-reviewed by an independent panel of scientists as a way of assuring stakeholders and agencies alike that the scientific information being developed is high quality and credible. The CALFED Program is also developing performance measures in each program area to provide a way to track progress on implementation, and has tied progress on implementation as critical to the approval of funding for future work. For example, the CALFED ecosystem restoration identifies key projects and milestones on which progress will be tracked.

One of the Water Forum Successor Effort's main responsibilities is to track progress on the implementation of the agreement, including ecosystem conditions. Unlike the SFEP and CALFED, the Water Forum did not identify any new environmental monitoring needs. The Water Forum participants felt comfortable that the ecosystem information they were using from the relevant state and federal agencies would continue to fit their needs in that regard. At the same time, however, the Successor Effort will track the progress of the various parties toward their commitments. For example, the local water purveyors will report back to the other participants on their progress in installing water meters and instituting billing practices in which water customers are charged for the volume of water they actually use.

While some kind of mechanism for tracking progress is likely to have emerged in these situations regardless of the type of policy making process used, the ones developed in the collaborative processes studied here entail continuing cooperation among diverse agencies and stakeholders that may not have even been viewed as possible prior to the onset of the collaborative efforts. We know from past experience that environmental monitoring programs often suffer from a lack of connection to management needs, and are frequently the first item cut when budgets are trimmed.[19] In these cases of collaborative policy making, however, participants have built in multiagency and multistakeholder review mechanisms to set priorities for research and monitoring and to assure that the information produced is of a high quality and is highly credible. Similarly, the mechanisms developed to track implementation actions involve broad reporting to the diverse stakeholder groups (e.g., the Water Forum Successor Effort), that intend to use the information to make decisions about future actions.

Spin-off Processes

Each of the three collaborative policy making processes studied here also produced spin-off processes. In these cases, participants and observers were sufficiently pleased with their experience in and the results of the processes that they chose to address other problems in similar ways. The Estuary Project, for example, spawned the Long-Term Management Strategy for dredging, which was designed based on the SFEP with some modifications that came out of participants' learning from their experience with the SFEP. Similarly, wetland habitant was one of two issues on which the SFEP did not come to full agreement. Soon thereafter, the Wetlands Goals Project was launched as a collaborative process to resolve this issue, and the Joint Venture formed to coordinate the

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[19] National Research Council. *Managing Troubled Waters: The Role of Marine Environmental Monitoring*. (Washington, D.C.: National Academy Press, 1990).

activities of the 23 federal, state, and local agencies, and stakeholder organizations involved in wetlands restoration around the Bay. When the Joint Venture released its "Implementation Strategy" in 1999, *Estuary* reported on the reflections of a long-time veteran of the wetlands wars.

> If anything is a legitimate step into that brave but more biologically beautiful new world, it is the strategy. Looking back over the last twenty years of wetland protection efforts, every step met with opposition except for this last one, according to Zentner. The first step involved creation of regional consensus on the S.F. Estuary Project's 1993 *Comprehensive Conservation and Management Plan* (CCMP) for the Bay and Delta, where even at the end of five years of discussion among over 100 stakeholders, a minority remained opposed to the plans wetland to-do list. Next steps coming out of the CCMP effort were the push to provide a sound scientific basis for figuring out what kind of wetlands, and where, were needed to sustain estuarine health … and to create a mechanism for buying and securing threatened wetlands …, both of which also had their share of rocky moments. But by the time the Joint Venture began funneling the results of all these efforts into an implementation strategy, "We'd all sat around long enough together that nobody had to call the cops to break up a fight anymore," says Zentner.[20]

The origins of CALFED can also be traced back in part to the SFEP. Midway through the SFEP, the federal agencies entered into a memorandum of understanding to work together cooperatively, forming the Federal Ecosystem Directorate (the FED in CALFED). Based on the experience of the SFEP, the FED explicitly chose to pursue a cooperative approach with the state rather than bringing the disputes over endangered species and water quality to the courts. The federal and state agencies entered into a memorandum of understanding known as the Framework Agreement, in which they pledged to cooperate in finding a solution to the problems of the Bay-Delta. Meanwhile, the urban and agricultural water users developed their own proposal for managing water and staving off any further reductions in water deliveries. Together these two sets of agreements formed the basis for the Bay-Delta Accord, an agreement developed among the state and federal agencies, and the agricultural and urban water user, and environmental interests. The Accord created CALFED to collaboratively develop a long-term solution to the Bay-Delta problems, and incorporated the salinity index that was developed in the SFEP as a the water quality standard to be used while CALFED was working toward the long-term solution.

CALFED itself has produced a number of additional collaborative processes. Several community-based collaborations have been initiated through or at the impetus of CALFED to address geographically-specific concerns, such as those being addressed in the Yuba Tools Project. At the level of state policy, the Department of Water Resources (DWR) is now conducting a periodic revision of the State Water Plan using a collaborative, stakeholder involvement approach. Historically, these plans have been prepared solely by DWR staff and consultants and not subject to outside review prior to issuance, and the methods used to project future water use have been a controversial flash point among the stakeholder interests. In conducting an open and collaborative planning

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[20] "Paperwork," *Estuary* Vol. 8, No. 6, p. 2. December,1999.

process, the DWR is likely to produce a set of estimates around which there is a much higher level of agreement and confidence than they have done in the past.

The Sacramento Water Forum also spawned a number of other collaborative processes. In the Sacramento region, leaders have been so pleased with the success of the Water Forum, they are setting up new collaborations to deal with other contentious issues, including the transportation in Sacramento County. Similarly, in El Dorado County where land use issues are highly contentious and have prevented the water agencies in that county from signing onto the Water Forum Agreement, the County Board of Supervisors launched a collaborative effort to resolve land use conflicts.

What is remarkable in each of these cases is that participants have found ways to apply what they learned in one collaborative process to resolve conflicts in other areas. In choosing to engage in these spin-off collaborative processes, participants from all sides of these very difficult and complex issues are demonstrating that these kinds of approaches are meeting their needs.

Use of Collaborative Techniques in Other Settings

People who participate in collaborative processes also report finding those techniques to be useful in other parts of their lives. The chair of the Estuary Project was so impressed with what could be achieved through collaboration and consensus-building, he now spearheads collaborative conflict-resolution efforts in his agency. Prior to the Estuary Project, he viewed his role as an regulatory agency staff member as one that required him to be adversarial—it was a situation of "regulator versus polluter." He reported having been "transformed" by his experience in the Estuary Project, and now incorporates collaborative techniques in all aspects of his daily work.

In the Water Forum, water purveyors reported using collaborative techniques to better understand and meet the interests of their customers. One water manager reported that he now consults with neighborhood groups routinely in advance of proposing projects that might affect them, like the installation of a new pumping station. He said that this practice allows him to make sure he can address the neighborhood concerns in the process of designing and planning the project. Another water manager reported that he now contacts representatives of the local environmental groups routinely on projects his agency is developing. He said that he used to worry about those groups objecting to all aspects of a project, but now when he talks with them in advance, he can focus his energies on their specific concerns and produce a project to which they do not object. One business representative reported having learned a tremendous amount about how to use collaborative processes to produce positive results through his experience in the Water Forum and from reading Fisher and Ury's *Getting to Yes*. He explained:

> I had never done interested based negotiation before. I read *Getting to Yes* and the other one, *Getting Past No*, and went through the [Water Forum] training . . . Looking back on it that's probably the best thing that came from this process . . . I've been able to use this approach in trying to resolve other things in my business dealings . . . I've kind of learned . . . to understand how to get past what people are saying to each other . . . I'll play a role where I'll say to one of my clients . . . "isn't what you want to get out of it this?" when what he's saying is to get that you he's gotta have that . . . So it's listening and translating . . .

By the end of the Water Forum process, participants began calling their mode of operation as "The Water Forum Way," in reference to their collaborative, open dialogues for making policy and solving problems among diverse stakeholders, and distinguishing their approach from the ways in which they had done business previously. At the celebration of the signing of the Water Forum Agreement, participants referred to "The Water Forum Way" with pride and the business interests donated baseball caps embroidered with those words and the Water Forum logo for all 600 attendees. In another example, a leading business stakeholder in the Water Forum became involved in a newly forming collaborative process in the Sacramento region to address transportation and air quality issues. At one point, others in the business interests wanted to pull out of the collaboration. When this leader argued against doing so, his colleagues suggested he had "sold out" to the environmental community. In an eloquent testimonial to the learning process he had been through he said,

> We have no choice. We have to stay at the table. There is no alternative . . The Water Forum process transformed me. I now understand that collaboration is the only way to solve problems. I do it now in everything I do, including running my business, and dealing with my suppliers, employees, and customers.

Similarly, the CALFED process has propagated the collaborative model of doing business. Because CALFED is so encompassing a program, it is sometimes hard to distinguish what is happening as a part of the CALFED process from what is happening because people are applying their learning in other parts of their business and lives. The following example, however, indicates that the learning in CALFED is resulting in widespread changes in related policy arenas. A newspaper report on a regional conference of farmers and government representatives illustrated how norms have changed as a result of the CALFED process. To quote,

> Localized partnerships that dictate the direction of water dispersion throughout the Sacramento Valley have proven a step up from the adversarial relationships of the past, a panel of valley farmers and local officials said Thursday afternoon. The event . . . was one in a long series designed to keep local activists updated on progress achieved by a valley-wide system of localized water distribution partnerships . . . "This is an opportunity to share experiences because we're all in some form of partnership," said moderator Jonas Minton, Deputy Director of the State Department of Water Resources.[21]

An assistant county public works director, continuing to discuss these partnerships, said,

> Each water district learned a lot more about surrounding water districts . . . but what made this special was that it was ours. It had local support—it had local credibility. The partnership brought together just about every

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[21] Wes Sanders. "Cooperation: Water Pulls Groups Together, Partnerships Replacing Adversarial relationships." *Marysville Appeal Democrat*, January 26, 2001.

politician in the area . . . Now local newspaper stories tell of cooperation over water issues instead of criticism from all sides. I can't tell you there was a master plan. I can't tell you where this partnership is going to go. I can tell you things have gotten a lot better . . . That's what CALFED did. It got people working together instead of looking for someone to blame.

People who participated in the three collaborative processes learned to identify interests, to listen to those having viewpoints, and to use collaborative dialogue skills to solve their mutual problems. These people are now applying these skills in other arenas of their professional lives, from individual business practices to regional partnerships, and in turn teaching others how collaborative dialogue can work. This development and propagation of collaborative skills from these processes is highly unlikely to have occurred if these processes had not been collaborative ones. Even more importantly, people are choosing to move forward using collaborative techniques in water and other policy arenas, over position-based, political influence, and other more adversarial approaches that they had been using previously. This is not to say that collaboration is a panacea for these folks. In fact, there are still important circumstances under which a definitive decision by the legislature or court is needed. However, even in such circumstances collaborative processes can be used to define more clearly the questions that need to be answered by those bodies.

New and Improved Relationships

Collaborative processes help build social capital (Judith Gruber, *Coordinating Growth Management through Consensus Building*, IURD Working Paper WP-617, 1994). That is, they provide a setting at the outset in which competing, and frequently warring, stakeholders can develop new personal and professional networks among themselves and as a result change the dynamic within the dialogue as well as outside it. In these processes, participants find a basis for dialogue that evolves into a personal mutual respect, and new and improved relationships. Based on these new and improved relationships, stakeholders, can work together to sort out issues instead of demonizing or stereotyping each other. Individuals can be passionate about their causes, and engage in constructive dialogue with one another. They can find their common interests and trust each other sufficiently to work together toward ends that require political coalitions.

In the early stages of each project, stakeholders representing diametrically opposing views, who had often fought each other in the courts or battled over legislation, tended to sit and talk mainly with others in their "caucus." But as time passed, stakeholders came to know one other and develop some empathy for each other's interests. They developed informal relationships over meals or through working together on a task force. Participants forged personal bonds that cut across their ideological and interest differences.

In the Water Forum, water agency representatives teased environmentalists in good-humored bantering amidst considerable shared hilarity about how the environmentalists would be out of jobs once they did not have the utilities to kick around. Environmentalists countered, without rancor, that they were not being paid in the first place. Individuals began to sit and talk with those representing different perspectives, sometimes to work on how to resolve differences, sometimes just because they enjoyed each other's company. On more than one occasion a stakeholder representing the

development community stopped a discussion from going forward, although it favored his interests, because one of the key environmentalists was not there and he knew he would object. In fact this stakeholder even outlined his colleague's position for the rest of the group.

In the Water Forum, many participants had never met one another before, although they had been long-time adversaries in public hearings and court rooms. By the end of the Water Forum process, however, several respondents reported that they regularly called up former adversaries to discuss other, non-Water Forum issues. At a celebration for the signing of the Water Forum Agreement that was attended by around 600 participants, elected officials, and other leaders in the Sacramento region, Water Forum participants joked about how six years ago they would have never all assembled in the same room together, unless it was a court room. Of course, if it had been a court room, it would have been primarily their lawyers battling things out, rather than the stakeholders themselves.

The new and improved relationships often were continued outside the process itself in ways we cannot fully trace. In one example, a Corps of Engineers representative in the SFEP told us that during the course of the process he began to contact the Sierra Club representative routinely to discuss possible projects in the hope of making alterations that would assure they could get the support of environmental interests. Similarly, one of the Sacramento water purveyors reported that he had begun to consult routinely with environmentalists on issues not related to the Water Forum because he knew they would be interested in them and could provide important input.

In the CALFED Bay-Delta Program, the most striking development of improved social capital occurred between and among the staff and officials in the state and federal agencies. Prior to the CALFED process, many of these agency personnel did not even talk with one another, despite their overlapping authorities and jurisdictions. In an egregious example, mailroom employees at one agency were instructed not to deliver letters from the staff of another agency if the addressee was of a higher rank than the sender. Meanwhile, because of the different structures of these two agencies, it was frequently the case that letters to that agency came from lower ranking officials at the other. More often though, agency staff did not talk to staff at other agencies because it was not a common practice and did not cross their minds. One federal agency staff member recounted a lunch break during an endangered species hearing at which he sat with staff from another agency, and they realized, "Gee, maybe we should coordinate our testimony on this." This type of incident in combination with the Estuary Project and the Governor's request that the federal agencies operate in a coordinated manner were what led to the formation of the Federal Ecosystem Directorate.

Although the federal agencies in CALFED had begun coordinating with one another in the events that led to the formation of CALFED, communication and coordination between federal and state agencies, and among the state agencies was still lacking. CALFED, through the regular meetings of the Policy Group (particularly when those meetings were closed to the public, allowing more forthright dialogue), the Management Team, and numerous interagency teams, provided forums in which agency staff developed the skills and means necessary to communicate across agencies. Staff within agencies learned who their counterparts were in other parts of government, and learned how those agencies operate. Although these agencies still have differences, it has become a norm to form interagency teams to address such issues, and the mailroom policy described above has since been revoked.

Each of these processes produced new and improved relationships among participants. In some cases, warring parties had never before met face-to-face, or they had only interacted in formal hearings or public meetings at which they glared at their opponents from across the room. Through the collaborative processes, however, these participants developed a basis for engaging with dialogue with one another, out of which they developed mutual respect and trust that they could work together to solve problems. These new relationships expanded participants professional networks and opened new opportunities for communication and coordination among them.

Political Capital

While the new and improved relationships and the personal and professional networks undoubtedly had many small impacts on both attitudes and actions of participants inside and outside the dialogue, it also translated into potent political capital. The trust and relationships built in the CALFED process meant that all the important and otherwise opposing players jointly developed and publicly supported two major statewide ballot propositions designed to raise nearly $3 billion dollars for environmental restoration, water quality improvement and water use efficiency projects, and water supply facilities. The success of these measures was particularly remarkable in a state where voters routinely turn down revenue measures and where a two-thirds popular vote is required. CALFED also managed to raise substantial sums in federal funding and to get the Governor and U.S. Secretary of Interior to sign key agreements that had been developed largely among the group.

In the Water Forum, the political capital and trust the stakeholders had built in the course of developing their complex agreement on water management for the region, allowed them to effectively "sell" a proposal to the public that would require a number of unpopular water conservation measures, water metering, and rate increases. The Water Forum members even persuaded a local congressman, who was not a fan of the Water Forum nor a supporter of environmental issues, to sponsor legislation to install a costly temperature control device on an upstream reservoir so that water could be released in a manner that would better protect the fish.

The political capital that emerged from these processes was based on the diversity of interests represented by the stakeholders involved in each process and the high level of agreement the participants were able to develop among themselves. In California, when urban and agricultural water users, environmentalists, and business interests all agree on an issue, it makes news. As Governor Davis said when the water bond ballot measure passed in March 2000,

> Normally, when you're talking about water, you don't have a hand-in-hand solution, you have hand-to-hand combat.

What is important here is not so much that the stakeholder interests were in agreement on the water bond, but rather that they worked together to develop the bond measure to assure that they could all support it, and then brought it to the voters. This kind of political capital emerges when the stakeholders can work out their differences in advance through collaboration. As a representative of development interests in the Water Forum process explained,

This used to be extremely confrontational politics . . .You had to figure out who had the bigger sword politically . . . To this day the game is played that way, but what I'm finding is just the political environment is shifting . . . I wouldn't say I've changed my business over this kind of approach, because I haven't had to . . . what's changed is the way we approach some land use proposals . . . For example, we sat down with property owners on a 1500 unit project . . . and said what is it that you'd need that would make you feel better about having this? . . . We worked out about half a dozen things they were concerned about . . . When you're trying to craft a deal there's a range of things people are willing to do . . . and then there's going to be the knock-down, drag-out issues. Those things will still happen . . . But I've been getting more of a message from politicians [to work these things out] . . . Politicians don't like controversy. I think they'd rather have you go work these things out before you come to them.

Collaborative processes provide stakeholders the opportunity to work things out and in a way that will work for them. They also provide a powerful and convincing message to politicians and the voting public when diverse interests have worked out a solution together and support it publicly. Conducting this kind of work requires being able to work together, something that parties are increasing finding they can do through collaborative policy making processes.

CONCLUSION

The research presented here on the three cases of collaborative water policy making in California—the San Francisco Estuary Project, the CALFED Bay-Delta Program, and the Sacramento Water Forum—demonstrates that such processes are producing a wide variety of outcomes that represent profoundly new opportunities for managing natural resources. In looking at these processes in much greater depth than simply whether or not they produced agreements, researchers found important outcomes that are qualitatively different from those achieved through more familiar administrative, judicial, and legislative processes.

In each of the cases, the policy environment that preceded the onset of a collaborative process had a long history of intense and intractable conflict. The resource issues in each case were highly complex and interlinked. The institutional environments involved multiple agencies having overlapping and sometimes conflicting roles that rarely coordinated their efforts, and diverse stakeholder groups that were often at odds with one another on almost every issue. In each case, however, through collaboration, participants developed new, agreed-on knowledge and understanding, and applied it toward solving the problems affecting their shared resources. Many of the solutions they developed are ones that would not have been considered prior to their experience in collaborative problem solving. These solutions entail ongoing collaboration among multiple agencies and stakeholders to monitor resource conditions, to make resource management decisions, and to anticipate and address needs in the future. Through collaboration, they found they could use information more rapidly and efficiently when they developed and evaluated it together, thus setting the stage for the creation of collaborative decision making processes based on real-time information. Through collaboration, agency and stakeholder participants found they could respond more

quickly and effective to changing conditions, allowing for resource management that better protected the environment and the reliability of water supplies.

The outcomes of the collaborative processes studied here extended beyond the immediate concerns they were established to address. They produced spin-off processes to address other complex policy issues, and participants reported using the collaborative skills they learned in these processes in other settings. Agency and stakeholder participants developed much improved relationships that allowed them to cooperate on other issues. When the participants in these processes needed to get others to do something to achieve their goals, their united voice proved politically powerful. When former adversaries spoke together to elected officials and the California electorate, they were successful in getting the financial resources to support their agreed-on activities and projects.

In addition to a tremendous amount of coordinated effort focused on restoring damaged ecosystems and improving the reliability of water supplies, these collaborative policy making processes have profoundly transformed policy making practices, as well as the way in which day-to-day decisions about on-the-ground management and operations are made. Although serious disagreements remain among agencies and stakeholders who participated in these processes, they have come a very long way from where they were at the outset. Today, it is standard practice for the state and federal agencies to coordinate with one another on water operations, endangered species protections, water quality protection, and a myriad of other related resource issues. Plans for addressing many of the disputed resource issues have been developed and actions are underway to address them. Today, it is common for agencies and stakeholders to seek a dialogue and collaborative resolution for disputed issues before attempting solve problems through legal action. Finally, these processes continue to produce a cascade of results as their successor processes move forward and as participants apply their learning in new areas.

As one respondent observed, "Consensus-building is forever."

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
San Francisco Estuary Project		San Francisco Estuary Project process						Approval	Ongoing implementation activities.						
CALFED Bay-Delta Program										CALFED Bay-Delta Program development process					Program implementation
Sacramento Area Water Forum									Sacramento Area Water Forum Process						Water Forum Successor Effort
Periods of Active Research						Research by Innes (SFEP)					Research by Innes (SWF)	Research activities primarily by Connick			