

**COMMUNITY BASED ENVIRONMENTAL DECISION MAKING**

**PROCEEDINGS**

**SESSION THREE**

**COOPERATION IN ENVIRONMENTAL DECISION MAKING**

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**SURVEYING DIVERSE STAKEHOLDER GROUPS:  
METHODOLOGICAL CONSIDERATIONS**

Working Paper\*

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**Abstract:** This paper addresses three common time-and-money-saving shortcuts used when studying multi-stakeholder resource management groups: 1) interviewing or surveying only the coordinator of the group, 2) interviewing or surveying only one category of stakeholder from the group, and 3) interviewing or surveying only participants in the group. Each shortcut led to significant biases when tested in a survey that was administered to 25 watershed partnerships in California. Surveying only the coordinator of the partnership led to a picture of the partnership that was more trusting, politically liberal, and successful than the median picture provided by the balance of the respondents. Surveying only one category of stakeholder was also problematic. Landowners, environmentalists, and/or agency staff held significantly different views on 11 of 12 issues regarding the partnership and general watershed management. In the case of surveying only participants (and excluding knowledgeable observers of the partnership), there wasn't a skew of opinion in any particular direction, but participants held more extreme views on 8 of the 12 issues, and half these differences were significant. The paper concludes that studies that fail to solicit responses from a broad group of stakeholders and knowledgeable observers may give a biased assessment of the ability of multi-stakeholder partnerships to resolve watershed management problems.

## Introduction

When surveying stakeholder groups, the importance of obtaining a representative sample rises with the amount of diversity within the group, while the feasibility of obtaining a representative sample often decreases with the level of diversity and conflict among stakeholders. This essay illustrates several reasons why a representative sample is important, and then suggests techniques for overcoming the special obstacles to adequate sampling that arise for diverse groups of stakeholders.

The empirical analysis that follows underscores three major conclusions. First, it is dangerous to rely upon a single respondent to represent the group as a whole. In particular, although group coordinators are often quite willing to share their views, we find that they frequently make poor point-estimates of the “average” perceptions of the members of the group. Second, we find that, in diverse groups, the views of any particular category of stakeholder are likely to provide only an idiosyncratic window upon the group’s activities, outputs, and dynamics. Therefore, it is important to try to survey each of the major categories within a group, such as landowners, environmentalists, and agency officials. Third, we note that knowledgeable observers of the group, who do not consider themselves group participants, may have distinct and valid perceptions. Excluding their views from the survey can generate a distorted impression of the actual condition of the group or the community in which the group operates.

To illustrate these points, we present interim results from a study of 25 watershed partnerships in California. The full study will ultimately consider 60 or more partnerships in California and Washington. Watershed partnerships are groups of stakeholders who periodically convene to discuss the management of streams, rivers, or watersheds. They typically involve 10 to 50 stakeholders including representatives from local, state, and federal government plus local landowners and environmentalists. By stakeholders, we mean people whose personal or professional welfare depends substantially upon the outcomes of the partnership. The ultimate goals of partnerships are to resolve conflict, and to craft and implement a watershed management plan, policy, or restoration project. Our study of partnerships is designed to uncover the factors that influence whether a partnership will be successful at achieving these goals. The discussion that follows should apply aptly to any type of group in which the stakes are high and the stakeholders' opinions diverge.

The central themes of this essay are consistent with the well-established notions that (1) large samples are preferable to small samples, and that (2) diversity (“variance” in statistical parlance) increases the size of the sample required to generate a reliable estimate of the mean of a population, for a given level of confidence. Although these ideas are not controversial, they bear repeating given the current, adolescent state of the field of watershed partnership research (Leach and Pelkey 2000). This is a growing area of scholarship dominated by very simple research designs involving small numbers of cases (often single case studies) and/or a low number of interviews or questionnaires per case.

Focusing on the latter issue, we consider in turn three tempting but compromised research designs. For each temptation, we list examples of published studies that use the design, followed by results from our own research to illustrate why the choice is a consequential one. The final section of the paper offers suggestions for how to achieve adequate response rates when attempting a full census of participants in high-conflict stakeholder groups.

### **Temptation 1: Surveying Only the Coordinator**

Several published surveys of watershed partnerships or related groups solicited the views of only a single representative--often the designated group coordinator or facilitator (for example, Cook 2000; Yaffee et al. 1996; University of Colorado 1996; CTIC 1999). Other interview-based studies averaged one to three interviews per partnership (Huntington & Sommarstrom 2000; Gordon & Jones 1998; Rieke & Kenney 1997; Wondolleck & Yaffee 1994). When research funds are limited and the goal is to examine a relatively large number of partnerships, it is tempting to try to get by with only a single interview per partnership.

Interim results from the Watershed Partnerships Project at UC Davis demonstrate the substantial risks involved in this approach. We have compiled survey data for 25 partnerships in California. A total of 360 stakeholders responded to the survey, with an overall response rate of 66%. Coordinators have responded for 15 of the partnerships. Five of the partnerships have two responding coordinators, yielding a total of 20 coordinators in the sample. We examined three types of survey questions to determine whether the coordinators' views could serve as a decent approximation of the perceptions of the partnership participants as whole. For all three measures, the data in Table 1 indicate that coordinators are unreliable estimators of the median group perceptions.

[ Insert Table 1 about here ]

In published studies on watershed partnerships, coordinators are frequently asked to evaluate the progress of the partnership. Using a 7-point Likert scale, we asked respondents to agree or disagree with the following statement: "So far, the partnership hasn't achieved many of its stated goals." Of the 19 coordinators who responded to this question, 7 were statistical outliers ( $p < .05$ ) based on the sign test, a non-parametric analogue of the one-sample t-test.<sup>1</sup> Overall, 11 coordinators rated the progress of their partnership more generously than did the median respondent (5 significantly so); 5 coordinators were less generous (2 significantly so); and 3 coordinators gave a median response.

For watershed partnerships, in which the primary task is to seek consensus on the appropriate balance of environmental protection and economic liberty, many perceptions related to the progress and dynamics of a partnership may be influenced by the respondent's political ideology. We asked five questions (see appendix) to gauge each respondent's views on deep-core (Sabatier and Jenkins-Smith 1993) deep-ecology (Devall 1980) issues, and five questions pertaining to fundamental socio-economic issues. Principal component analyses for each set of questions generated single, unrotated factors explaining 52% and 57% of the variance, respectively. We used the factor scores from each analysis to generate an "environmentalism" scale and a "conservatism" scale.

For the environmentalism scale, 9 of the 20 coordinators were significantly different than the median respondent ( $p < .05$ ). Fourteen coordinators displayed a stronger pro-environmental ideology than did the median respondent from their own partnership (7 significantly); and 6 were less pro-environment than the median (2 significantly).

For the conservatism scale, 8 of 20 coordinators were significantly different than the median respondent ( $p < .05$ ). Thirteen coordinators were more liberal than the median respondent from their own partnership (8 significantly); and 6 were more conservative than the median (none significantly).

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<sup>1</sup> The sign test is more conservative than the Wilcoxon test, which accounts for both the sign and magnitude of the differences between observed values and test values (Norman and Streiner 1986).

Another commonly measured partnership attribute (used both as an explanatory and dependent variable) is the degree of interpersonal trust. Using 6 questions, we asked respondents to evaluate the trustworthiness of their fellow partnership participants. Principal components analysis generated a single, unrotated factor explaining 62% of the variance in the 6 questions. We used the factor scores to generate a trust scale. Of the 20 responding coordinators, 13 were significantly different than the median respondent based on the sign test ( $p < .05$ ). Fourteen coordinators were more trusting than average (11 significantly); 3 were less trusting than average (2 significantly); and three were average.

In sum, studies based on interviews or surveys of the partnership coordinator alone will, on average, provide a portrait that is more generous regarding interpersonal trust and partnership accomplishments, and that reflects liberal environmental and socio-economic perspectives.

### **Temptation 2: Surveying a Single Category of Stakeholders**

Coordinators are not the only outliers. Different types of stakeholders may have strikingly different views. Therefore it is useful to survey all types. Watershed partnership studies that solicit responses from employees of only a single government agency (e.g. Manring 1998; Carr et al. 1998; Schuett, et al. 1997), are useful for honing in on issues within that agency, but are less reliable as guides to the overall functioning of the partnership.

To illustrate the risks entailed by this approach, we compared the perceptions of four broad categories of stakeholders across all 25 partnerships. The categories are 1) environmental advocates (n=45)—including recreational fishing or hunting advocates and other outdoor recreation interests; 2) landowners (n=46)—farmers, ranchers, and forest products companies; 3) local governments or special districts (n=77); and 4) state or federal agencies (n=94). We compared the four categories using 12 survey questions or scales (see appendix), which elicited respondents' views about the functioning of their own partnership, and about watershed management in general.

Table 2 shows that federal/state agencies<sup>2</sup> differed from local agencies for only two issues (environmentalism and conservatism). However, each of the other two-category comparisons displayed significant differences on at least half the issues. The greatest number of significant differences occurred for federal agencies vs. landowners, which differed on 10 of 12 issues.

[ Insert Table 2 about here ]

One of the most striking patterns in Table 2 is that the environmentalism and conservatism scales were significantly different for all six two-category comparisons. Examination of the means for each category reveals that, as expected, environmentalists were the most liberal on both scales, followed by state/federal agencies, then local agencies, then landowners.

Another visible pattern is that landowners were the most unique category—differing significantly from all three other categories for 7 of 12 issues. Landowners are least likely to favor consensus-based watershed management; they are least likely to judge their partnership's process as being fair; and they are least likely to view their partnership as being successful in terms of either stated goals or its ability to build capacity through new friendships or stakeholder education.

Employees of federal and state agencies are another frequently outlying category. More than any other category, they are likely to feel that all interests are effectively represented within

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<sup>2</sup> Because federal and state agencies were found to differ significantly on only one issue, we treat them as a unit to simplify the discussion. Federal agencies are more likely to view their partnership's process as being fair.



the partnership. They are more trusting of other members of their partnership, and they are more likely to rate their partnership as being successful. Local agencies, by contrast, tend to lie in the middle on most issues.

Environmentalists are the staunchest supporters of a regulatory role for government agencies in watershed management. However, environmentalists are similar to landowners in that they both are unlikely to trust other members of their partnership, and they both tend to feel that their partnership's process is unfair.

In sum, surveys that solicit input from a single stakeholder category are not necessarily useful for characterizing the partnership as a whole. Different categories of stakeholders have different views, and over 50% of these differences were statistically significant in our sample of watershed partnerships in California.

### **Temptation 3: Surveying Only Participants**

People who are knowledgeable observers of—but not members of—a group may have distinct and valid perceptions about the group. Not including their views can distort the overall portrait of the group and/or the surrounding community. None of the 3 dozen studies on watershed partnerships reviewed by Leach and Pelkey (2000) reported surveying non-participants. Although some of the studies sampled liberally using partnership mailing lists, and probably did reach several non-respondents (e.g. McGinnis et al. 1999; Woolley and McGinnis 1999), none of the studies explicitly distinguishes between participants and knowledgeable observers.

We examined whether participants (n=282) and knowledgeable observers (n=64) held distinct views regarding the same 12 issues used to compare different categories of stakeholders (see Table 3).<sup>3</sup> We found no significant differences between the average responses for participants and knowledgeable observers (Mann-Whitney  $p < .05$ ). However, upon examining the proportion of extreme responses,<sup>4</sup> we found that participants held more extreme views than knowledgeable observers on most questions. For 8 of the 12 issues, participants were more likely to give an extreme response (and four of these proportional differences were statistically significant at  $p < 0.05$ , Fisher's exact test). On three issues, observers held more extreme views, but none were statistically significant.

[ Insert Table 3 about here ]

These results are consistent with the idea that only the most highly motivated individuals will be willing to bear the costs of participating in collective-action groups such as watershed partnerships (Olson 1965). The results contradict the notion that "extremists" are less likely to pursue collaborative or consensus-based processes. This isn't to say that some extremists stay home or are excluded from partnerships partly as a result of their extreme views, but it does appear that a disproportionate number of people with extreme views populate the rosters of watershed partnerships. Failing to survey knowledgeable observers would result in an

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<sup>3</sup> The names and addresses of participants and knowledgeable observers were obtained during in-person interviews with 3-5 key participants in each partnership. Both participants and observers included all four categories of stakeholders, however, knowledgeable observers included a higher proportion of city and county staff and elected officials (19% vs. 10% for participants).

<sup>4</sup> Extreme responses were defined as either "1" or "7" for the 7-point Likert questions. For the scales, responses greater than 1 or less than -1 were considered extreme. The scales are each distributed with mean = 0, and standard deviation = 1.

exaggerated view of the overall level of conflict in the larger community in which the partnership operates.

### **Redemption: Achieving an Adequate Response Rate**

If one accepts the preceding argument—that surveys of diverse stakeholder groups call for representative samples of participants and knowledgeable observers—then the remaining task is to design and administer the survey in such a way to maximize the response rate. If non-respondents were generated at random, then even a quite low response rate would be adequate, assuming the total number of respondents was still relatively large. However, if non-respondents are peculiar, then the results of the survey will show a systematic bias. Although various methods have been devised to ascertain the probable representativeness of a limited sample (Dillman 2000), it is preferable to simply achieve a high response rate and forgo the need to speculate about unobserved non-respondents.

Stakeholder diversity and conflict can aggravate certain obstacles to achieving an acceptable response rate. For example, in high-conflict situations, many of the most interesting research questions may entail highly sensitive topics. Research on watershed partnerships may involve soliciting respondents' views on hot-button environmental issues, their evaluation of the trustworthiness of fellow participants, or their identification of allies and opponents within the partnership. In partnerships with pending legal cases, stakeholders may fear having their survey responses subpoenaed.

In diverse groups, researchers will also probably face one or more categories of stakeholders who harbor strong suspicions about the researchers' motives. For example, watershed partnerships often include many rural landowners who fear or disdain their state and federal government. This creates problems if the researchers or their funding agencies have government affiliations.

To help overcome respondents' suspicions, one can try to establish general credibility in the watershed. This can be done in several ways. If the survey is going to be administered by mail, phone, or internet, it can be helpful to precede the survey with in-person interviews of a few key participants representing each of the primary categories of stakeholders. Besides generating additional information about the group, and improving the design of the forthcoming questionnaire, the interviews can generate local visibility for the project. The survey's cover letter can list names of the people interviewed, so that potential survey respondents can then contact the interviewees, who hopefully would vouch for the researchers' sincerity and understanding of the issues. A second way to build credibility is to convene an advisory committee consisting of representatives from agencies, industries, and advocacy groups—again reflecting all major interests. For university-based research, receiving the endorsement of a prestigious committee of “real-world” practitioners can help dissipate lingering doubts about whether the ivory-tower academics are out-of-touch with the realities of the local situation.

A third approach to building credibility is to headquarter the research project within an organization that is as neutral as possible. Universities typically carry a reputation for impartial analysis, however departmental affiliations can also be important. In our case, UC Davis is a major center for agricultural research as well as the administrative hub for each of the UC system's locally-based “county” cooperative extension offices. This outreach function probably conferred upon our project an extra measure of credibility among the agricultural community,

which might otherwise be suspicious of faculty and graduate students from a "Department of *Environmental Science and Policy*."

Enticing stakeholders to candidly respond to a battery of sensitive questions requires careful attention to fundamental issues of good survey design. Respondents may be offered anonymity. Consistent with social exchange theory (Dillman 2000), one can offer to provide respondents with a copy of the results. One can also highlight the importance of the survey in a way that would probably strike a cord with most potential respondents. For example, do funding agencies plan to use the survey results to develop criteria for distributing funds to stakeholder groups?

To capitalize on the survey recipients' inherent interest in their group, and by extension the survey, the content of the questionnaire should be tailored to the group (for example, by referring to the group by name throughout the questionnaire). The questionnaire should be visually appealing, and the question format should vary from one page to the next. Finally, persistence can be a virtue, with up to half of all responses arriving after the second or third appeal (Dillman 2000).

## **Conclusions**

All things considered, large samples are preferable to small samples, and the importance of sample size increases with the diversity of within-group perceptions. Surveying a single individual from a diverse, high-conflict stakeholder group is a poor way to gather data on attributes of the group as a whole. Group coordinators, in particular, are likely to have specific biases. In the case of watershed partnerships, the coordinators are more environmentally liberal, more trusting, and more generous in their assessments of the success of the partnership.

Surveying only a single category of participants also provides a skewed portrait of the group. Similarly, failing to survey knowledgeable observers as well as participants may render an off-color assessment of the group's actual condition. We found that participants in watershed partnerships hold more extreme views than do knowledgeable observers.

When attempting to survey a complete census of participants and knowledgeable observers regarding a stakeholders group, it is important to strive for a high response rate to ensure that all factions are proportionately represented. In this regard, diverse, high-conflict, stakeholder groups can be challenging because the issues are sensitive, and many stakeholders are likely to harbor doubts about confidentiality or about how the research results will be used. By addressing these challenges, it is possible to develop and administer an appealing questionnaire that attracts a high response rate.

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## Appendix — Questionnaire items and scales

Unless otherwise noted, all the following items are 7-point Likert-scales where 1 = strong disagreement and 7= strong agreement. Cronbach's alpha indicates the reliability of each scale. Kendall's tau is a nonparametric measure of correlation between each survey question and its corresponding scale.

1. So far, the partnership hasn't achieved many of its stated goals.
  
2. The best strategies for resolving watershed issues include. . .
  - a) consensus-based negotiations among stakeholders, including agencies.
  - b) reliance on each agency's legal mandate and court review.
  - c) reliance on tradable permits for water, fish catch, development, etc.
  - d) allowing private property owners to manage their land as they see fit.

### **Environmentalism Scale** (Cronbach's $\alpha = 0.77$ )

1. People were intended to rule over the rest of nature. ( $\tau = -0.60$ )
2. One person's right to a clean environment is more important than another's right to gainful employment. ( $\tau = 0.43$ )
3. Plants and animals exist primarily for use by people. ( $\tau = -0.64$ )
4. All species have an inherent right to exist, quite apart from any instrumental use. ( $\tau = 0.62$ )
5. Environmental regulations should not be promulgated unless the proponents can prove that the monetary benefits will exceed the costs. ( $\tau = -0.59$ )

### **Conservatism Scale** (Cronbach's $\alpha = 0.82$ )

1. The best government is the one that governs the least. ( $\tau = 0.85$ )
2. A first consideration of any good political system is the protection of private property rights. ( $\tau = 0.62$ )
3. Government laws and regulations should primarily ensure the prosperity of business since the health of the nation is dependent upon the well-being of business. ( $\tau = 0.61$ )
4. Government planning almost inevitably results in the loss of essential liberties and freedoms. ( $\tau = 0.62$ )
5. Decisions about development are best left to the economic market. ( $\tau = 0.56$ )

**Trust Scale** (Cronbach's  $\alpha = 0.89$ )

How many of the participants... (5-point Likert scale: 1=none, 2=few, 3=half, 4=most, 5=all)

- a) are honest, forthright, and true to their word? ( $\tau = 0.65$ )
- b) have the same values and priorities that you do? ( $\tau = 0.52$ )
- c) have reasonable motives and concerns? ( $\tau = 0.64$ )
- d) are willing to listen, and sincerely try to understand other points of view? ( $\tau = 0.72$ )
- e) reciprocate acts of good will or generosity? ( $\tau = 0.71$ )
- f) propose solutions that are compatible with the needs of other members of the partnership? ( $\tau = 0.71$ )

**Capacity-building Success Scale** (Cronbach's  $\alpha = 0.79$ )

The partnership has given me:

- a) new long-term friendships and/ or professional relationships. ( $\tau = 0.72$ )
- b) a better understanding of other stakeholders' perspectives. ( $\tau = 0.71$ )
- c) a better understanding of the physical or biological processes in the watershed. ( $\tau = 0.66$ )

**Fair Process Scale** (Cronbach's  $\alpha = 0.67$ )

- 1. The partnership process treats all parties fairly and consistently. ( $\tau = 0.67$ )
- 2. The partnership's discussions are civil, and marked by mutual recognition and respect. ( $\tau = 0.53$ )
- 3. The scientists and engineers frequently clash with non-technical stakeholders regarding the proper role of science and technology in managing our watershed. ( $\tau = -0.19$ )

**Broad Representation Scale** (Cronbach's  $\alpha = 0.60$ )

- 1. Some critical interests are not effectively represented in the partnership. ( $\tau = -0.65$ )
- 2. Government agencies have too much influence within the partnership. ( $\tau = -0.51$ )
- 3. The partnership represents the interests of most people in the local community. ( $\tau = 0.59$ )

**Access to Information and Technology Scale** (Cronbach's  $\alpha = 0.60$ )

- 1. The existing body of technical information about our watershed is inadequate. ( $\tau = -0.52$ )
- 2. The data and information that do exist are easily accessible to all stakeholders. ( $\tau = 0.66$ )

3. The partnership enjoys good access to people with sufficient training to evaluate scientific and technical information relevant to the partnership. ( $\tau = 0.57$ )

**Table 1. Comparison of Partnership Coordinators with the Rest of Their Partnership**

Questionnaire Item	Number (n) of coordinators whose responses were:	n	Significantly Different than the median (sign test $p < .05$ )
Evaluation of Partnership Success	more positive than the median	11	5
	less positive than the median	5	2
	equal to the median	3	0
	total	19	7
Environmentalism (5-item scale)	more pro-environment than median	14	7
	less pro-environment than median	6	2
	equal to the median	0	0
	total	20	9
Conservatism (5-item scale)	more conservative than the median	6	0
	less conservative than the median	13	8
	equal to the median	1	0
	total	20	8
Trust of other members (6-item scale)	more trusting than median	14	11
	less trusting than median	3	2
	equal to the median	3	0
	total	20	13



**Table 2. Mean responses for 4 categories of stakeholders, and one-way ANOVA multiple comparisons<sup>†</sup> for each survey question.**

			C O N S E N S I V E N E S S Y	A G E N C Y	T R A D E	P R I V A T E	U N S U C C E S S F U L	E N V I R O N M E N T A L I S M	C O N S E R V A T A L I S M	T R U S T	C A P A C I T Y	F A I R P R O C E S S	R E P R E S E N T A T I O N	I N F O & T E C H N O L O G Y
<b>M E A N S</b>	federal & state agencies	(n=95)	6.1	3.7	3.2	2.9	3.8	0.29	-0.23	0.18	0.15	0.15	0.26	-0.02
	local agencies	(n=77)	5.9	3.1	3.3	3.1	4.2	-0.23	0.19	0.12	-0.08	0.22	-0.06	0.08
	landowners	(n=46)	4.2	2.6	3.1	4.8	4.9	-0.75	0.83	-0.52	-0.49	-0.68	-0.33	-0.27
	enviros & recreation	(n=45)	5.8	4.4	2.4	1.7	4.5	0.62	-0.73	-0.36	0.06	-0.34	-0.13	0.11
<b>A N O V A</b>	federal-state vs. local		O	O	O	O	O	**	*	O	O	O	O	O
	fed-state vs. landowners		**	**	O	**	*	**	**	**	**	**	**	O
	federal-state vs. enviros		O	*	*	**	O	*	*	*	O	O	*	O
	local vs. landowners		**	O	O	**	O	*	**	**	*	**	O	O
	local vs. enviros		O	**	*	**	O	**	**	O	O	*	O	O
	enviros vs. landowners		**	**	O	**	O	**	**	O	*	*	O	O

The first five questions are Likert items where 1 = strong agreement and 7 = strong disagreement.

Scales are based on Likert questions, and are standardized with overall mean = 0 and standard deviation = 1.

<sup>†</sup>Kruskal-Wallis nonparametric Z tests for multiple comparisons: O not significant \* p < 0.05 \*\* p < 0.01

**Table 3. Proportion of Extreme Responses by Participants and Observers**  
(Participants held more extreme view on 8 of 12 issues.)

Questionnaire items and scales	Participants %	Observers %	Fisher's Exact Test
option1: consensus-based processes	52	48	
option2: regulation by government agencies	21	19	
option3: tradable permits	19	17	
option4: private enterprise	40	39	
"partnership has not achieved its goals"	24	9	p < 0.01
environmentalism (scale)	34	36	
conservatism (scale)	30	34	
trust in partnership members (scale)	32	16	p < 0.01
capacity building success (scale)	35	39	
fair process (scale)	34	34	
broad representation (scale)	36	23	p < 0.05
adequate information and technology (scale)	38	25	p < 0.05

## **Attitudinal Support for Collective Action: Do Institutions Matter?**

Working Paper\*

Presented by Mark Lubell, Florida State University

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## **Attitudinal Support for Environmental Governance: Do Institutions Matter?**

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In this paper, I present a theoretical framework for understanding the development of attitudinal support for democratic governing institutions, with a specific focus on public policy institutions for solving collective action problems. By attitudinal support, I am referring to political actors' general satisfaction with the institutional rules governing a particular policy arena. Since the 1950s, political science research has suggested an important link between attitudinal support for democratic rules and norms and the performance of democratic institutions (Easton 1953; Truman 1951). More contemporary research examines this relationship in narrower policy arenas. For example, Levi (1988) hypothesizes the ability of a tax system to collect revenues depends on "quasi-voluntary" compliance from citizens, while Scholz and Lubell (1998a, b) empirically demonstrate how institutional changes in the United States tax system that increase trust in government and civic duty lead to increased tax compliance behavior. In short, previous research suggests attitudinal support is a necessary condition for the viability of democratic governance.

My attitudinal support framework combines "transaction cost" theories of governance proposed by neoinstitutional political economy (Eggertsson 1990; Libecap 1989; North 1990; Weber 1998) with the Advocacy Coalition Framework's (Sabatier and Jenkins-Smith 1993) focus on stakeholders' subjective belief-systems. The transaction cost approach assumes attitudinal support should be linked to actors' beliefs about the efficacy of institutional rules for solving collective action problems. Institutions are effective when they are well suited to the attributes of the collective action problem at hand, and thus reduce the transaction costs of collective action. Hence, institutions that reduce transaction costs will increase attitudinal support.

However, a major disadvantage of the transaction cost approach is that it does not provide a realistic model of how individual stakeholders actually think in the context of a particular governing institution. Following the Advocacy Coalition Framework (ACF), my approach to understanding how institutions matter examines the effects of institutions on political actors' subjective belief-systems. I link the transaction cost approach to individual belief systems by arguing attitudinal support is a function of beliefs that reflect the benefits and transaction costs of solving a collective action problem (Libecap 1989; Ostrom 1990), perceived fairness of the governance institution (Tyler 1990), and exposure to "social capital" in the form of trust, policy networks, and political entrepreneurs (Putnam 1993, Coleman 1990, Schneider et al. 1997). In addition, attitudinal support is shaped by more basic value orientations regarding how policy should be made in particular policy arenas. In particular, I will demonstrate an interaction between institutional context and belief-systems: the influence of institutions depends on the structure of belief systems, and the structure of belief systems depends on institutional context. Institutions will increase attitudinal support only when they feature governance styles congruent with an individual's basic value orientations.

To give my theory a substantive setting, I examine collective action problems in the environmental policy domain, specifically those involved with the governance of estuaries. Estuaries are coastal ecosystems where a fresh water source enters a saltwater body, creating a set of hydrological, chemical, and biological conditions that foster one of the most valuable types of ecosystems in the world (Costanza et al. 1997). To understand the role of institutions, I compare attitudinal support in estuaries governed by traditional, *adversarial* models of

environmental governance to estuaries featuring new institutions that emphasize cooperation, collaborative planning, and adaptive ecosystem management. From my theoretical perspective, these new *consensual* institutions reduce the transaction costs of estuary governance because they are better suited to the attributes of estuary collective action problems than adversarial institutions. Hence, consensual institutions should increase levels of attitudinal support among estuary “stakeholders”.<sup>5</sup>

A combined mail/telephone of 1198 stakeholders from 20 estuaries involved in the US Environmental Protection Agency’s National Estuary Program (NEP) and 10 estuaries without the NEP provides the data to empirically test the attitudinal support framework. The NEP is one of the leading national examples of consensual institutions, and thus the NEP/non-NEP comparison constitutes a quasi-experiment for testing the effects of institutional change on levels of attitudinal support (Achen 1986). The survey measures the attitudes and social relationships of individual stakeholders, including multiple measures of attitudinal support for estuary policies.

In the next section I briefly discuss the transaction cost approach to governance and collective action and its application to estuary politics. I then introduce my theoretical framework for predicting attitudinal support and qualitatively derive testable hypotheses. Lastly, I present analyses that model attitudinal support as a function of stakeholder evaluations of the transaction costs and benefits of collective action, basic values about environmental policy, and the social and institutional context of the policy arena in which they are embedded.

### **A Transaction Cost Approach to Environmental Governance and Collective Action**

As I alluded to in the introduction, the theoretical basis for my attitudinal support framework involves a comparative institutional analysis of estuaries with and without the National Estuary Program in terms of the transaction costs of environmental governance. The logic of the comparative institutional analysis is based on Williamson (1975, 1995), who shows how the transaction costs of economic exchange are reduced by institutions well suited to the attributes of the transaction at hand.

#### **Institutional Change and Political Contracting**

The first assumption required by a transaction approach to estuary governance is that environmental degradation in estuaries is caused by collective action problems. Because estuary resources are non-excludable, they are subject to the same collective dilemmas that plague other common-pool resources: overexploitation of ecosystem services (the flow problem), and underinvestment in natural capital (the stock problem; see Ostrom 1990).<sup>6</sup> Additional economic losses are incurred as a result of conflict between stakeholders attempting to secure property rights to estuary resources (Libecap 1989). Hence, the welfare gains available from solving estuary

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<sup>5</sup> By stakeholders, I mean the broad range of governmental and non-governmental actors swept into the “whirlpools” of a particular policy arena (Hecl 1978). Democratic governance depends not only the support of the governed, but also the willingness of government officials to implement the rules in a consistent, credible, and efficient manner (Weimer 1997). A broad focus of this type is justified because all of the actors involved in a particular policy arena have a stake in the outcome—public policy affects political as well as economic welfare. Following the vocabulary used in policy analysis, I will continue to use the term “stakeholders” throughout my analysis.

<sup>6</sup> Ecological economists identify two types of resources in estuaries (and ecosystems in general) that affect human welfare: natural capital and ecosystem services (Constanza et al. 1997). Natural capital is the stock of natural processes in the estuary such as hydrological dynamics, wildlife habitat, and energy exchange systems. Ecosystem services are the flows of resource units produced by natural capital, such as drinking water or fish, which people consume.

problems include both protecting natural resources and reducing the costs of stakeholder conflict (Cheung 1970; Gordon 1954; Ostrom 1990).

The second assumption is solving collective action problems requires changing the property rights structure governing the use of estuary resources. Property rights are the manifestation of the entire set of formal and informal rules governing behavior in a specific collective action arena (Schlager and Ostrom 1992), which Ostrom (1990) calls “operational rules”.<sup>7</sup> Institutional change in the operational rules, however, does not occur magically. The transaction cost perspective views the structure of operational rules as the output of a *political contracting process* between stakeholders who stand to gain from solving a collective action problem. In the context of common-pool resources like estuaries, contracting for property rights “includes both private bargaining to assign or adjust informal ownership arrangements and lobby efforts among private claimants, politicians, and bureaucrats to define, administer, and modify more formal property institutions (Libecap 1989, 11).”

The main hypothesis is that institutional change will occur when the Pareto-benefits to participants outweigh the transaction costs of political contracting. The welfare gains available from solving the underlying collective action problem are the main benefits of political contracting (Libecap 1989). Political transaction costs include the costs of searching for more efficient policy solutions, bargaining over which of those policy solutions are chosen, and monitoring and enforcing the resulting agreement.

### **Describing Possible Estuary Governance Institutions**

The third assumption of the transaction cost approach is that governance institutions well suited to the attributes of the collective dilemma at hand reduce the transaction costs of political contracting. Governance institutions are analogous to Ostrom’s (1990) notion of “collective-choice institutions” as the set formal and informal rules that structure political contracting by defining how rules-in-use at the operational level can be changed. Like in an economic market, political transaction costs are reduced when there is good match between the structure of the collective choice arena and the attributes of the collective action problem.

In the context of US environmental policy, I argue governance institutions can be characterized along the three dimensions of institutional design shown in Table 1: inclusiveness, coercion, and specialization. The inclusiveness dimension is relevant to the search and bargaining stages of political contracting, and defines which actors are eligible to participate in the process of institutional innovation. Are all estuary stakeholders involved in the decision-making process, or only a limited subset? The coercion dimension is relevant to the *ex post* monitoring and enforcement stages, and refers to which stakeholders are subject to the terms of the contract. Does the contract apply only to those stakeholders who participate in the contracting process, or are the terms of the contract forced onto excluded stakeholders? The standardization dimension refers to the congruence between institutional rules and the idiosyncrasies of a particular collective action problem. Is the political contract specialized for a particular collective dilemma, or does it provide a generic blueprint for use across a range of

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<sup>7</sup> Schlager and Ostrom (1992, 250) provide the clearest statement about the relationship between rules and property rights: “Clarity in analysis is enhanced by recognizing that ‘rights’ are the product of ‘rules’ and thus not equivalent to rules. ‘Rights’ refer to particular actions that are authorized. ‘Rules’ refer to the prescriptions that create authorizations. A property right is the authority to undertake particular actions related to a specific domain. For every right an individual holds, rules exist that authorize or require particular actions in exercising that property right.”

problems? The governing style of a collective choice arena is defined by its placement along these three dimensions of institutional design.

**[Table 1 about here]**

I am concerned with two types of institutions in this paper: the traditional, or *adversarial* (called command-and-control by some observers) model of environmental decision-making, and the *consensual* model as practiced by the National Estuary Program. As depicted in Table 1, consensual institutions are inclusive, voluntary, and specialized, while adversarial institutions are exclusive, coercive, and standardized.

The NEP process meets the criteria of a consensual institution. States nominate estuaries for inclusion into the NEP. For those estuaries that meet EPA criteria, the EPA signs an agreement with the nominating states that authorizes the formation of a Management Conference consisting of private and public stakeholders from all levels of the federal system. The Management Conference is a policy planning process that brings all these actors together to produce a Comprehensive Conservation Management Plan (CCMP), which delineates the rights and responsibilities for estuary management. The NEP is specialized because local stakeholders design the structure of the Management Conference, and the policies embodied in the CCMP are designed to solve problems in an individual estuary. It is inclusive because the EPA explicitly encourages broad stakeholder participation, in particular integrating non-governmental interests in local estuary communities who were previously excluded from decision-making or only participated through litigation or other coercive tools. The CCMP is a voluntary political contract that relies on incentives instead of penalties; hence implementation of the terms of the agreement depends on stakeholder cooperation.

Bringing the argument to a close requires describing how consensual institutions are better suited to estuary governance than the adversarial system. Several attributes of estuaries create high transaction costs for adversarial institutions: complex ecological processes mask cause and effect relationships, multiple-use of ecosystem resources breeds conflict between competing user groups, and ecosystem boundaries, which cross existing administrative and political jurisdictions, create fragmented rule systems. Furthermore, many estuary problems are caused by the resource use decisions of large number of spatially diffuse actors, which significantly increases the monitoring and enforcement costs of standardized, coercive rules. For example, the sources of non-point source pollution from urban and agricultural runoff are difficult to identify and involve virtually all estuary actors. Given these characteristics, both environmental and economic interests are dissatisfied with the uncertainty, fragmentation, and conflict that characterize the traditional policy system (Marsh and Lallas 1995; Rabe 1986; Weber 1998).

The NEP's combination of inclusive, voluntary, and specialized rules helps reduce the transaction costs of estuary governance. Because many of the problems involve diffuse actors and feuding interest groups, the inclusive, consensus-based decision process of the NEP reduces information asymmetries, builds trust, and increases the legitimacy of the resulting management plan. By using positive incentives like grants and land acquisition to supplement existing regulations, NEP policies encourage environmentally sustainable behavior. Finally, because no estuary faces an identical set of problems, the specialized nature of the management plan helps funnel resources to those problems identified by stakeholders as the priorities for their estuary. Hence, to the extent attitudinal support reflects stakeholders' experiences with the costs and



benefits of environmental governance, it should be higher in estuaries where the NEP introduces a new collective choice arena. In other words, the

### **The Attitudinal Support Model and Estuary Governance**

In the previous section, I hypothesized the NEP will directly increase levels of attitudinal support because it reduces the transaction costs of estuary governance relative to adversarial institutions. The problem with this approach is that it looks only at the *structure* of the action arena, and not the micro-foundations of collective action at the individual level. Attitudinal support develops within the belief-systems of individual people, and thus requires looking into the minds of individual stakeholders. How do people think when participating in estuary politics? I argue attitudinal support is a function of four factors: 1) attitudes and beliefs that reflect the benefits and transaction costs of collective action; 2) stakeholders' beliefs about the fairness of the collective choice arena; 3) the congruence between stakeholders' basic value orientations and the governing style of the institution in which they participate; and 4) stakeholders' access to transaction resources in the form of policy networks and political entrepreneurs. I next lay out the details of each of these components.

### **Beliefs Related to the Benefits and Transaction Costs of Collective Action**

Most economists would assume attitudinal support is a function of explicit cost-benefit calculations by individual stakeholders. Many researchers have serious doubts about the validity of this assumption, and argue the ability of humans to achieve goals is "bounded" by limited cognitive and information processing capacities (Simon 1975; 1979). Bounded rationality shifts the analytic focus onto the subjective representation of the task environment, and assumes proximate causes of behavior are contained in the internal world of the decision-maker and cannot be directly inferred by analyses of external constraints.

The trick is to translate this analytic shift to the internal world of the decision-maker into the context of collective action and institutional analysis, without abandoning the system-level conjecture that collective action is more likely when benefits outweigh transaction costs. To integrate the attitudinal model into the transaction cost framework, I argue institutional support is a function of subjective beliefs about attributes of the collective action arena related to the benefits and transaction costs of political contracting.<sup>8</sup> In other words, stakeholders use those beliefs that *reflect* benefits and transaction costs as cues for collective action decision-making. This leads to my first hypothesis about attitudinal support:

**Hypothesis 1: Attitudinal support for estuary governance institutions increases with perceptions related to the benefits of collective action, and decreases with perceptions related to the transaction costs of collective action.**

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<sup>8</sup> Note that many economists might argue that measures of stakeholder perceptions are not direct measures of benefits or transaction costs, and that I am therefore not testing my theory. However, as Furubotn and Richter (1991) note, the measurement of transaction costs has always been problematic. I follow Williamson's (1985) indirect method of measuring transaction costs by assuming they are a function of the attributes of a particular transaction or institutional structure. The indirect method of measurement simply requires making assumptions about the relationship between measurable characteristics of the collective choice situation, in my case the attitudes of stakeholders, and the level of transaction costs. In my case, I am assuming that certain attitudes and beliefs increase or decrease in response to the benefits and transaction costs inherent in a particular estuary.

Several strands of research support my argument that people use beliefs fine-tuned to the critical parameters of a collective action problem as decision cues. Scholz (1998; see also Scholz and Lubell 1998a,b) proposes an “adaptive attitudes” model, which argues people use affect-laden political attitudes like trust and duty as heuristics for collective action decision-making. Scholz and Lubell (1998a) demonstrate how these adaptive political attitudes increase with the benefits and decrease with the costs of cooperation in the tax-paying arena. In other words, the attitudes instrumentally adjust to features of the collective choice situation—they “track” the critical features of the collective choice situation that affect benefits and transaction costs. Learning and evolutionary psychology provide a second a justification for the tracking capacity of adaptive political attitudes. Those individuals who learn or inherit belief-systems sensitive to the critical parameters of a collective choice situation have a higher probability of gaining the rewards of collective action, and therefore gain an evolutionary advantage.<sup>9</sup> The idea of policy learning proposed by the Sabatier and Jenkin-Smith’s (1993) advocacy coalition framework can be conceptualized as the evolution of a belief system fine-tuned to the structure of a particular policy environment.

To make empirical predictions, the task of the analyst is to identify those attitudes and beliefs that are the most important reflections of benefits and transaction costs. The rest of this section describes beliefs about estuary conditions and the institutional context that are relevant to the benefits and transaction costs of estuary governance.

#### *Beliefs about Benefits: Problem Severity and Conflict Resolution*

The NEP program has documented an extensive list of environmental problems in estuaries (EPA Office of Water 1998), which I argue are similar to typical common-pool resource problems. The key question from the perspective of attitudinal support for estuary policies is stakeholder beliefs about problem severity. In general, people are not willing to support an institution designed to solve a collective action problem if they do not think there is a problem in the first place:

#### **Hypothesis 1(a): Attitudinal support will be higher among stakeholders who believe the environmental problems in their estuary are severe.**

In addition to solving environmental problems, the benefits of successful governance include resolving conflict between competing advocacy coalitions, where each advocacy coalition prefers the institutional arrangement that provides them the highest share of the gains from collective action. Libecap (1989, 13) notes in the context of contracting for property rights, that “to maintain claims to valuable assets or to wrest control from others through the use of force, competing claimants have incentive to divert labor and capital inputs from socially valued production to predatory and defensive activities.” In environmental policy, the opportunity costs of legal and other forms of combat between competing advocacy coalitions are high; every dollar spent in the legal arena could be put towards acquisition of sensitive lands by environmental

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<sup>9</sup> The evolution of adaptive belief-systems is an individual-level parallel to Alchian’s (1950) argument about the evolution of institutional structures, where survival of the fittest favors efficient institutional forms. Over time then, people who are better able to formulate belief systems that accurately track the costs and benefits of a particular action with low cognitive processing costs will have a better chance of survival in whatever task environment is under consideration.

interests or improvements in production technology by economic interests (Weber 1998). Furthermore, once conflicts enter the legal arena, generalist judges with little expertise in environmental policy often decide them. The likelihood of a court decision that pleases both environmental and economic interests is thus fairly low. Hence, stakeholders are more likely to support estuary policies if they believe conflicts can be resolved within the structure of the collective choice arena:

**Hypothesis 1(b): Attitudinal support will be higher among stakeholders who believe estuary policies do an adequate job of internal conflict resolution.**

*Beliefs about Transaction Costs: Scientific Knowledge, Problem Diffusion, and External Decisions*

One of the main assumptions of neoinstitutional economics is that transaction costs are rooted in uncertainty, which in turn is related to the costliness of obtaining information about the attributes of goods being exchanged and the performance of agents. Complexity and information costs play a parallel role in the political market--uncertainty at any stage of the political contracting process increases the transaction costs of agreement (Heckathorn and Maser 1987). Libecap (1989) shows how consensus about the costs and benefits of institutional change is hampered by disagreements over the economic value of existing and proposed property rights arrangements. Information also plays a critical role in sustaining cooperation. Calvert (1995) demonstrates the sensitivity of cooperative and coordination equilibria to the availability of communication and the costs of information. Bendor (1987) shows the evolutionary advantage of reciprocal strategies is reduced by implementation errors, which could be attributed to incomplete information.

Information problems and uncertainty are substantial in the environmental policy arena. Stakeholders are uncertain about the causes, sources, and consequences of environmental problems, especially in ecosystems characterized by complex, interconnected natural processes. For this reason, scientific research from almost every discipline is a critical ingredient for successful policies. The NEP explicitly acknowledges the importance of science by integrating technical advisory committees into the Management Conference. These committees consist of university scientists and consultants who apply sophisticated techniques like species population simulations and hydrodynamic models to estuary problems. These studies not only help document the extent and causes of estuary problems, they also help stakeholders predict the future consequences of alternative management scenarios. The success of the NEP depends to a large extent on its ability to construct a scientific record that reduces the uncertainty associated with various policy alternatives. This leads to a third hypothesis about bounded rationality with relation to transaction costs:

**Hypothesis 1(c): Attitudinal support will be higher among stakeholders who believe the amount of scientific knowledge about estuary problems is adequate.**

The complexity of an environmental problem is often related to the diffusion of actors involved with accessing ecosystem resources. As I mentioned above, many estuary problems are the product of many small decisions spread across a wide geographic area, and identifying the marginal contribution of any single source is exceedingly difficult. Diffuse problems create

transaction costs in ways similar to how mobile fish populations increase the difficulties of fisheries governance (Schlaeger, Blomquist, and Tang 1994). Advocates of consensual institutions argue the NEP enjoys a comparative advantage in controlling diffuse problems because it uses incentives and educational programs to encourage cooperation among multiple individuals as opposed to coercion. Hence, stakeholders who believe problems are diffuse will view the NEP as a positive supplement to existing, adversarial governance arrangements. Conversely, people who believe problems are not diffuse may prefer the traditional structure. For example, some stakeholders believe all estuary problems are related to point source discharges from sewage treatment plants and factories, which could be efficiently controlled through existing permit systems. This suggests an interaction between the institutional context and beliefs about problem diffusion, which reflects the comparative advantage of consensual institutions:

**Hypothesis 1(d): Attitudinal support will be higher among NEP stakeholders who believe estuary problems are diffuse, but lower among NEP stakeholders who believe estuary problems are not diffuse. Conversely, attitudinal support will be higher among non-NEP stakeholders who believe problems are not diffuse and lower among non-NEP stakeholders who believe problem are diffuse.**

Finally, the transaction costs of governance are higher when stakeholders believe policy decisions relevant to the estuary are being made outside the estuary action arena. Rules made outside the estuary are more likely to be standardized and less likely to take into account the idiosyncrasies of the particular ecosystem, therefore creating uncertainty about their applicability to particular estuary situations. Local actors often believe they have superior knowledge about estuary problems in comparison to outsiders, and will resist outside decisions in which they do not participate (Ostrom 1990). Local actors not only include producer groups like fishers and agriculture, but also local government officials, regional environmental groups, and personnel from state and Federal agencies assigned to a particular location. The inclusive and specialized nature of the NEP is designed to include these actors in the collective choice process, in order to produce a specialized institution viewed as legitimate by those actors who are most affected. This leads to my final bounded rationality hypothesis:

**Hypothesis 1(e): Attitudinal support will be higher among those actors who believe estuary decisions are being made within the local estuary action arena.**

### **Fairness Evaluations**

Lind and Tyler (1988) and Tyler (1990) argue persuasively that perceptions of distributive and procedural fairness are critical for citizen cooperation with laws and broader support for social and political institutions. Unfortunately, there is a good deal of uncertainty about the concepts of both distributive and procedural fairness. With respect to distributive fairness, Hardin (1980) argues that in cases where stakeholders receive different benefits from solving the collective action problem and also incur different costs of cooperation, there is no cost-sharing rule that represents a prominent solution to the fairness question.<sup>10</sup> A prominent

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<sup>10</sup> Hardin (1980) considers four cost-sharing rules: equal cost sharing, proportional benefits taxation, marginal rate of substitution taxation, and proportional incremental benefits taxation. The problems of distributive fairness

solution is a unique cost-sharing scheme that all stakeholders mutually recognize as providing an equitable distribution of costs and benefits (Schelling 1960).

The meaning of procedural fairness is even less clear. Lind and Tyler (1988) note a variety of factors that affect citizen perceptions of procedural fairness, including control over the decision process, interest representation, and outcome satisfaction. The structure of estuary institutions makes it difficult to ascertain the values of these variables. Does the institution provide stakeholders with adequate control over the process, or do administrators or special interests control the agenda? Are all interests equally represented, or are some excluded or marginalized?

Regardless of which aspect of fairness stakeholders are considering, the critical question is who controls the process and outcome of the political contracting process (Thibaut and Walker 1975; Tyler 1990). If stakeholders believe a particular advocacy coalition has undue control over either aspect of the contracting process, they are less likely to believe it is fair. Perceptions of fairness reflect self-interest and are linked to stakeholders' overall evaluations of the benefits of collective action. Stakeholders will believe the political contracting process is fair when they think they are receiving benefits proportional to their contribution. This leads to my second broad hypothesis:

**Hypothesis 2: Stakeholders who believe estuary policies are fair will have higher levels of attitudinal support for the estuary policies.**

### **Policy-Oriented Belief Systems**

Up to this point of the analysis, I have examined beliefs that are directly related to the attributes of the collective dilemma and the institutional context. However, following Sabatier and Jenkin-Smith's Advocacy Coalition Framework (ACF), I argue stakeholder attitudes and beliefs are integrated into a structured set of abstract and concrete idea elements called a "policy-oriented belief system". Policy-oriented belief systems are hierarchically organized into three levels (Hurwitz and Peffley 1987). The first level consists of deep core beliefs, or "fundamental normative and ontological axioms" (Sabatier and Jenkins-Smith 1993:31). Deep core beliefs refer to socially constructed ideas about human nature (e.g. evil vs. socially redeemable), ultimate human values (e.g. freedom), and distributive justice. The second level consists of policy-core beliefs, which are fundamental policy positions developed within a specific policy domain, for example environmental or health policy (e.g., environment vs. economic development). Secondary beliefs form the third level of policy-oriented beliefs, and represent perceptions of specific external conditions and evaluative attitudes towards the policy instruments and institutions involved with a specific policy problem within a particular domain (e.g., should we update the discharge permit for sewage treatment plant X?). The beliefs about benefits and transaction costs discussed above constitute secondary beliefs.

Following Azjen and Fishbein (1980; see also Eagly and Chaiken 1993, Chapter 4), the ACF argues actors judge the desirability of particular actions in terms of both their expected utility and relationship to the broader core values of an individual's reference group. Translated into the context of institutions, I argue that stakeholders will have higher levels of attitudinal

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become even more severe when utility is non-transferable (i.e., individual welfare cannot be measured using a common currency), as is the case with many environmental problems (e.g., business evaluates policy implications using monetary consequences, while environmentalists use difficult to measure non-monetary criteria).

support when their policy-core beliefs are congruent with the governing style of the institution in which they are participating.<sup>11</sup> By governing style, I mean specifically how the institution is characterized in terms of inclusion, coercion, and specialization. This leads to the following “congruence” hypothesis about the relationship between policy-core beliefs and the institutional context:

**Hypothesis 3 (Congruence Hypothesis): Attitudinal support will be higher among stakeholders whose policy-core beliefs are congruent with the governing style of the operative institution in an estuary.**

The congruence hypothesis suggests the possibility of interaction effects between the governing style of the operative institution and policy-core beliefs with respect to how each factor influences attitudinal support. The interaction can be looked at in two ways. First, the effect of the NEP on attitudinal support will be conditional on the congruence between policy-core beliefs and the governing style of the NEP. Second, the effects of policy-core beliefs on attitudinal support will be conditional on the institutional context. As I will show in the analysis, both ways of looking at the congruence hypothesis have intriguing implications.

Sabatier and his colleagues have identified several policy-core beliefs relevant to environmental policy; I will focus on three that frequently appear and hypothesize about how their relationship to attitudinal support might differ depending on the presence of the NEP. First, the most commonly analyzed scale is what Sabatier and Zafonte (1997) call the “neo-classical conservatism” scale, which focuses on the tensions between government regulations and private property rights in environmental policy.<sup>12</sup> This tension is highly salient to many economic groups, industries, and private landholders who argue that government regulations violate Constitutional protection of private rights (Kayden 1996).

Most analyses argue the threat to property rights embodied in environmental policies should reduce support for estuary policies among property-rights advocates. Indeed, I hypothesize that conservatives are less likely to support environmental policies in non-NEP estuaries. But one of the hallmarks of the NEP is the use of incentives to increase voluntary compliance--carrots instead of sticks. As part of the broader movement to reinvent and decentralize government, the NEP is supposed to be user-friendly and bring businesses to the decision-making table. Thus, contrary to traditional analyses, I expect property rights advocates to actually express higher levels of support for the NEP because the governing style of consensual institutions is more congruent with their policy-core beliefs.

The second most commonly analyzed policy-core value is environmentalism. Sabatier and Zafonte (1997) find two measures of environmentalism are positively related to support for

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<sup>11</sup> This hypothesis extends to deep-core as well as policy-core values. I focus on policy-core values because that is the level of values most likely captured by our survey.

<sup>12</sup> Whether or not this belief is classified as a “deep core” or “policy-core” value depends on which writing the concept appears in. In older works like Sabatier and Jenkins-Smith (1993), neo-classical conservatism is a policy-core belief associated with the proper role of governments versus markets in allocating natural resources. In more recent works, however, neo-classical conservatism is a more general deep-core belief that can span multiple policy areas (Sabatier and Zafonte 1997; Zafonte and Sabatier 1998). For my analysis, I will refer to “neo-classical conservatism” as a policy-core belief that applies more narrowly to the domain of environmental policy. This is especially justified because the survey questions I use to measure the belief are framed in terms of environmental policy.

San Francisco Bay-Delta protection policies. However, many environmentalists dislike adversarial policies at the ecosystem level because they fail to take into account ecological relationships, while praising the NEP for its ecosystem management philosophy. Thus, I expect the NEP to have a positive effect on attitudinal support among environmentalists and a negative effect among non-environmentalists. Conversely, I expect environmentalism to negatively affect attitudinal support within non-NEP estuaries, and have a positive effect within NEP estuaries. Before moving on, notice the combined importance of the role of neo-classical conservatism and environmentalism in relation to NEP support. The general focus of the ACF on conflict would predict opposing directions for these two core beliefs. That is because these core beliefs are generally diametrically opposed in adversarial institutions. Within the NEP, however, environmentalism and conservatism may work in the same direction because the inclusive nature of consensual institutions represents a collective choice mechanism that bridges traditional lines of conflict.

A third important belief concerns the role of public participation in the policy process, which is directly relevant to the inclusiveness of consensual institutions. Many scholars reject the “managerial discourse” of the Progressive Era, which argues technically complex policy decisions like those in environmental policy should be made by rational experts (Williams and Matheny 1995). Instead, these scholars argue the key to solving environmental problems is to merge the managerial discourse with a communitarian discourse focusing on the importance of building support among citizens and other local actors. The inclusive nature of the NEP implicitly accepts the idea of community building as a necessary component of estuary politics, because solving diffuse environmental problems requires local participation. Hence, I argue the NEP will have a positive effect among people who believe environmental policy should be inclusive, and a negative effect among those who subscribe to an exclusive model. Conversely, the policy-core belief of inclusiveness should have a positive effect on attitudinal support within the NEP and negative effect outside the NEP.

### **Exposure to Social Capital**

The final component of the attitudinal model considers stakeholders’ exposure to social capital within the context of the estuary action arena. Following Putnam (1993) and Coleman (1990), I argue social capital in form of norms of reciprocity, networks of civic engagement, and trust between stakeholders is a critical resource for building cooperation. From the transaction cost perspective, social capital decreases the costs of monitoring and enforcing cooperative agreements. Generalized norms of reciprocity and trust create expectations of cooperation, and networks of civic engagement facilitate the spread of information about the behavior of others.

The Advocacy Coalition Framework has developed the idea of networks to the greatest extent within the policy literature. Within a particular action arena, networks of social relationships develop between stakeholders that share similar belief systems. By networks of social relationships I mean patterns of interpersonal interaction and social exchange between individual stakeholders. Heclo (1978) calls these networks of actors “issue networks”<sup>13</sup>. The focus on issue networks reflects the recent integration of Granovetter’s (1985) principle of “embeddedness” into theories of economic behavior. Granovetter criticizes the atomized actors

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<sup>13</sup> My usage of issue networks varies somewhat from Heclo’s (1978) original usage, which is very similar to the term advocacy coalition. As mentioned earlier, I use issue networks to very specifically refer to concrete social relationships between stakeholders.

of both neoclassical and neoinstitutional economics as unrealistic. Instead, actors are embedded in a network of concrete personal relations, which exert an independent influence on individual behavior and belief-systems (Coleman 1990). Granovetter focuses especially on the role of networks in “generating trust, establishing expectations, and in creating and enforcing norms” that facilitate economic transactions.

Extending this reasoning, I argue that issue networks are an important source of social capital in the policy arena, which facilitates the success of estuary policies in three ways. First, issue networks create “shadow communities” of stakeholders with common goals that bridge administrative, geographic, and political boundaries (John 1994). Second, issue networks facilitate the transmission of information between these stakeholders, and are used instrumentally by stakeholders to solve problems and achieve goals (Coleman 1990; Lin 1982). Third, issue networks engender the norms of reciprocity and trust that are essential to the smooth functioning of democratic governance (Putnam 1993). The social networks in which stakeholders are embedded thus exert independent influences on attitudinal support for consensual institutions.

In addition to social networks, a range of public entrepreneurs may also populate the social context of the estuary.<sup>14</sup> In private markets, entrepreneurs are individuals who engage in acts of creative discovery, reorganizing factors of production into more efficient configurations and reaping the subsequent increase in profits (Casson 1982; Kirzner 1985; Ricketts 1987; Schneider and Teske 1995). Political entrepreneurs perform similar functions in estuary politics. Existing institutions contain a range of policy tools that are applied in an uncoordinated manner; that is one of the reasons traditional policies fail at the ecosystem level. These failures create a niche for public entrepreneurs who can focus existing resources on a common problem. In their study of public entrepreneurs in local government, Schneider and Teske (1995) search for single individuals in local governments who are pushing policy innovations. Leadership in a particular estuary, however, often comes from multiple sources. Many political entrepreneurs are agency officials who step outside of their traditional job description to reach out to other agencies and citizen groups. Leaders of local environmental groups that have long-standing interests in estuary management are also entrepreneurs, as well as business leaders wary of impending coercive regulations. Of particular importance are the leadership capabilities of NEP directors and staff, who have the difficult job of managing the planning process. Regardless of the structural location of entrepreneurs, stakeholders who are exposed to effective leadership are more likely to support estuary policies.

Hence, the social capital hypothesis is stated as follows:

**Hypothesis 4: Attitudinal support will be higher among stakeholders with access to social capital in the form of issue networks, trust, and political entrepreneurs.**

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<sup>14</sup> Most scholars maintain a conceptual distinction between political entrepreneurs and other forms of social capital, and I am not attempting to make a forceful argument about the appropriateness of this distinction. The main reason for lumping political entrepreneurs with social capital is organizational; discussing the fine points of political entrepreneurs is beyond the scope of this paper. However, I would argue that traditional forms of social capital and political entrepreneurs are both parts of the social context in which stakeholders are embedded, and therefore should be distinguished from the other attitudes I consider.



## Empirical Tests of Attitudinal Support

The remainder of the paper is devoted to testing the propositions of the attitudinal support model. In this section I will discuss the survey design, the measurement of the dependent and independent variables, and the statistical analyses.

### Survey Design

The survey data comes from respondents in 20 NEP estuaries and 10 non-NEP estuaries. The NEP data combines a mail survey sent to a sample of 1668 estuary stakeholders, and a follow-up telephone survey of 796 mail survey non-respondents from 12 of the original 20 NEP sites. The mail survey generated 501 usable responses (30% response rate) for a response rate of 30% and the follow-up telephone survey generated 405 responses (50% response rate), for a combined mail/phone total of 906 NEP respondents (54% response rate for initial sample of 1668).<sup>15</sup> The non-NEP data consists of interviews from a sample of 466 estuary stakeholders, which generated 312 usable interviews for a response rate of 67%.<sup>16</sup>

I generated the NEP sample universe by combining lists of contacts provided by EPA's Office of Wetlands, Oceans, and Watersheds with lists of stakeholders provided by individual NEP directors. The NEP stakeholders were generally individuals directly involved with the Management Conference. Generating contacts in non-NEP estuaries was considerably more difficult because there were no existing lists of stakeholders. Hence, I generated my own lists by searching the Internet for active projects and interest groups in the particular estuary and using the National Wildlife Federation's *1998 Conservation Directory* to find additional stakeholders. I then called the initial list of contacts generated by the search process and asked them to identify additional stakeholders active in the estuary, for a total baseline sample population of 340 contacts. The telephone survey company then used a snowball procedure, which asked the original 340 contacts for more names, to generate 126 more potential respondents, for a total of 446 potential non-NEP respondents.

While strictly speaking this is a non-probability sample, the statistical tests are suited for inferences about the population of "active policy stakeholders" in each particular estuary. To demonstrate the survey respondents are representative of a wide range of estuary stakeholders, Table 2 presents a cross-tabulation of respondents according to stakeholder types and location in the federal system. As can be seen, 56% of the sample are government representatives (mostly from administrative agencies), 12% environmental groups, 10% business groups, 7% research, and 16% other types such as citizens-at-large and consultants.<sup>17</sup> Clearly, estuary politics is

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<sup>15</sup> The combination of mail and telephone surveys raises the possibility of instrumentation bias. Fortunately, the means for most of the variables are no different for telephone and mail respondents, so there is little evidence of instrumentation bias. The one variable that did exhibit a problem is the *allies* network question; mail respondents were much more likely to mention allies than phone respondents. Perhaps phone respondents feel uncomfortable providing contact information via telephone. This problem throws some doubt on the validity of the hypothesis tests regarding policy networks.

<sup>16</sup> There was some variance in response rates across the 20 NEP estuaries. For the mail survey, the response rate ranged from 17% in Peconic Bays, NY to 41% in Narragansett Bay, RI. For the telephone survey, the response rate ranged from X to X in NEP estuaries and X to X in non-NEP estuaries. Overall, the response rate compares favorably to surveys of watershed partnerships conducted by other researchers: 51% by Wooley and McGinnis (1999), 41% by Johnson and Cambell (1999), and 42% by Cook (2000).

<sup>17</sup> The budget for the telephone survey required me to collapse the number of categories used to identify stakeholder types and position within the federal system. Results from the NEP mail survey present a more detailed picture: 60% government officials (mostly from administrative agencies), 11% environmental groups, 7% marine

heavily devoted to intergovernmental coordination, but interest groups from both sides of the environment/economy debate and researchers are involved as well. The small proportion of non-governmental actors does not mean they are unimportant; although they constitute a minority of the sample, many individuals represent much larger groups.

#### [Table 2 about here]

Estuary politics also involves stakeholders from all Federal levels. Overall, state (33%) and local (26%) stakeholders are the most active players. This makes sense given the central role of state agencies in the NEP process, and the overall role of states in protecting ecosystems within their boundaries. Similarly, local government actors always play an important role in estuary politics because they control land-use, are usually the main operators of drinking, storm, and wastewater treatment facilities, and are always on the lookout for environmental funding from higher levels of the federal system. However, the Federal government is also represented, reflecting the fact that the NEP is an EPA initiative, and the many different Federal agencies with jurisdiction over different aspects of estuarine systems. Environmental and business groups are also likely to come from lower levels of the Federal system because estuary politics involve primarily local issues.

### Measuring Attitudinal Support

The main dependent variable in the analysis is attitudinal support for estuary policies. I use two survey questions to measure different aspects of attitudinal support: overall policy effectiveness and perceived levels of cooperation (see Appendix for question wording). The *effectiveness* question focuses on the ability of current estuary policies to actually improve environmental conditions. In terms of policy stages, *effectiveness* is the best measure of stakeholders' beliefs about policy outcomes.

The *cooperation* question measures the perceived level of teamwork and communication between estuary stakeholders. In contrast to the *effectiveness* measure, *cooperation* focuses on the process of policymaking and the development of social interaction between stakeholders. In general, the most visible short-term results of watershed partnerships are changes in the nature of stakeholder relationships; actual changes in policy outputs and outcomes are a longer-term and less certain outcome. Hence, from a conceptual standpoint it is important to analyze these variables separately. Empirically, however, the variables are positively correlated (correlation=.42) and probably related to a common underlying dimension of attitudinal support. Taken together then, the analysis is looking at two aspects of the broader idea of attitudinal support that I have argued is a necessary component of successful governance institutions.<sup>18</sup>

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recreation/fisheries/forestry/agriculture, 5% business and real estate, 9.5% university/education, and 7.5% other. For levels of the federal system, there were 17% national, 10% subnational, 28% state, 17% substate, and 28% local (county, municipality, special district). Similarly, there is little variation in response rate across stakeholder type, with the exception of environmental groups, who are slightly more likely to respond. Overall, the more detailed data confirms my evaluation that the sample population is a good representation of the stakeholders active in estuary policy-making. Whether or not the representation of actor types is "fair" from a normative standpoint is beyond the scope of this paper, although the approximately equal balance of environmental groups and business groups seems promising.

<sup>18</sup> One immediate criticism of my measures of attitudinal support is they are not capturing the "right" attitudes. Again, the costs of the telephone survey required me to reduce the number of questions used to measure attitudinal support. The mail survey contained multiple measures of both policy satisfaction and perceived cooperation, allowing me to create reliable scales. In addition to problem improvement, the *satisfy* scale included questions about general policy satisfaction and likelihood of policy implementation (Cronbach's alpha= .82). In addition to

## Independent Variables

During this discussion, I will indicate the hypothesized direction of influence of each independent variable in parentheses. Stakeholder beliefs about the benefits of collective action are measured by perceptions of problem *severity* (+) and the *conflict resolution* (+) capabilities of estuary governance institutions. Beliefs about transaction costs are measured using questions regarding the adequacy of *scientific knowledge* (+), *problem diffusion* (+ in NEP, - in non-NEP) in terms of the number of people involved in the problem, and the extent to which policy decisions are made *external* to the estuary. *Procedural fairness* (+) is measured with a 2-item scale (Cronbach's alpha = .76) consisting of stakeholders' perceptions of the overall fairness of the decision-making process to all stakeholders, and the adequacy of representation for the individual respondent. *Administrative* (-) and *economic domination* (-) measure perceptions of whether or not administrative experts or economic interest groups control the policy decision process. Policy-core values are captured by three variables: *environmentalism* (+ NEP, - non-NEP), *government role* (2-item scale, Cronbach's alpha = .70; +NEP, -non-NEP), and *inclusiveness* (+NEP, -non-NEP).

Stakeholders' exposure to social capital is measured with a combination of attitudinal and social network questions. *Trust* (+), the attitudinal aspect of social capital that is associated with issue networks, is measured by asking respondents whether or not they trust other stakeholders to fulfill their commitments made in the context of the management plan. In the network battery, respondents can report the presence of a political entrepreneur and a maximum of three "allies". *Entrepreneur* (+) is coded as a dummy variable equal to 1 if the stakeholder mentioned the presence of a stakeholder who is displaying effective leadership. *Allies* (+) is a raw count of the number of allies mentioned by a respondent, providing one measure of the size of issue networks.

Lastly, given the number of government actors in the sample, I include a dummy variable to separate the effects for *government actors* (+). Government actors, especially administrative officials, may express higher levels of attitudinal support because they have a vested professional and political interest in keeping environmental issues on the policy agenda. Indeed, the NEP may have less of an effect on government officials if they think of it as one of many possible tools for securing budgetary resources. On the other hand, the NEP may have a larger effect on non-governmental actors because its inclusive governing style is designed to bring non-governmental actors into a collective choice arena formerly dominated by administrative officials. The change in governing style might be more obvious to political actors who had been attempting to gain access to the estuary decision-making arena.

### Methodology: Missing Data Imputation and Treatment Effects Model

Two important methodological issues might bias hypothesis testing. First, item non-response common in surveys produced missing data. The average rate of missing data for all variables was 4.4%, and ranged from a high of 10% for the *conflict resolution* variable to 2% for *cooperation*. To avoid the "evils" of listwise deletion (King et al. 1999), I replaced the missing data using Schafer's (1999) NORM software for multiple imputation of missing data under a normal model. The multiple imputation procedure assumes all data in the imputation model is

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teamwork, the *cooperate* scale included questions about changing levels of cooperation, perceptions of consensus, and communication among stakeholders (Cronbach's alpha = .74). The concept of attitudinal support clearly captures many attitudes important to policy scholars.

missing at random and jointly normally distributed. Based on these assumptions, the procedure uses iterative Markov Chain Monte Carlo procedures to produce multiple data sets, where missing data is replaced by simulated imputations. I included all attitudinal questions in the imputation model, which converged after 55 iterations and produced five imputed datasets. All statistical results reported in this paper combine the estimates from each of the imputed data sets into a single result using Rubin's (1987) rules for scalar estimands, which take uncertainty into account by using the variance both within and between imputed datasets to compute standard errors for the model coefficients.

Second, non-random NEP designation process raises a causality question: Does the NEP facilitate collective action, or does collective action lead to the NEP designation? Because the NEP designation requires a state-level nomination and federal approval, there is reason to believe the conditions for successful collective action, such as attitudinal support, are already in place before the NEP designation. On the other hand, the effects of non-random selection might be small because the nomination process generally includes a smaller subset of stakeholders. The inclusion of a broad range of stakeholders does not really take place until the Management Conference is convened and the planning process begins.

If non-random selection was not an issue, I could estimate the influence of the NEP using the following outcome equation:

$$\text{Attitudinal Support}_i = \hat{\mathbf{a}}' \mathbf{x}_i + \delta \text{NEP}_i + \mathbf{e}_i$$

However, if attitudinal support were systematically higher in estuaries prior to their selection into the NEP, a positive slope coefficient ( $\delta$ ) for the NEP dummy would overestimate the influence of the NEP (Achen 1986). To control for the potential selection bias, I estimate a treatment effects model described by Greene (2000, see also Maddala 1983), which models the NEP dummy variable as endogenous. The presence of the NEP is modeled as a probit selection equation, where the NEP is observed if some underlying latent variable representing the capacity for collective action ( $C_i$ ) is greater than zero:

$$C_i^* = \tilde{\mathbf{a}}' \mathbf{w}_i + u_i$$

$$\text{NEP}_i = 1 \text{ if } C_i^* > 0, 0 \text{ otherwise}$$

When  $\mathbf{e}_i$  and  $u_i$  are correlated ( $\rho$  in the results table), there is a spurious relationship between attitudinal support and the NEP due to unmeasured factors that predict both the level of attitudinal support and the presence of the NEP. To remedy the problem, the treatment effects model includes the appropriate selectivity correction ( $\lambda_i$ ) term for both NEP and non-NEP participants. I use maximum likelihood to simultaneously estimate the coefficients of both the outcome and the selection equation.

The independent variables in the outcome equation represent tests of the hypothesis of the attitudinal model at the individual level, as outlined earlier. The variables in the selection equation are at the estuary level; each individual respondent is associated with a particular set of estuary characteristics. The selection equation includes independent variables found by Lubell et al. (1999) to be predictors of the presence of watershed partnerships: 1980 population density (per 1000 miles<sup>2</sup>), total area (1000 miles<sup>2</sup>), % farmland, % rangeland, and % agricultural land. In addition, three variables represent attitudes that predict attitudinal support and might also affect the presence of the NEP: mean level of trust, mean level of scientific knowledge, and mean level

of external decision-making.<sup>19</sup> Although the variables in the selection equation have substantive meaning, they primarily control for non-random selection.

### **Results: Predicting Attitudinal Support**

Tables 3 and 4 present treatment effects models for *effectiveness* and *cooperation*, respectively. The second column in each table reports the results including interactions between policy beliefs and the NEP, and the third column excludes the NEP x Policy-belief interactions. Unless otherwise noted, I will confine my discussion of the results to the models that include the NEP x Policy-belief interactions because they represent direct tests of the congruence hypothesis (Hypothesis 3). The coefficients for the probit selection equation are presented in the bottom section of each table. All measures of beliefs and attitudes, including the dependent variables, are linearly transformed to the [0,1] range. Hence, when multiplied by 100, the coefficients for the belief variables in the outcome equation are interpreted as the percentage point change in the mean of the attitudinal support measures moving across the entire range of the explanatory variable.

#### **[Tables 3 and 4 about here]**

Hypothesis 1 regarding perceptions of benefits and transaction costs receives support in both models. *Conflict resolution* appears to be the most important benefit of collective action in estuaries, increasing *effectiveness* by 6% points, although the effect is not significant for perceptions of *cooperation*. The ability to solve environmental problems is clearly linked to the capacity of the estuary institutions to resolve conflict and alleviate policy gridlock. Problem severity does not have a significant effect in any model. This null finding is particularly interesting given the environmental policy literature's emphasis on the relationship between perceptions of problem severity and general support for environmental policy (Ellis and Thompson 1997; Mohai 1985; Samdahl and Robertson 1989). When asking political actors to assess environmental policy institutions, it appears conflict resolution is receives a higher priority than perceptions of environmental quality.

For both measures of attitudinal support, the most important beliefs relating to transaction costs are the quality of scientific knowledge and external decision-making. Moving across the range of the scientific knowledge variable leads to a large 17% point increase in *effectiveness*, and smaller 7% point increase in perceptions of *cooperation*. Estuary stakeholders strongly believe good science is necessary to improving environmental outcomes, and science also plays a role in facilitating cooperation among stakeholders. Similarly, perceptions of external decisions increase *effectiveness* by 9% points and *cooperation* by 4% points. Decisions made outside the estuary increase the transaction costs of solving specialized estuary problems, and also decrease cooperation among stakeholders, who might consider external decision-makers a threat to the credibility of local agreements. Lastly, perceptions of problem diffusion have a significant effect on both *effectiveness* and *cooperation*, although the significant NEP x Problem diffusion interaction shows the effect of problem diffusion is conditional on the presence of the NEP. I will examine these conditional effects in more detail in the next section.

Fairness evaluations have the largest effect on attitudinal support. Perceptions of procedural fairness increase *effectiveness* by 24% points and *cooperation* by 44% points. Keeping in mind how the measure of procedural fairness is related to self-interest, stakeholders obviously place a high value on the adequacy of their representation in the decision-making

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<sup>19</sup> Averages computed using all respondents in a particular estuary.

process. This is because gaining access to the benefits of collective action requires representation in the decision-making process. Similarly, stakeholders who believe business dominates estuary decision-making have a lower level of attitudinal support, although the effect of business domination is much smaller (6.6% point decrease for *effectiveness* and 5.1% point decrease for *cooperation*) than overall procedural fairness.

Exposure to social capital, in particular trust, also increases attitudinal support. Moving across the range of the trust variable increases *effectiveness* by 12% points and *cooperation* by 24% points. Exposure to social capital appears to have a greater effect on perceptions of cooperation, as corroborated by the larger trust coefficient and the significant effect of leader presence (2.9% point increase) on cooperation, but not on effectiveness. Number of allies mentioned has no effect on either measure, perhaps reflecting difficulties in measuring networks with the telephone instrument.<sup>20</sup> The strong effect of trust on attitudinal support reflects its theoretical importance as an aspect of the social environment that decreases the transaction costs of collective action.

Notice the interesting asymmetry between the cooperation and effectiveness measures of attitudinal support. Overall, beliefs about transaction costs related to the structural/technical aspects of the action arena, like scientific knowledge and external decision-making, have a stronger effect on satisfaction with policy outcomes. Conversely, measures related to the social aspects of stakeholder interactions, like fairness, trust, and leadership, have a stronger influence on cooperation. Perhaps this reflects the fact that environmental outcomes are more immediately related to the technical aspects of decision-making, while stakeholder cooperation implicates the human dimension of policy-making. The social and technical dimensions of collective action are both necessary to the overall success of environmental policy, but are sensitive to different components of the action arena.

### **Do Institutions Matter? Policy Beliefs and the NEP**

The baseline hypothesis of the transaction cost approach suggests the NEP should directly increase attitudinal support because consensual institutions reduce the transaction costs of estuary governance relative to adversarial institutions. The positive and significant coefficients on the NEP dummy variable reported in the third columns (i.e., the models without the belief interactions) of Tables 3 and 4 support this hypothesis. However, the significant interaction with the government actor indicator shows the effect of the NEP on attitudinal support is different for governmental and non-governmental actors. For non-governmental actors, the NEP increases *effectiveness* by 10% points, with a smaller effect of 6% points on *cooperation*. Being a government actor moderates the effect of the NEP to 4% points for *effectiveness* and 3% points for *cooperation*. Overall, the influence of the NEP on attitudinal support is higher among non-governmental actors, highlighting how the NEP expands the boundaries of the collective choice arena. The NEP represents an improvement for government actors, but they probably make a smaller distinction between the NEP and the host of other environmental policies they are involved in as part of their overall job profiles.

However, Hypothesis 1(d) and especially the congruence hypothesis (Hypothesis 3) suggest the influence of the NEP on attitudinal support is conditional on stakeholders' policy

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<sup>20</sup> Lubell (1999) found a significant positive effect of number of allies on attitudinal support when looking only at the NEP mail respondents.

beliefs, and conversely the effects of policy beliefs are conditional on the institutional context.<sup>21</sup> Hence, because government actors also have policy beliefs, the story in the previous paragraph is too simple.

The coefficient estimates for the interaction terms in the *effectiveness* model (Table 3, column 2) provide strong support for the congruence hypothesis and problem diffusion hypothesis. The interaction terms for environmentalism, inclusiveness, and problem diffusion are all positive and significant. As predicted by Hypothesis 1(d), the NEP has a more positive effect on attitudinal support among stakeholders who believe environmental problems are diffuse. The NEP\*Problem Diffusion interaction is also significant in the *cooperation* model. This robust finding reflects the comparative advantage of the NEP over adversarial institutions for dealing with the complex problems of ecosystem governance. As predicted by the congruence hypothesis, the effect of the NEP on policy *effectiveness* is larger among environmentalists and stakeholders who support inclusive environmental decision-making. However, policy-core beliefs are not significant in the cooperation model, which is interesting given the importance of policy-core beliefs for shaping secondary beliefs in uncertain decision contexts (Lubell 2000). Perceived policy effectiveness is strongly correlated with beliefs about environmental outcomes, which intuition suggests are more uncertain (especially given the time frame of ecological processes) than beliefs about cooperation derived directly from stakeholders' immediate social experience.

To better understand the conditional effects of the NEP institution, Figure 1 graphs the marginal effects of the NEP on perceived policy *effectiveness* as a function of environmentalism, inclusiveness, and problem diffusion.<sup>22</sup> The x-axis shows the marginal effects moving across the range of the environmentalism scale, the solid and dashed lines represent the maximum and minimum of the problem diffusion scale respectively, and the squares and triangles represent the maximum and minimum of the inclusiveness scale respectively. For example, the NEP has the largest positive effect (24% points) when environmentalism, problem diffusion, and inclusiveness are at their maximums. In other words, the NEP increases attitudinal support among those stakeholders whose policy beliefs are most congruent with the governing style of the NEP. Conversely, the NEP has a large negative effect on attitudinal support (-33% points) among those stakeholders whose policy beliefs are not congruent with the NEP: non-environmentalists who believe problems are caused by a small number of actors and environmental decision-making should be exclusive.

Figure 1 suggests two other important substantive points. First, environmentalists are not unwavering supporters of the NEP. The NEP actually decreases support among environmentalists who believe public participation should be minimized and problems are concentrated among a few actors. Environmentalists of this type equate consensus building with compromise to economic development interests, and prefer tougher implementation of existing environmental laws through the adversarial process. Second, the interaction effect is largest for problem diffusion (26% points, the distance between the solid and dashed lines), followed

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<sup>21</sup> Note the insignificance of policy-core beliefs and problem diffusion without the interaction terms in column 3 of Table 3. Without the interaction terms, the negative and positive effects of these beliefs cancel out, leading to the erroneous conclusion that policy-core beliefs and secondary beliefs about problem diffusion have no effect on attitudinal support.

<sup>22</sup> The estimates were derived by differentiating the results of the treatment effects model in Table 2 with respect to the NEP dummy variable, holding government role at the mean level in the sample and collapsing across types of government actors.

closely by inclusiveness (17%, the distance between the square and triangle lines), and smaller for environmentalism (13%, the slope of the lines). Hence, the most important effect is related to the comparative advantage of the NEP for reducing the transaction costs of governing diffuse ecosystem problems, while the congruence between the inclusiveness of the NEP and policy-core beliefs is more important than a general environmental orientation.

Figure 2 presents the interaction effects from the reverse perspective, and graphs the marginal effects of policy beliefs and actor type conditional on institutional context. As can be clearly seen, the relationship between policy core beliefs changes drastically in different institutional contexts, reinforcing the congruence hypothesis. In non-NEP estuaries, inclusiveness, environmentalism, and problem diffusion all have a negative effect on attitudinal support. Environmentalists who are worried about ecosystem-scale problems and who believe in inclusive decision-making are unhappy in the context of adversarial institutions. On the other hand, these same values lead to increasing levels of support in the context of the NEP. The effects of stakeholders' values on attitudinal support depend on the type of institution they are being asked to evaluate. Furthermore, the difference between governmental and non-governmental actors is reduced within the NEP. This is a sign that the consensus building process is bridging differences between governmental and non-governmental actors in terms of their belief-systems, which is exactly what proponents of the NEP claim should happen.

### **Indirect Effects of the NEP**

In addition to directly increasing attitudinal support, the NEP may indirectly affect attitudinal support by changing beliefs related to the benefits and transaction costs of collective action. EPA's stated goals for the NEP include changing estuary policies in ways that will theoretically reduce the transaction costs of collective choice. At the technical level, the NEP encourages applied scientific research on specific estuary problems and the development of management plans with specialized sets of rules and projects. At the political level, consensual institutions are thought to improve the fairness of collective decision-making, resolve conflict, and increase trust among stakeholders with many different interests and values. As I demonstrated above, stakeholders' beliefs about these same aspects of the estuary action arena are important predictors of attitudinal support, and hence may indirectly register the effects of institutional change.

To assess this possibility, Table 5 presents the results of bivariate regressions of those beliefs found to be important predictors of attitudinal support in the previous analysis, using the NEP dummy as the exclusive explanatory variable.<sup>23</sup> The second column in Table 5 shows the regression coefficients, while the third and fourth columns show the indirect effects of the NEP on *satisfy* and *cooperate*, respectively, as filtered through different elements of the stakeholders' belief systems on which the NEP has a significant influence.<sup>24</sup>

#### **[Table 5 about here]**

Table 5 suggests the NEP improves several of the beliefs that reflect benefits and transaction costs. In comparison to non-NEP stakeholders, NEP stakeholders think the policies of consensual institutions are better at conflict resolution, are fairer, increase scientific

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<sup>23</sup> I assume the NEP is exogenous in the bivariate regressions. The lack of evidence for selection bias effects in the treatment effects models provides the justification for this assumption.

<sup>24</sup> The indirect effects are found by multiplying the coefficient for each bivariate regression times the coefficient for that particular belief in the treatment effects model.



knowledge, and foster higher levels of stakeholder trust. Interestingly, perceptions of problem diffusion also increase, which is probably due to the NEP's emphasis on educating people about non-point source pollution. Similar to the treatment effects models, the NEP has the largest direct effects on conflict resolution and fairness. This reinforces my earlier point about how the NEP's influence on factors related to political decision-making are equally important if not more important than factors related to the technical characteristics of environmental problems.

The combined indirect effects of the NEP are almost equal in magnitude to the largest direct effects discussed above. Taken together, the NEP has a total indirect effect of 23% points on *effectiveness* and 15% points on perceived *cooperation*. The most important indirect effect is on beliefs about problem diffusion. This is due to the interaction between problem diffusion and the NEP dummy in the treatment effects model, which boosts the indirect effect of changes in beliefs about problem diffusion. People who think problems are diffuse like the NEP better, so the NEP can actually increase attitudinal support by convincing people everybody in the estuary needs to change to solve environmental problems. Hence, education about non-point source pollution can actually serve as a strategic policy tool for increasing political support for the NEP among estuary stakeholders. The importance of fairness evaluations also shows up in the relatively large indirect effects, especially on *cooperation*. Overall, these analyses suggest the NEP not only directly increases attitudinal support among those stakeholders with congruent belief systems, but also indirectly increases attitudinal support by changing beliefs regarding the benefits and transaction costs of collective action.

### **Conclusion**

The findings in this paper advance the study of collective action and governance in three ways. First, I demonstrate the utility of a transaction cost approach to governance by showing how policy stakeholders' beliefs about the benefits and costs of collective action are related to overall levels of attitudinal support. For environmental governance, the most important belief about benefits is the ability of the collective choice institution to resolve stakeholder conflict, and the most important belief reflecting transaction costs is the ability to effectively integrate science into the policy decisions. Fairness considerations are also critical for attitudinal support; stakeholders who believe their interests are fairly represented have confidence they will receive some benefits of collective action. These findings emphasize the political aspects of consensual institutions. Ecosystem management within the NEP is not just about changing the technical and scientific basis for policy decisions, it is about changing the governing style of collective choice institutions to be more inclusive, voluntary, and specialized.

Second, I show how institutions matter with respect to their influence on stakeholders' subjective belief systems. Consistent with the hypothesis that consensual institutions reduce the transaction costs of estuary governance, the NEP appears to directly increase levels of attitudinal support, especially among non-governmental actors who are enjoying a more substantial role in environmental decision-making than in adversarial institutions. More interesting, however, is how the effects of the NEP are conditional on the basic policy-core beliefs of stakeholders. The NEP has a positive effect on stakeholders whose policy-core beliefs are congruent with the governing style of consensual institutions and the environmental goals of the NEP, but has a negative effect on those stakeholders who prefer the governance style of adversarial institutions. From the reverse perspective, the relationship between the policy-core and secondary elements of stakeholders' beliefs systems is conditional on the institutional context in which they

participate. In other words, beliefs systems are not independent of the social and institutional context in which political actors are making decisions. Institutions evolve to reflect a certain pattern of policy-core beliefs, and actors are unhappy when institutional changes violate those beliefs.

Furthermore, the NEP changes beliefs related to the benefits and transaction costs of collective action, and thus indirectly affects attitudinal support. To the extent these beliefs accurately track the benefits and transaction costs of collective action, the positive change in these beliefs provides additional evidence that the NEP is in fact reducing transaction costs. While this paper does not objectively measure transaction costs, governing institutions that reduce transaction costs by providing a good fit to the attributes of ecosystem collective action problems should change stakeholders' beliefs in the manner I observe.

Finally, the importance of the belief system-institution interactions and indirect effects points to the utility of merging the transaction cost approach's focus on the "objective" characteristics of economic and political situations with a focus on political actors' subjective representation of the task environment and the structure of belief systems. Due to bounded rationality, peoples' belief systems do not always correspond in obvious ways to political and economic analyses of the structure of the policy environment. However, people's beliefs about the task environment are the proximate causes of political behavior. At the very least, this discrepancy increases the noisiness of empirical models based on the rational actor assumption, and in some cases leads to political behavior that appears irrational from the analyst's perspective. Hence, further studies should explore the relationships between the structural aspects of a political action arena and the belief systems of political actors, in an effort to understand how the heuristics people use translate information from the environment into specific attitudes and behaviors.

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## Appendix: Variable Construction

Unless otherwise noted, all variables are measured on a disagree/agree scale with integer response values ranging between [0,10], with 0 = strongly disagree and 10 = strongly agree. Specific value labels are included in the descriptions below if needed. Questions preceded by an asterisk (\*) were reverse coded to minimize systematic response bias.

Question wording was slightly different for non-NEP and NEP respondents to reflect participation in different collective choice arenas. I display both NEP and non-NEP wording for the dependent variables to give a basic idea of the difference, but for brevity all other variables are reported with NEP wording. Specific wording for all questions is available from the author.

### *Dependent Variables*

#### Stakeholder Cooperation

NEP: There is a high level of teamwork between stakeholders in the partnership. Disagree/Agree.

Non-NEP: There is a high level of teamwork between stakeholders in making decisions about the estuary.

#### Estuary Policy Satisfaction

NEP: Are the proposed or agreed upon management actions considered by the partnership very likely to significantly improve the problem, very unlikely to significantly improve the problem, or somewhere in between? 0= Very unlikely to improve, 10= Very likely to improve

Non-NEP: How likely are current government policies to significantly improve the problems of your estuary? 0= Very unlikely to improve, 10= Very likely to improve

### *Independent Variables*

#### Problem Severity

Concerning the overall health of your estuary, do you think the problems associated with each issue listed below are very severe, not severe, or somewhere in between? 0= The problems are not severe, 10= The problems are very severe.

#### Conflict Resolution\*

When conflicts arise, do you think that you can resolve conflicts to the satisfaction of your organization with the partnership, or do you think your organization will need to shift the dispute to courts, political, or other administrative arenas? 0= Resolve conflict inside partnership, 10= Shift disputes outside partnership.

## Science

On average, do you perceive the level of scientific understanding about the causes and causes of problems in your estuary to be very inadequate, very adequate, or somewhere in between? 0 = Scientific understanding is very inadequate, 10= Scientific understanding is very adequate.

## Problem Diffusion

Would you say that a full resolution of the problem would require changes in the activities or behavior of a small number of citizens and businesses, would it require changes of almost everyone in the estuary, or somewhere in between? 0= Only a small number would need to change, 10= Almost everybody would need to change.

## External Decisions

Almost all major decisions affecting estuary issues are made outside the partnership. Disagree/Agree.

## Procedural Fairness (alpha= .76)

1. Overall, the decision-making process in the partnership is fair to all stakeholders. Disagree/Agree.
2. My organization's interests and concerns are adequately represented in the partnership. Disagree/Agree.

## Economic Domination

Economic interest groups have an undue influence on partnership decisions. Disagree/Agree.

## Expert Domination

The partnership is dominated by experts and administrators. Disagree/Agree.

## Environmentalism

In general, how would you describe your policy orientation on estuary issues when tradeoffs between environmental protection and economic development are important? 1-7 scale; 1= pro-development, 7= pro-environment.

## Government Role (alpha = .70)

1. Preserving the rights of individual citizens is more important than protecting the environment. Disagree/Agree.
2. In general, government agencies and regulations intrude too much on the daily lives of private citizens. Disagree/Agree.

## Inclusiveness

Maximizing the scope of public participation in environmental policy improves policy effectiveness. Disagree/Agree.

## Number of Allies



Think about three people or organizations on which you have relied most heavily in dealing with estuary issues during the past year. Consider the full range of stakeholders, including government agencies, interest groups, and local officials. Please write the full name of the individual and/or organization in the space below. Again, all information will be held in confidence. Variable constructed by summing the number of mentions.

### Entrepreneur

Sometimes, a single individual can make a big difference in watershed partnerships, helping to call attention to an issue or getting people to cooperate when they might not otherwise have been able to work together. Is there a stakeholder in your estuary who is critical in maintaining or energizing the partnership? 0= No, 1= Yes.

### Trust

Thinking about the range of contacts you have had with other stakeholders, do you completely trust these stakeholders to fulfill the promises and obligations made on each issue in the context of the partnership, completely distrust them, or somewhere in between? 0= Completely distrust, 10= Completely trust.

**Table 1. Types of Collective Choice Institutions for Environmental Governance**

<u>Consensual (NEP)</u>	<u>Adversarial (Non-NEP)</u>
<i>Inclusive:</i> Collective decision-making includes all stakeholders who stand to gain from solving a collective action problem.	<i>Exclusive:</i> Decision-making limited to an elite subset of stakeholders.
<i>Voluntary:</i> Rule compliance insured by norms of cooperation and incentives.	<i>Coercive:</i> Rule compliance insured by penalties.
<i>Specialized:</i> Rule structure customized for a particular collective dilemma.	<i>Standardized:</i> Rule structure applies to broad classes of collective dilemmas.

**Table 2. Cross-Tabulation of Stakeholder Type by Federal Level**

<i>Federal Level</i>	<i>Stakeholder Type</i>					<u>Total</u>
	<u>Government</u>	<u>Environmental Group</u>	<u>Business Group</u>	<u>Research and Education</u>	<u>Other</u>	
National	134 (11.6%)	16 (1.4%)	19 (1.7%)	23 (2.0%)	22 (1.9%)	214 (18.6%)
State	229 (19.9%)	43 (3.7%)	26 (2.3%)	32 (2.8%)	47 (4.1%)	377 (32.7%)
Regional	94 (8.2%)	37 (3.2%)	27 (2.3%)	14 (1.2%)	46 (3.9%)	217 (18.8%)
Local	170 (14.8%)	39 (3.4%)	28 (2.4%)	3 (0.3%)	54 (4.7%)	294 (25.5%)
<u>Other</u>	<u>16 (1.4%)</u>	<u>5 (0.4%)</u>	<u>10 (0.9%)</u>	<u>6 (0.5%)</u>	<u>13 (1.1%)</u>	<u>50 (4.3%)</u>
Total	643 (56.8%)	140 (12.1%)	110 (9.5%)	78 (6.8%)	181 (15.7%)	1152 (100%)

**Table 3: Treatment Effects Regression Models for Estuary Policy Effectiveness**

Independent Variables	With Policy Belief Interactions	Without Policy Belief Interactions
<i>Benefits</i>		
Problem Severity	.002 (.030)	.018 (.031)
Conflict Resolution	.058 (.023)**	.059 (.023)*
<i>Transaction Costs</i>		
Scientific Knowledge	.169 (.029)**	.169 (.029)**
Problem Diffusion	-.180 (.044)**	.002 (.025)
External Decisions	-.093 (.021)**	-.080 (.021)**
<i>Fairness Evaluations</i>		
Procedural Fairness	.244 (.037)**	.255 (.038)**
Business Domination	-.066 (.023)**	-.081 (.023)**
Expert Domination	.012 (.024)	.015 (.025)
<i>Social Capital</i>		
Trust	.123 (.033)**	.126 (.033)**
Number of Allies	.005 (.005)	.006 (.005)
Leadership	-.007 (.012)	-.007 (.012)
<i>Policy-core Beliefs</i>		
Government Role	.004 (.052)	.002 (.030)
Environmentalism	-.098 (.058)^	.005 (.029)
Inclusiveness	-.115 (.050)*	-.004 (.028)
<i>Institutional Factors</i>		
NEP Estuary	-.289 (.079)**	.098 (.028)**
Government Actor	.075 (.022)**	.065 (.023)**
NEP Estuary X Government Actor	-.073 (.026)**	-.062 (.027)*
<i>Policy Belief Interactions</i>		
NEP X Problem Diffusion	.261 (.053)**	----
NEP X Government Role	<.001 (.026)	----
NEP X Environmentalism	.132 (.066)*	----
NEP X Inclusiveness	.170 (.060)**	----
Constant	.522 (.075)**	.234 (.052)**
<u>Coefficient Estimates For Probit Selection Equation</u>		
<i>Attitudinal Factors</i>		
Average Scientific Knowledge	10.971 (1.85)**	10.979 (1.85)**
Average Trust	15.825 (2.210)**	15.840 (2.214)**
Average External Decisions	7.544 (1.341)**	7.543 (1.340)**
<i>Geographic Factors</i>		
Estuary Area	.008 (.002)**	.008 (.002)**
Population Density 1980	.003 (.001)**	.003 (.001)**
% Agricultural Land	-.038 (.013)**	-.038 (.013)**
% Rangeland	-.023 (.008)**	-.023 (.008)**
% Forest land	-.031 (.007)**	-.031 (.007)**
Constant	-17.160 (1.86)**	-17.166 (1.866)**
<u>Diagnostic Statistics for Selection Bias</u>		
$\rho$	-.008 (.072)	.005 (.071)
$\sigma$	.179 (.004)**	.194 (.004)**
$\lambda =(\rho*\sigma)$	-.002 (.012)	.107 (.013)

---

Entries in cells are coefficient estimates from maximum likelihood treatment effects models. Standard errors in parentheses. Hypothesis tests of coefficient=0,  $\wedge p < .10$ ,  $*p < .05$ ,  $**p < .01$ . N= 1173 for both models.

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**Table 4: Treatment Effects Regression Models for Perceived Stakeholder Cooperation**

Independent Variables	With Policy Belief Interactions	Without Policy Belief Interactions
<i>Benefits</i>		
Problem Severity	-.040 (.028)	-.036 (.028)
Conflict Resolution	.023 (.023)	.022 (.023)
<i>Transaction Costs</i>		
Scientific Knowledge	.070 (.027)**	.071(.027)**
Problem Diffusion	-.106 (.046)**	-.014 (.024)
External Decisions	-.041 (.021)^	-.036 (.021)^
<i>Fairness Evaluations</i>		
Procedural Fairness	.437 (.033)**	.438 (.033)**
Business Domination	-.051 (.023)*	-.056 (.022)*
Expert Domination	-.029 (.022)	-.028 (.022)
<i>Social Capital</i>		
Trust	.242 (.033)**	.244 (.033)**
Number of Allies	-.002 (.005)	-.001 (.004)
Leadership	.029 (.011)**	.030 (.011)**
<i>Policy-core Beliefs</i>		
Government Role	.010 (.053)	-.009 (.027)
Environmentalism	-.040 (.059)	.035 (.028)
Inclusiveness	.009 (.058)	.030 (.026)
<i>Institutional Factors</i>		
NEP Estuary	-.006 (.022)	.063 (.024)**
Government Actor	.026 (.022)	.021 (.022)
NEP Estuary X Government Actor	-.040 (.026)	-.035 (.025)
<i>Policy Belief Interactions</i>		
NEP X Problem Diffusion	.129 (.053)**	----
NEP X Government Role	-.025 (.063)	----
NEP X Environmentalism	-.008 (.068)	----
NEP X Inclusiveness	.009 (.058)	----
Constant	.176 (.076)	.126 (.051)**
<u>Coefficient Estimates for Probit Selection Equation</u>		
<i>Attitudinal Factors</i>		
Average Scientific Knowledge	10.939 (1.846)**	10.945 (1.856)**
Average Trust	15.887 (2.220)**	15.874 (2.218)**
Average External Decisions	7.488 (1.349)**	7.498 (1.34)**
<i>Geographic Factors</i>		
Estuary Area	.008 (.002)**	.008 (.002)**
Population Density 1980	.003 (.001)**	.003 (.001)**
% Agricultural Land	-.038 (.013)**	-.038 (.013)**
% Rangeland	-.023 (.008)**	-.023 (.008)**
% Forest land	-.031 (.007)**	-.031 (.007)**
Constant	-17.149 (1.869)**	-17.160 (1.863)**
<u>Diagnostic Statistics for Selection Bias</u>		
$\rho$	-.032 (.076)	-.025 (.075)
$\sigma$	.180 (.004)**	.181 (.004)**
$\lambda = (\rho * \sigma)$	-.006 (.014)	-.005 (.014)

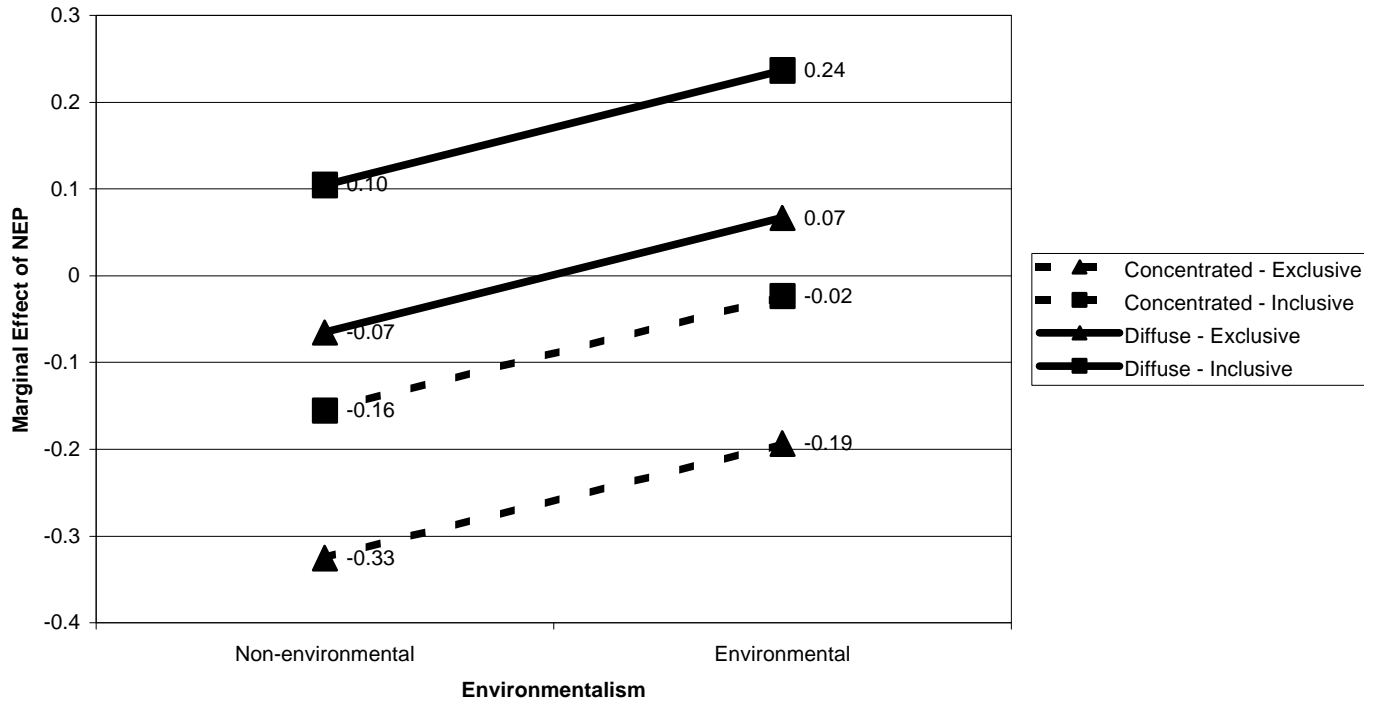
Entries in cells are coefficient estimates from maximum likelihood treatment effects models. Standard errors in parentheses. Hypothesis tests of coefficient=0, ^p< .10, \*p< .05, \*\*p< .01. N= 1173 for both models.

**Table 5. Indirect Effects of the NEP on Attitudinal Support**

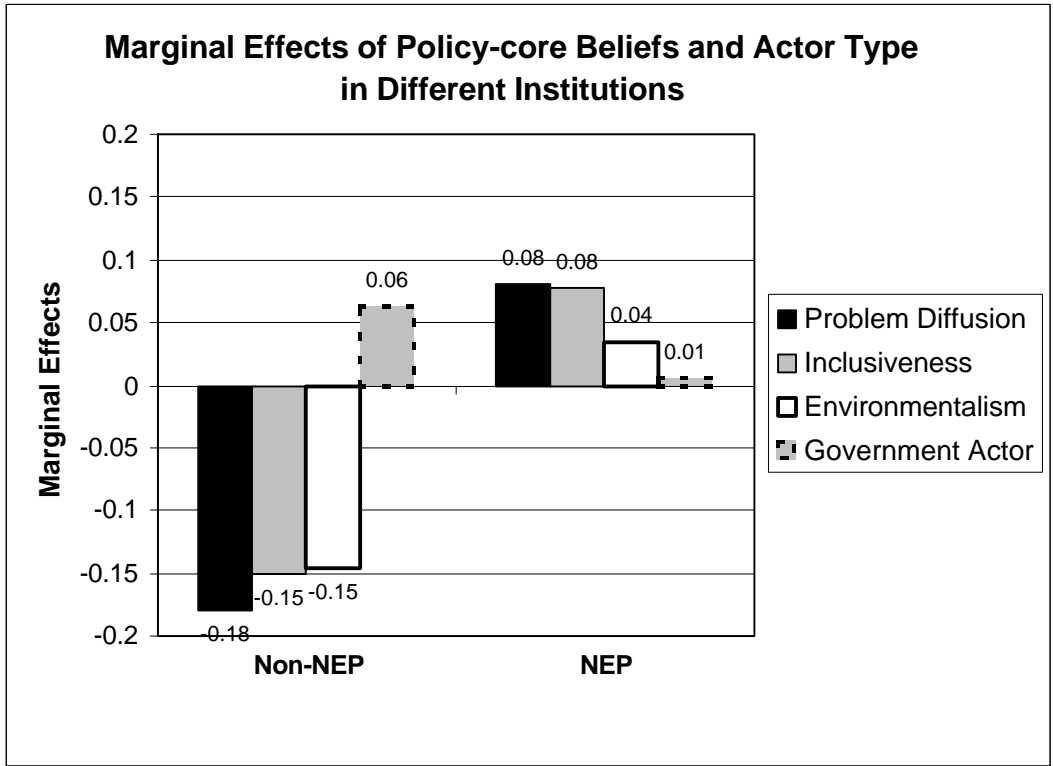
Predictors of Attitudinal Support	Bivariate Regression Coefficient	Indirect Effect on Policy Satisfaction	Indirect Effect on Perceived Cooperation
<i>Benefits</i>			
Problem Severity	-.020 (.014)	---	---
Conflict Resolution	.149 (.018)**	.009	.003
<i>Transaction Costs</i>			
Problem Diffusion	.083 (.016)**	.171	.081
Scientific Knowledge	.052 (.014)**	.009	.004
External Decisions	-.004 (.019)	---	---
<i>Fairness Evaluations</i>			
Procedural Fairness	.107 (.014)**	.026	.047
Economic Domination	-.154 (.018)**	.010	.008
Administrative Domination	-.019 (.016)	---	---
<i>Social Capital</i>			
Trust	.045 (.013)**	.006	.010

Cell entries in column two are unstandardized bivariate regression coefficients using the NEP dummy as the independent variable, with standard errors in parentheses. Columns three and four are the indirect effects of the NEP on both measures of attitudinal support for significant bivariate relationships. ^ p< .10, \*p< .05, \*\*p< .01

Marginal Effect of NEP as a Function of Policy-Core Beliefs



Dear Reader: I apologize for the lousy graphics on the bar graphs. They were very artistic until translated into PDF, so I had to change them to a simpler format.





## **The Limits of Civic Environmentalism**

Summarization by ELI with Statistical Remarks by Troy Abel\*

Presented by Troy Abel, Southern Illinois University, Edwardsville

\* This paper introduces research that Troy Abel presented to the U.S. Environmental Protection Agency Office of Economy and Environment, National Center for Environmental Research and the National Science Foundation, Decision, Risk, and Management Science Program workshop, “Community Based Environmental Decision Making,” held on May 9, 2000, at the National Rural Electric Cooperative Association Conference Center in Arlington, Virginia. Funds from the Joseph Fisher Fellowship and National Science Foundation grant SBR-9815876 supported this effort. I am grateful for the research assistance of Mary Beth Chrestman, Denise Hanchulak, Jabeen Aktar, Jason Townsend, Heonyol Kwon and Rich Radil. Many of these remarks are also the product of my collaboration with Mark Stephan.

## The Limits of Civic Environmentalism

Troy D. Abel

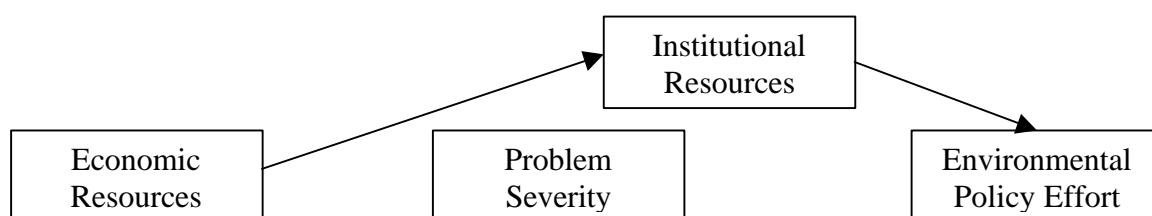
Assistant Professor

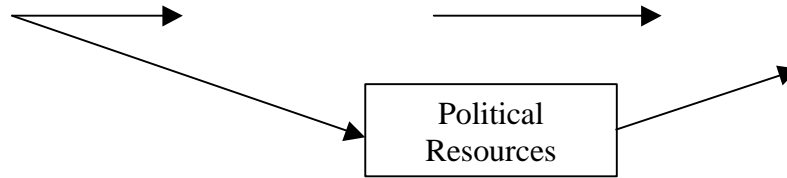
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Edwardsville, IL 62026

My research attempts to answer the question of what factors influence a community's propensity to go beyond environmental compliance. I looked at this question using quantitative analysis and, more recently with co-author Mark Stephan, qualitative methods. Our combination of multivariate regression, case studies, and interviews examining local environmental initiatives found that politics explains most of these efforts; stable communities are less likely to adopt beyond compliance policies; and participatory decision making does not necessarily incorporate the views of the general citizenry.

My research question immediately introduces two operational issues: how to measure “community cooperation” and how to measure “environmental performance.” For community cooperation, I looked at the presence of social capital, or civicness, which some suggest should positively influence communities to go beyond environmental compliance. Social capital refers to a web of cooperative relationships between citizens that facilitate a community’s ability to resolve collective action problems. For environmental performance, I looked for communities voluntarily pursuing environmental activities independent of state or federal regulations. I found 53 communities who adopted local resolutions to reduce greenhouse gas production as part of the Cities for Climate Protection program.

This diagrammatic model illustrates the causal framework I tested with multivariate regression techniques (adapted from Ringquist, 1993).





In this model, economic, institutional, political resources, and problem severity all influence the environmental policy effort. My research focuses on the influence of political resources within this framework.

To measure civicness as a political resource, I primarily looked to two previous studies. The first is by Putnam (1983; 1993), who studied regional government performance in Italy and specified potentially influential variables such as the number of civic associations, newspaper readership, referenda turnout and preference voting to create a civic community index. Putnam postulated that this “social capital” index would correlate with a region’s governmental effectiveness. The Italian research found that northern Italy had both a higher civic index and better regional governmental performance. Social capital thus became a postulated precondition for making democratic practices work.

A second study, by Irwin et al. (1997), looked at American counties, and considered the number of small and retail firms, civic associations, small manufacturers and certain religious denominations as factors that would be related to “nonmigration,” or stability, at the community level. This index seems to be problematic, as it finds that the most civic communities in the country are Los Angeles, New York and Houston. Because these places contain very large numbers of small firms, non-profit associations, small manufacturers and adherents to civic denominations; statistical associations may be problematic. I addressed this problem by standardizing the variables by population and found that a slightly different set of items clustered together in subsequent factor analyses.

## **Multivariate Analysis**

For my quantitative study, two alternative operational procedures were conducted to determine the existence and scope of an unmeasured or latent “civicness” variable. First, similar variables were factor analyzed but after standardizing by the total population for each variable. For instance, the number of small retail firms was calculated as a percentage of all retail firms

and the number of churches or voluntary associations were percentaged in relation to all non-profit associations. Second, Internal Revenue Service (IRS) data collected on most U.S. non-profits provided the association data. This data set was obtained on CD-ROM from the Urban Institute's National Center on Charitable Statistics (IRS, 1997).

To test for the existence of a county's "civic" dimension, a modification of Armor's (1974) method of principal components analysis was followed. Multiple items were factor analyzed to determine which ones covaried together. Candidate items were based on previous research (Irwin et al., 1997a; Irwin et al., 1997b; Irwin et al., 1998; Tolbert et al., 1998) and included 10 measures: (1) the nonmigration rate, (2) percent of persons 25 or older with a HS degree, (3) percent of households with children, (4) percent of persons working in their county of residence, (5) percent of owner occupied housing, (6) median age, (7) per capita presidential vote, (8) percent retail individual proprietorships, (9) percent retail eating and drinking establishments, and (10) proportion of voluntary non-profit membership associations among all non-profits.

To identify variables loading on different factors, an iterative PCA was conducted where the number of factors was decreased successively and followed by a varimax rotation. One rule for determining how many "latent" variables exist is to retain factors with eigenvalues greater than one. But, changes in the eigenvalues and explained proportional co-variance often suggest the inclusion of fewer dimensions. Thus, factors were forcibly lowered on subsequent rotations to determine latent variable stability, the consistency of certain items loading on particular dimensions, and consistency with a priori expectations.<sup>25</sup> Generally, items loading above an absolute value of 0.4 were considered to be scale components.

After four PCA iterations, the analysis was adjusted for population outliers and produced results which indicated that two latent factors existed based on the proportional co-variance of the ten variables.<sup>26</sup> Table one displays the four items that loaded on the first factor which could be construed as one dimension of a county's civic infrastructure. They were: (1) percent of persons 25 and older with a HS education; (2) percent of owner occupied housing; (3) percent of retail trade that are individual proprietorships; and (4) percent of non-profit organizations that are

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<sup>25</sup> David Armor suggested this technique after several conversations we had about my research.

<sup>26</sup> The most obvious outliers, very small and large counties, were omitted by including only cases above 25,000 and below 4,000,000 in population.

membership associations.<sup>27</sup> To evaluate whether these items should be combined, an alpha reliability was conducted and resulted in a value of 0.72 (Carmines and Zeller, 1979).

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<sup>27</sup> The first factor produced an eigenvalue of 2.41 and explained approximately 48% of co-variation in the eight items.

TABLE 1

**“Civic Infrastructure Index”**

Item	Factor Loading
Persons 25 & older with HS degree (%)	0.78442
Owner occupied housing (%)	0.73824
Retail trade individual proprietorships (%)	0.72434
Membership non-profit associations (%)	0.75068
Eigenvalue = 2.24850 Cumulative co-variation explained = 0.5621 Alpha reliability = 0.7400	

The four items represent an alternative operational definition of a postulated “unmeasured” civic dimension for American counties. The items were used to estimate factor scores for a new variable based on the PCA.<sup>28</sup>

My prior expectation was that larger, richer, Democratic and more civic counties would exhibit a propensity to go beyond environmental compliance. Table 1 below displays the results of a multivariate model of climate change policy adoption propensity.<sup>29</sup> The statistically significant chi-square test of the log-likelihood ratio indicates that the null hypothesis stating each independent variable except the constant are equal to zero can be rejected with 99.9% confidence. The effect of each independent variable can be evaluated in logistic regression by utilizing an odds ratio. The odds ratio can be thought of as a measure of association and analogous to a relative risk measure.<sup>30</sup> Moreover, while there may be statistical significance, a value of one indicates that the relationship between an independent and dependent variable is very weak. Values greater than one are indicative of a positive relationship while odds ratios

<sup>28</sup> A factor score is produced by standardizing each variable to zero mean and unit; variance; weighted with coefficients; and summed for the factor. The new factor variable has a mean approximately equal to zero and a standard deviation equal to one.

<sup>29</sup> Data analysis is conducted using multiple logistic regression. A number of candidate independent variables representing the resource, policy, and political elements were available from Census and IRS data sources. To select variables for inclusion in the multivariate logistic regression models, Hosmer and Lemeshow’s (Hosmer and Lemeshow 1989) four step method was generally followed. A logit regression model is an appropriate technique to analyze multivariate models where the dependent variable is dichotomous (McFadden 1974; McFadden 1975; McFadden 1976; Maddala 1983; King 1986; Hosmer and Lemeshow 1989; Maddala 1992; Kleinbaum 1994). The most parsimonious model is presented here. For a more detailed data analysis and the model building sequence, see Abel (1998).

<sup>30</sup>(See Kleinbaum 1994).

less than one signify a negative relationship. The model yields a 15 percent reduction in predictive error over the modal category (no adoption).<sup>31</sup>

Table 1. Logistic Regression of Climate Change Policy Adoption and *NACo Innovation Recognition*

Variable	Odds Ratio			z-score		
	DV = climate adoption DV = <i>NACO innovation award</i>					
Resources						
Population	<b>0.95</b> (0.12)	<b>1.16</b> (0.05)	<b>1.12</b> (0.05)	-0.38	3.71***	2.76**
Per capita local government revenues	<b>1.60</b> (0.73)	<b>2.74</b> (0.81)	<b>1.90</b> (0.38)	1.03	3.41**	3.31**
Policy						
Government employees per capita	<b>1.00</b> (.003)	<b>0.63</b> (0.09)	<b>0.65</b> (0.07)	0.23	-3.09**	-3.92***
Politics						
Democratic presidential vote (%)	<b>1.15</b> (.039)	<b>4.40</b> (1.41)	<b>0.84</b> (0.12)	4.37***	4.62***	-1.16
Civic index      PCA index	<b>7.38</b> (3.28)	<b>0.53</b> (0.12)	<b>0.50</b> (0.06)	4.49***	-2.83**	-6.16***
Number of Cases	1,459	1,460	1,460			
Log likelihood ratio	-111.2***	-117.35***	-429.24***			
Pseudo-R <sup>2</sup>	0.0394	0.3605	0.1732			
% Reduction of Error	17.5	15.0	10.8			
					Max VIF = 10.30	
					Max VIF = 1.61	
					<b>Max VIF = 1.63</b>	
*significant at 0.05, **significant at 0.01, ***significant at 0.001	Standard errors are in parentheses					

The first column of table 3 presents a multivariate model of policy adoption propensity including the civic index developed by Irwin, Tolbert and Lyson while the latter two columns utilizes my standardized index. Population is positively correlated with policy adoption propensity supporting one proposition. However the odds ratio (close to one) indicates population is a relatively weak determinant. As expected, the per capita local government revenue coefficient is positive and statistically significant. The odds ratio indicates that for every one more thousand dollars of per capita local revenues, the likelihood of voluntary climate change policy adoption

<sup>31</sup> Another statistical issue arose in this analysis because of the large split of cases between the categories of the dependent variable (40 adoptions and 1,460 non-adoptions). Maddala (1983, 1992) indicated that large disparities between the dichotomous categories of the dependent variable would affect the estimation of the constant term and consequently, any predictive statistics such as the pseudo-R<sup>2</sup> or classification estimates. He suggested undersampling the disproportionately larger groups and in this case, the non-adopters. A 10% random sample of 1,420 non-adopters produced a sample of N = 184 and multiple logistic regression yielded similar coefficients and better predictive results (pseudo-R<sup>2</sup> = 0.4099 and Reduction Of Error = 55.0%).

nearly tripled. This association makes good theoretical sense and replicates the findings of other state and local policy output studies.<sup>32</sup> Unexpectedly, my proposition about government capacity is not supported by the statistically significant but inverse correlation between policy adoption propensity and local government employees per capita.<sup>33</sup>

Democratic presidential vote (%) is positively associated with policy adoption propensity, thus, one of the political propositions is supported by the data analysis. Moreover, the odds ratio indicates that Democratic partisanship has the strongest association with policy adoption propensity. For every ten percent increase in a county's Democratic vote for president, the likelihood of voluntary policy adoption quadruples. This association corroborates the classic proposition that politics matters and the studies that have found it to be related to policy outputs.<sup>34</sup> Finally, and surprisingly, my civic proposition is not supported by the analysis as the civic factor's odds ratio is less than one indicating it has an inverse association with policy adoption propensity. For every one-unit increase in a county's PCA score, the likelihood of policy adoption was 0.53 times lower. This finding is antithetical to most theory and empirical work on the influence of social capital or civicness. In short, places with a higher PCA score are less likely to voluntarily adopt a policy to reduce CO<sub>2</sub> emissions.

My standardized civic measure in fact appears to be a limiting factor for communities who are not going beyond compliance. This kind of analysis follows a growing literature examining civic environmentalism, or the increasing participation of citizens in environmental decisions (John 1993; Siranni and Friedland 1997). In short, although my index represents a standardized measure of stability, it seems to represent the "wrong kind of civicness" for civic environmentalism. Therefore, local patterns of strong associational networks may inhibit political and policy efforts to move communities beyond environmental compliance.

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<sup>32</sup> (Dye 1966; Hofferbert 1966; Dye and Gray 1980; Lester, Franke et al. 1983; Lester, Franke et al. 1983; Lester 1990; Lester and Lombard 1990; Davis and Feiock 1992; Ringquist 1993) Other resource variables that did not have an affect on policy adoption propensity and were omitted from the model included number of manufacturers, number of small manufacturers, per capita income, median family income, and median household income. In fact, median family income will be used as a dependent variable below.

<sup>33</sup> Several other variables representing local organizational capacity or policy commitments were tested and found to be insignificant determinants including per capita expenditures for education, health, welfare, highways, fire, and police.

<sup>34</sup> (Key and Jr. 1949; Plotnick and Winters 1985; Wright, Erikson et al. 1987; Calvert 1989; Erikson, Wright et al. 1989) Other political variables, % Presidential vote and Republican vote, were also significant but their odds ratios were lower indicating they are not as influential as the Democratic partisanship variable.



## **Socioeconomic Performance**

Economic prosperity is another area where civic or social capital factors are postulated to be influential. The noted economist Michael Porter recently argued that: “The enduring competitive advantages in a global economy lie increasingly in local things—knowledge, relationships, and motivation that distant rivals cannot match” (1998, p. 78). This thesis reflects yet another dimension of the influence of social capital, that is, as a determinant of economic performance. Putnam argued: “The social capital embodied in norms and networks of civic engagement seems to be a precondition for economic development, as well as for effective government” (Putnam, 1993b, p. 36). Earlier, Mark Granovetter’s (1973; 1983; 1985) research implicated embedded social networks, mechanisms facilitating social capital, with more effective economic transactions such as job searches and contracting. Again, the work of Tolbert, Lyson and Irwin tested these theories about social capital at the county level. They advance the idea that institutions of local capitalism include small and medium sized firms, the number of small retail establishments, the number of family owned farms, and the number of associations (Tolbert, Lyson et al. 1998).

In a recent study, they tested the thesis that places with more of these local institutions would have greater stocks of civiness, and thus higher socioeconomic levels. They operationalized socioeconomic levels with four dependent variables; income, inequality, poverty, and unemployment. After controlling for other variables such as education, the small manufacturer, family farm, and religious items varied as hypothesized. However, contrary to their thesis, the association variable was not statistically significant in any model (Tolbert, Lyson et al. 1998).

## **Another Civic Effects Estimation**

The second quantitative model of this paper follows their efforts and tests the effect of county variables including my modified civic index on median household income. Can the empirical framework depicted in table one help explain local economic prosperity as postulated by Tolbert, Lyson, and Irwin?

## **Economic Prosperity**

Table 2 below first replicates the same empirical model delineated above where certain resource, political, and institutional factors are tested with median family income as the dependent

variable. Because of concerns with the first dependent variable, this continues as a validation of the multivariate model's explanatory power.

Table 2. Ordinary Least Squares Regression on Median Family Income

Variable	Coefficient	t-score
Resources		
Population	<b>.006</b> (.001)	8.07***
Per capita local government revenues	<b>4.57</b> (0.42)	10.95**
Policy		
Government employees per capita	<b>-212.5</b> (18.2)	-11.7**
Politics		
Democratic presidential vote (%)	<b>-55.6</b> (28.3)	-1.96***
PCA factor score	<b>-1186</b> (200.4)	-5.92**
Number of Cases	1,460	Max VIF = 1.63
F- ratio	104.54***	
Adjusted-R <sup>2</sup>	0.2619	
<i>*significant at 0.05, **significant at 0.01, ***significant at 0.001</i>	Standard errors are in parentheses	

The multiple regression above confirms that the empirical framework presented I developed above provides explanatory power for median family income variation in American counties. Population and local government revenues had a positive and statistically significant relationship with median family income. The percentage Democratic vote exhibited a significant negative relation to a locality's prosperity. Contrary to expectations, the PCA index produced a significant and negative association to median family income. This result is consistent with the findings above with different dependent variables. The stable civic index also appears to be a limiting factor for economic prosperity.

## Case Studies and Interviews

To examine the environmental policy propensity question in another way, Mark Stephan and I conducted a pilot survey of local officials, using a database from Renew America. We emphasize that civic environmentalism means that citizens, not just stakeholders, scientists or

elites, participate in the environmental policy making process. In the survey, we asked local officials if their programs surpass or are independent of Federal or State requirements (program scope), whether they include citizen involvement, whether citizens are influential in the process, and at what stage of policy citizens exert influence. Readers should realize that these results are from a pilot survey of 50 respondents. I intend to generate a more structured instrument to draw from a more representative sample of local jurisdictions in the United States later in the research project. A fuller discussion of this research will be available this fall in an issue of the *American Behavioral Scientist*.

On the program scope questions, an overwhelming majority responded that they either surpassed or were independent of State and Federal requirements. Local respondents felt that citizens were influential in 65% of the cases. The most common participatory mechanism reported in the pilot was the use of public meetings followed by the use of citizen advisory groups. Citizen respondents seemed to be involved throughout the policy making process with slightly more involvement at the agenda setting and implementation stages.

We argue that the most important question in the pilot survey was about who the participants are. We wanted to know if the environmental decision making process is bringing in new citizens or if participants are the typical array of activists, community leaders, higher educated and higher income residents that normally get involved in these types of processes. To answer this question, We conducted 16 follow-up telephone interviews of situations where citizens were deemed influential in the process by the pilot respondents. Six respondents characterized participants as unrepresentative of the community and 15 said participants were exclusively community activists. Most participants also characterized environmental policy participants as wealthier and better educated than the general population.

## **Conclusion**

To summarize, we found that local politics explains most of a locality's propensity to do more for the environment. Stability, on the other hand, seems to limit civic environmentalism. In the processes studied, citizen participants were not new to community efforts. So far, civic environmentalism is not as civic as we would like it to be.

I am conducting another research project that illustrates this conclusion. For another paper, I examined over four hundred EPA environmental justice grants (Abel 2000). I began by

characterizing the types of projects funded to get a sense of what capacities the program aimed to cultivate. I identified four types of capacities: technical, informational, political and civic. Less than ten percent of the grants fell into the civic capacity category. I argue that civic capacity: efforts to make environmental policy processes inclusive and build citizen competence should be emphasized if we want to encourage civic environmentalism. For future research directions, I will work on constructing a better community civic index and doing a comparison of communities that are beyond compliance and those that are short of compliance. I hope my research will contribute to the development of policies that include new citizens and enhance their competence in the environmental decision making process.

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## **Policy Discussion for Session III**

### **LINKING COMMUNITY-BASED PROCESS TO MEASURABLE ENVIRONMENTAL, ECONOMIC AND QUALITY-OF-LIFE IMPROVEMENT**

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The opinions expressed in these remarks are those of the author and do not reflect positions or policies of the US EPA.

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## **Community-based environmental decision making - reaching for better results through better partnerships.**

Over the last six years EPA has had an increasing interest in working more effectively with communities as a partner in promoting stewardship and sustainability. In February 1999, EPA released its *Framework for Community-Based Environmental Protection* (EPA, 1999) to define why and how it would implement community-based approaches. EPA's principle goals in adopting community-based approaches focused on:

- doing a better job in achieving the Agency's programmatic goals (clean air, water, etc.);
- supporting communities' efforts to ensure long-term ecological, economic, and quality-of-life benefits;
- helping communities address environmental concerns that were not amenable to traditional federal regulatory concerns;
- and promoting integration of EPA programs to enhance community-based decision making.

EPA's interest in community-based approaches came from a desire to help communities protect the ecosystems, ecological resources and ecosystem services (ESA, 1997) that are the foundations of local economies and quality of life. EPA also recognized that traditional regulatory approaches *alone*, would not be adequate to meet these environmental challenges for building a more sustainable future. EPA also understood that citizens in the US are reluctant to grant broad regulatory powers over land use to any level of government. Therefore, collaborative approaches that rely on the broadest stakeholder participation and consensus processes seemed to offer the greatest potential for protecting ecosystem goods and services.

For EPA, the community-based environmental protection (CBEP) approach required:

- a focus on addressing the collective issues within a definable geographic area
- working collaboratively with a full range of stakeholders through effective partnership
- assessing the quality of land, air, water and living resources in a place as a whole
- working to help communities integrate environmental, economic and social objectives and promote local stewardship of all community resources
- working collaboratively to identify and implement the use of the most appropriate public and private, regulatory and non-regulatory tools
- using an adaptive management approach that relied upon ongoing assessment information to feed decision processes.

EPA's strategy for incorporating and promoting this approach included incorporation of the approach for all EPA programs and regions; building capacity for states, tribes, local agencies and community groups; and carefully selecting places where EPA might work directly and as a prominent partner to optimize the use of resources for achieving success. EPA recognized that its involvement with communities might change over time and might be different for each community. In some places, EPA as a Federal agency might be only indirectly involved, (e.g., providing data, information or referral) and conversely, in some places, in partnership with

community members and other agencies, EPA might take a leadership role for some or part of a community project. In the middle of this gradient may be a large number of places where EPA's role might be a mix of activities -- such as educator, advisor, grant source, facilitator.

In the development of the Agency's CBEP approach, EPA recognized the need for social science tools, methods and information to assist communities in identification of public perceptions, desires and beliefs as a necessary ingredient for community decision processes. Social science approaches may also provide tools such as "social marketing" to find the most effective ways to educate and influence beliefs and behaviors. Over the last 4 years, EPA has supported a community-based fellowship through a cooperative agreement with the Society for Applied Anthropology (SfAA). These fellowships provided technical assistance for social science assessments to communities by SfAA fellows. Similarly, EPA has been working on the development and pilot testing of tools for community profiling to help communities better identify public perceptions, beliefs and behaviors that would be significant issues for community-based environmental decision making.

### **Promoting community-based initiatives.**

The papers we heard this afternoon provide us with some precautionary tales about the nature of "devolution" of federal environmental programs and true community participation; about the circumstances that are likely to promote public participation on decision processes; and about the pitfalls of assessing public perceptions and motivations.

One aspect of the community-based approach that we had to recognize very early on as we began to frame the Agency's CBEP approach was that there was no single model of how place-based projects originated. Certainly, we recognized that local and county governments in many places had experience in more holistic approaches to environmental planning. Many local and county governments were moving away from more traditional "top-down" planning approaches and moving toward more inclusive processes that included tools like "visioning@" (EPA 230-B-96-003, 1997). Clearly, public concerns over issues such as sustainability and smart growth influenced the considerations of local government entities, and there was an acknowledgment from local governments that citizens were demanding a more active role. We also recognized a growing movement towards more "grass-roots", citizen-lead efforts where governments and local institutions may, or may not have been partners. We examined a number of models to describe how these efforts worked, included community-based education (e.g., Project Head Start) and public health (e.g., HIV/AIDS prevention, treatment and social services) organizations. These organizations identify their goals and derive their governance through broad community participation and leadership. In this model, local and state governments participate as advisor, resource provider, information resource, and liaison to higher levels of government. One challenge for each community is to identify suitable models for local stewardship and to integrate the activities of individuals, citizen groups and local governments with *a focus on environmental results* as an outcome of good and fair community processes. It would be an oversight not to acknowledge that in the United States there are old models of participatory

processes for conservation and community planning, including citizen conservation and zoning commissions at local and county levels, and even town meeting form of government.

In today's paper by Dr. Lubell we see evidence that a process that is perceived as fair and open and that minimizes the burden of "transaction costs" is important to encouraging wide community involvement. That paper also presents evidence that perceptions about the severity of environmental issues, the soundness of scientific information and the likelihood of positive outcomes may have an influence on peoples willingness to participate and support community action. The paper also provided evidence that the level of social capital within a community is a necessary ingredient to extensive public participation. These hypotheses are consistent with some of the observations we made in trying to develop case studies of community-based watershed protection efforts in two communities -- the Blackfoot watershed in Montana and in the Big Darby Creek watershed in central Ohio.

In the Blackfoot watershed, community members rather than county or state government lead the way in developing plans to protect a valuable and possibly endangered trout fishery. The state government provided scientific assessment information, but local land owners devised and voluntarily implemented strategies to protect stream bank and habitat by limiting the number of access areas for recreational use through private land. Their action apparently was effective in mitigating the need for regulatory approaches for protecting endangered species. In this case, the members of the local community perceived the gravity of the problem with the assistance of government agencies. Significant to the local landowners who were at the heart of this initiative were three perceptions:

- they shared a unique and valuable natural resource ("*A River Runs Through It*").
- the resource was at risk from unjudicious use and lack of conservation effort
- that only their collective action could preserve and protect the resource.

In the case of the Blackfoot, a western aversion to regulatory approaches, and the trust among community members on the watershed issues build through long evenings of discussion and debate were strong drivers in the creation of consolidated effort. Notably, there was an "institution of social capital" that played a very strong role in facilitating the community dialogue -- we should never underestimate the importance of the local tavern/restaurant in creating social capital!

In the second case, the Big Darby Creek watershed in Ohio, state government played a strong role in educating communities through assessments and public education and awareness programs. The link from government into the community was made most effectively through the local academics and conservation agents who "wear two hats" as both members of the local community and as an extension of the natural resource conservation agencies. The Creek contains several endangered species of fish and mollusks and is both an urban and rural recreational resource in the metropolitan Columbus area. Local fishing and hunting organizations became strong advocates for improved conservation and enthusiastic partners of government and academia in raising public awareness and facilitating community discussions about planning and best land use practices. While the threats to the Big Darby from rapid and

environmentally damaging patterns of suburbanization are very real and continuing, some progress has been made on agricultural land where local owners have begun to teach each other the value of better farming and land conservation practices. Equally important here were the perceptions of the importance of the resource, the decline of the condition of the natural resource, and the importance of collective voluntary action. A very key factor here, also was the trust that the community build among its members and with the state and local government over these issues.

I would like to suggest, however that sustaining a local effort involves making perceivable progress in solving problems. Without measurable progress toward an environmental or economic or social goal, these initiatives are very hard to sustain, losing participants who are frustrated by the high transactional cost with no apparent gain. I believe that from a community perspective, as Drs. Abel and Stephan identify, there is a need for results and accountability as communities assume more control over local environmental issues. Not only is this necessary for participation of the Federal agencies under the Government Performance and Results Act (GPRA), but it will be key to sustaining community involvement for long term stewardship.

To this end, I would propose that we (collectively) need to help communities understand their status and trends by developing better and more understandable indicators of environmental, economic and social progress that are applicable and useful at the community level. We need to link those indicators more closely to our measures of public perceptions and particularly public attitudes and behaviors in order to understand what community action models work most effectively under what circumstances to produce results. The good news is that there is progress in finding these types of indicators (Hart, 1999). The bad news is that we haven't made very good progress on integrating the social sciences, natural sciences and science of public administration in ways that help us use indicators to encourage public action through understanding, trust, and sustained civic participation.

### **What Are Useful Roles for the Federal Government?**

Dr. Lubell asks the question in his paper, “Do institutions matter?”. I believe that we are beginning to develop a body of evidence, although most of it anecdotal at this point, that for communities, the Federal government can be an important institution in supporting community initiatives. For the US EPA, clearly we envision continuing a strong role in implementing and overseeing the Federal environmental regulatory program since it provides a way to create an “environmental baseline” upon which communities can build to attain their long term sustainability goals. This Federal regulatory program provides a bulwark against any “race to the bottom” that could be created by the fragmentation of environmental standards and political winds at state and local levels that may drive political entities to opt for reduction in public expenditure or acceptance of economic growth strategies that sacrifice long term environmental and economic progress for ephemeral economic growth.

The EPA and other Federal agencies also have clear mandates in matters that cross state and tribal boundaries and the authorities and influence it can exert are important in addressing issues that occur at landscape and global scales. The Federal government also has the ability and authority to ensure that the interests of minority communities are considered within the context of community planning and community environmental initiatives. Most notably, the Federal government has the authority under Title VI of the Civil Rights Act to move or deny federal resources and assistance in support of minority communities’ concerns (Collin and Morris Collin, 1998). The Federal authority in this matter becomes all the more important when states are unsure about their authority or ability to act in these matters (Manry for the State of Florida, 1999).

In the 200 plus projects EPA has participated in over the last 6 years that are identified as “community-based”, Agency staff have played a variety of roles, such as:

- technical and analytical assistance for environmental assessments,
- assistance and training in group facilitation and community visioning,
- pilot testing community profiling techniques to ascertain community values and beliefs.

EPA has also provided monetary resources for community activities through grants to organizations that provide training, assessment assistance and policy analysis for local governments. One of EPA’s most valuable roles is in providing information on environmental conditions and change within communities. EPA has access to a tremendous amount of environmental information and data - and public access to these information resources is improving rapidly. Examples of information systems such “Envirofacts”, “Enviromapper”, and “Surf your Watershed” located on the EPA website provide citizens with instant access to information about their communities.

In today’s papers we heard evidence to suggest that the level of public awareness and knowledge about environmental issues and processes is an impediment to public participation in community decision processes. This suggests that EPA may find an important role in expanding its current environmental education initiatives for adults.

Similarly, it seems that EPA and other Federal and state/tribal agencies might be able to fill a significant information/education gap by considering what role they could play in creating state-level centers for community education and assistance for sustainability planning and implementation. Some of the existing models, such as the cooperative extension- land grant colleges and universities and the Natural Resource Conservation Service show us how government can support assistance networks for natural resource protection. I suggest that it might be worthwhile to create a pilot test for a state sustainability assistance center to see if such a center, perhaps at a land grant university could provide both hands-on assistance with environmental, economic and quality-of-life assessments; access to better local information and data; and educational opportunities focused at improving adult participation in civic process.

It seems likely that institutions such as these are more likely to find trust within communities because they are locally (or at least state) based and could become an institution, focused on sustainability goals and customer service. They are also more likely to work in scales of size and time that are relevant to local communities. They could also provide mentoring and evaluation to ensure accountability through successful outcomes. The applications of social sciences that we have discussed today become an important ingredient to supporting community decision processes.

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### **Policy Discussion for Session III by Bruce Tonn, University of Tennessee, Knoxville**

This short piece provides comments on the three papers presented in Session III: Cooperation in Environmental Decision Making of the Community-Based Environmental Decision Making Workshop organized by the EPA and NSF on May 9, 2000. Specific comments are provided about each paper as well as general comments that cut across all three papers. This commentary also highlights other important community-based environmental decision making research issues and discusses the need to consider how powerful national social, economic, and technology trends could impact future community-based environmental decision making.

#### *Comments on Attitudinal Support for Environmental Governance* by Mark Lubell

This paper explores the relationship between community-based environmental decision making process type and public participation. The hypotheses are that collaborative processes have characteristics that potential participants would find favorable and that such attitudes would then translate into increased participation. Stakeholders involved in decision making about thirty estuaries were surveyed. Twenty of the estuaries are part of the National Estuary Program, which involves collaborative decision making processes. The remaining ten estuaries are not part of this program.

This research demonstrates that collaborative programs have characteristics which potential stakeholders would find favorable. The set of variables used in the analysis is quite strong, as is the accompanying literature review and theoretical discussions. These mostly Likert scale variables measure important factors such as degree of collaboration, process effectiveness, problem severity, perceived fairness of the process, the locus of decision making authority (internal or external to the region), and whether the process is dominated by economic interest groups or experts and administrators. The paper also develops a strong transaction cost framework that explains participation decisions in terms of minimizing total environmental decision making transactions costs that must be expended to achieve one's goals. Many of the paper's specific hypotheses were supported by the statistical results.

I only have one straightforward suggestion for improving this paper. This involves providing the reader some additional information about the estuaries and stakeholders. A map of where the thirty estuaries are located and a table or two describing each estuary and its constellation of stakeholders would provide a foundation for the following theoretical analyses.

My other suggestions probably relate more to extensions of this research than to the current paper. One suggestion relates to fully implementing and tuning the use of the Azjen and Fishbien model. (1) This is an excellent model to apply to the study of public participation. The model has four elements, beliefs, attitudes, intentions and behaviors. With respect to public participation, one can model stakeholder's beliefs about environmental decision making processes, their attitudes about environmental decision-making processes emanating from their beliefs, their intentions to participate, and finally their ensuing participatory behaviors. It would

be exciting to add to the variable set described above, which mostly measures beliefs about decision making processes, variables that measure attitudes (e.g., which process characteristics are most favored by potential participants), intentions, and actually participatory behaviors. It would also be interesting to include in the model variables that capture characteristics of the region where the estuary is located as a proxy for potential cultural influences, and characteristics of each process being implemented in each estuary. For example, it is possible that how long a process has been operating may influence beliefs and attitudes about the process, regardless of whether it is collaborative or not.

#### Comments on *The Limits to Civic Environmentalism* by Troy Abel and Mark Stephan

The main purpose of this paper is to explore the relationship between devolution of environmental decision making responsibilities and public participation. It has been hypothesized by some that devolution will lead to increased public participation. This is an important hypothesis to explore because the state of environmental civiness is quite low in this country and the expectations about devolution can be quite high. To explore this hypothesis, program contacts for 107 municipal-based environmental programs highlighted by Renew America as having achieved success were surveyed about the participatory aspects of their programs. The data do not support the above hypothesis. Indeed, the data show that municipal environmental decision making is dominated by an elite corps of leading citizens, law makers and bureaucrats.

Conducting an analysis with regard to the above hypothesis is quite a challenging task. Here are several suggestions that the authors could consider as they continue their research in this area. Foremost, the programs included in the database need to be better described. Were the programs in the database indeed established to undertake new environmental responsibilities devolved to municipalities from federal and state governments? It is hard to discern from the paper. After all, municipalities have had a stable of environmental issues to contend with for many years, as related to land use, waste disposal, and local natural amenities, for example. It is also arguable whether many new local environment decision-making responsibilities have actually devolved to the municipalities. Additionally, many communities are instituting sustainability programs, not at the behest of state and federal governments but because of their own growing recognition of the needs to protect the environment. So, I think there is some work to be done to better flesh out the devolutionary aspects of the above hypothesis.

I do not question the lack of civic environmentalism displayed in most communities around the country. The presentation at the workshop highlighted the decline of social capital in our communities as one potential explanation but writers such as Putnam mentioned in the presentation were not mentioned in the paper. Thus, it is recommended that the paper mention the literature which describe factors that may constrain people from participating in community-based environmental decision making processes, such as work, lifestyle, lack of community social capital, personal anxieties, and a built environment not conducive for social dialogue. Conversely, it would be interesting to explore if environmental-issue non-governmental organizations (NGOs) are providing opportunities for more people to exercise civic environmentalism. The number of this type of NGO has grown phenomenally in recent years and

may be a more appropriate forum for broad civic environmentalism than would be for a dominated by municipal governments.

Comments on *Surveying Diverse Stakeholder Groups* by Bill Leach, Neil Pelkey and Paul Sabatier

This paper addresses a very important issue to social science researchers, data collection. Researchers routinely face time and funding constraints that could lead them to interview fewer people associated with an environmental decision making process than would be ideal. This paper discusses how insights into watershed decision making could be different had researchers not only interviewed coordinators or one specific stakeholder group or only direct participants in the decision making process and not knowledgeable outsiders. Data collected from twenty-four watershed groups provides a quantitative description of potential biases associated with limited respondent sets.

It would be interesting if this paper developed hypotheses concerning expected differences in viewpoints about watershed decision making. For example, it was found that coordinators believed processes were infused with more trust and had made more progress than did the stakeholders. It was argued that coordinators' beliefs could be biased. On the other hand, it is possible to hypothesize that coordinators would experience more trust in a process because they would have more frequent and intense relationships with more stakeholders than would the average stakeholder. Additionally, one could hypothesize that coordinators would have had more experience in environmental decision making and observe that what others would judge as little progress as would actually be better progress as compared with many other environmental decision making processes. If one were to accept these hypotheses as valid, then the question becomes whether the answers provided by the coordinators would in some sense be more informed than the answers provided by the stakeholders. What differences would be expected among stakeholders? Also, why would one not expect to find that non-participants have less extreme views of watershed decision making processes, given a tendency some people have of providing answers toward the middle of scale questions when one does not have high knowledge about the answers to the questions being put to them?

#### General Comments

The main comment pertains to the choice of decision process or mode for different contexts. It appears that the debate about this has been between those who espouse "rational", expert dominated processes versus those that favor collaborative processes. I think it is most reasonable to argue that different decision making processes are appropriate for different contexts.<sup>(2)</sup> For example, with respect to the Abel and Stephan paper, it could be argued that many or most of the environmental problems being confronted by the municipalities in their database could be best dealt with by an "elite corps" approach. One could also question whether a collaborative approach is best for every NEP estuary. Future research should endeavor to test hypotheses that relate decision making contexts to the effectiveness of different decision making processes or modes. What would be the predicted outcomes of environmental decision making efforts that implemented inappropriate processes? What would be the predicted outcomes of

efforts that implemented the most appropriate processes? This type of research requires long-term observations and evaluations of complex processes that may indeed switch among modes and even implement combinations of decision process types as the needs arise.

The need to improve public participation seems to be a given among a large group of concerned government officials and environmental activists. What is a reasonable goal? What can we expect from or demand of our citizens? A recent article by Michael Schudson in the *Wilson Quarterly* argues that historically citizens of the United States have largely been ignorant of political ideas and issues and have been generally uninvolved.(3) There is no golden era of citizen participation in our past. Indeed, the combination of factors that can constrain citizen participation and the decided lack of ability of government to implement strong, long-lasting participation programs can appear overwhelming.(4) I think it would help this community to discuss what would be reasonable goals for environmental citizenship for the average person in the US.

In conjunction with this discussion, I believe it is important to explore in-depth the potential contributions of information technology to environmental citizenship. Many issues could be explored. For example, how are community networks being used to support local and regional environmental decision making? Are data and information provided by federal agencies such as EPA and USGS through their websites being used by communities? Can the data and information be provided in better manners? To what extent are automated decision support tools being used to support community decision making? How can these tools be better tailored for this application? Information technology issues could be explored in the all the contexts covered by the three papers in this session.

#### Other Important Research Issues

Community-based environmental decision making is exceedingly complex. There are numerous additional issues that are worthy of research attention. Here are several for consideration:

- ▶ Uncertainty: How is it handled? How ought it be handled?
- ▶ Turnover of Participants: What is the level and impacts upon community environmental decision making of turnover?
- ▶ Expertise: What is the level of expertise needed to support this endeavor and how can it be developed?
- ▶ Foresight: Is it being practiced? If so, to what extent? If not, why not?
- ▶ Interconnections: with adjacent areas, with other governments, with other environmental problems. Are these connections being made? If not, why not?
- ▶ What is the *ideal* for community-based environmental decision making? Again, it is important to articulate expectations and goals, even if people disagree on them and even if they are revised over time.

## Future Assessment of Community-based Environmental Decision Making

Community-based environmental decision making is a future-oriented exercise. Generally, the goals are to preserve today's environment and improve tomorrow's. Foresight is needed to identify future risks to the environment and long-term programs are needed to promote environmental quality. Within this vein, then, it is important to be future-oriented with respect to the prospects for community-based environmental decision making in the future. It would be useful to assess the potential impacts of strong social, economic and technological trends over the next twenty years upon this endeavor.

For example, the population of the U.S. is rapidly aging. What impacts might this trend have upon community-based environmental decision making? Will seniors have more time to devote to this activity? Will they have strong or weaker attitudes about the environment? Will generational disputes arise? Will they have more leisure time and money to engage in eco-tourism? Will eco-tourism be a growing phenomena in any case? How will this industry impact local and regional environmental decision making?

In many ways, it appears that the rise in concern about public participation is in response to the growing domination of corporations upon our country, communities, families and individuals. Additionally, it can be viewed as a response to the growing dominance of big government upon all aspects of American society. In fact, one could argue that the future of community-based environmental decision making lies in a bigger battle for the soul of American society being fought by communities (which includes families and civic organizations), ubiquitous government and pervasive corporate organizations. How will this battle evolve in the future?

The important role of information technology to support community-based environmental technology was mentioned above. However, what would be the impact if personal computers in twenty years were one million times more powerful than today's personal computers? (5) How would the discussions change if our abilities to genetically engineer flora and fauna were significantly enhanced, even to the point of becoming God-like? What could be the possible future interactions between the state-of-the-environment, these two factors, and community-based environmental decision making? Will we see the emergence of re-environmentalization, where large swaths of the American landscape are allowed to return to natural states? These types of questions need to be asked to complement social science research on today's environmental decision processes.

### ENDNOTES

1. Azjen, I. and Fishbien, M. 1980. *Understanding Attitudes and Predicting Social Behavior*. Prentice Hall, Englewood Cliffs, NJ
2. See Tonn, B., English, M., and Travis, C., 2000. A Framework for Understanding and Improving Environmental Decision Making, *Journal of Environmental Planning and Management*, Vol. 43, No. 2, 165-185.
3. Schudson, M. 2000. Americas Ignorant Voters, *Wilson Quarterly*, Spring.

4. Tonn, B., and Petrich, C. 1997. Environmental Citizenship: Problems and Prospects, ORNL/NCEDR-1, Oak Ridge National Laboratory, Oak Ridge, Tennessee, December.

5. This prediction was made by Bill Joy, Chief Scientist of Sun Microsystems, during a presentation made at the National Science Foundation on May 5, 2000.



### **Question and Answer Period for Session III**

Matt Clark of EPA asked about the bottom line of community based environmental decision making. At the end of the day, are we getting a cleaner environment? In contrast, he asked, what if we allocate all our resources to enforcement rather than to public participation?

Troy Abel responded that his sample had 53 communities that are exceeding federal standards for prevention of global climate change. He also noted that, as a political scientist, his primary research concern is not about how to get a cleaner environment.

Mark Lubell responded that attitudinal support is necessary but not sufficient for obtaining success in environmental policy. He said that collaborative decision making is not a blanket solution to all types of problems, and that there are certain types of problems where enforcement would fail, for example, nonpoint source pollution. With lawn fertilizers, collaborative decision making would be much more efficient. Additionally, he suggested that, although we may see attitudinal changes in the near future, we may not see any environmental changes for at least ten years.

Gerald Filbin stated that the burden is on the researchers to demonstrate the payoff when federal resources are being invested. He said that EPA has been involved in community based efforts for six years now and should be able to measure some type of benefits from the process.

Anne Bostrom of the National Science suggested that conflicts can be very expensive and, therefore, the expense of resolving conflict can be justified.

Mark Nechodom of US Forest Service mentioned a case study that compared conflict with upfront investment in the process and found that multi-stakeholder processes can be even more costly than conflict because of the appeals process. This study undermines claims that investment in the process can reduce conflict costs by 80%.

Anne Sargeant of EPA mentioned that her experiences with community involvement in the places she has lived have given her some ideas of what is important for encouraging involvement. For example, there should be a venue or place that people can go to meet each other and get things done. She also thought it is easier to get involved on smaller scales, for example, in neighborhood associations that are more accessible. Finally, she asked Troy Abel whether he can include moneyless organizations (those that would not report to the IRS) in his analysis.

Abel responded that the ideas suggested would be difficult to include in a quantitative analysis but that he would try to consider them in his case study work.

Clay Ogg of EPA suggested that certain parameters should be in place in order for a community based program to be successful. He gave the example of a Department of Agriculture watershed program where communities must identify their problem, set goals



and identify steps they will take to achieve their goals in order to be considered for the program. Ogg felt that community based programs have a high likelihood of working if this kind of disciplinary approach is taken.

Lubell responded that every management plan has different goals, obligations and rules and that it is hard to compare across programs. One of the benefits of collective decision making is that the local community derives its own goals and objectives based on the specific issues of their environment.

Lubell and Ogg agreed that it would be useful to have data where specific goals of a process are identified and “checked off” when they are achieved.

Nechodom suggested that the goals are usually ecosystem condition goals and that the process by which you get there is less important than the goals. He also felt that USDA’s watershed program and EPA’s CBED program are rare, or alone, among government programs in emphasizing social capital building. He noted that this discussion referred back to Matt Clark’s initial question in this session.

Abel suggested that many more grants (for example in the environmental justice program he studied) should go to social capital building and that we need to find ways to provide people with more political information, including relevant offices to contact, and time and locations of public meetings.

Nechodom suggested that we have to consider whether we want to define “politics as practice” or “politics as means.” In other words, is public participation a good in itself or are we trying to get better environmental policy?

Bryon Norton referred to Lee’s *Compass and Gyroscope* which argued that the idea that people will learn and be part of the process has not, and will not, work. Lee promoted the idea of an epistemological community of people who are interested and willing to invest their time and learn new models. If these people are representational of the community, they are accepting the responsibility not only of decision making, but of ultimately educating their constituents about the problems and difficult trade-offs that had to be made. Norton argued that, based on this idea, the goal of increasing participation may not be necessary or even optimal.

Mark Stephan of Georgetown University said that when we do not have full participation, the question becomes what is the nature of the representation. How do we hold the citizens in advisory groups accountable? In our democratic system, the usual form of accountability is voting, but we do not vote citizens in and out of these panels.

Norton responded that environmental concerns never make it to the agenda for public accountability anyway. He argued that these communities can be informal and participants can lose their legitimacy when they do not function as representatives of particular constituencies.

Anne Sergeant suggested that we may not have full accountability, even at the national level. She also thought there may be problems where a number of people do not care what happens anyway, so their nonparticipation is fine.

Stephan responded that what is important is that everyone has an equal opportunity to participate.