

An Assessment of Environmental Governance among learning stakeholders in India

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1. Introduction & Background

Until very recently, environmental governance among teaching and learning stakeholders is not demonstrated much in Indian literature. In this expert-led process, local people have rarely had the chance to participate, and this resulted in least participation. There is a great demand on part of the intellectual stakeholders to educate the public in this direction. A part of the students, college Directors, Principals, University teachers, College teachers, School teachers who are directly or indirectly accountable for environmental education and dissemination, were involved for this study.

To understand this further it must be recognized that, within culture, one can distinguish between core and secondary cultures (Jenkins-Smith and Sabatier 1994, Gluck 2000): the former include a relatively restricted set of abstract beliefs, such as fundamental environmental value priorities, and positions on sustainable development; secondary beliefs comprise policy preferences regarding desirable policy regulations and the design of specific institutions for pursuing the policy core, such as dispositions toward the establishment of social consensus and ecotourism development. Indeed, consensus-driven policy was highlighted as a crucial component in the success of natural resources planning (McCreary and others 2001, Mascarenhas and Scarce 2004), especially when it is facilitated by the diversity in perceptions and values of actors engaged (Brown and others 2001).

Because consensus is required and all key affected stakeholders (with their different values) need to be included in the decision-making process in order to create durable agreements, there is a need to identify how environmental management via stakeholder engagement can be improved (Lane 2003). Although environmental management conflicts include value laden struggles, such as maintaining social identities (Cheng and others 2003), the tendency has been to identify stakeholders in very specific and narrow terms as product-centered resource user groups (Castro and Nielsen 2001). Stakeholders are frequently selected in terms of interests rather than values (Hoffman and Ventresca 1999, Gamborg 2002). In an attempt to negotiate workable compromises within the current neocorporatist nature policy, conflicts of value are often transformed in conflicts of interest, but "value" management might be the key to successful stakeholder consultation (Keulartz and others 2004).

Although the importance of understanding and assessment of stakeholder beliefs on environmental culture has been noted by many authors (Harrison and Burgess 2000, Stoll-Kleemann 2001, Tarrant and Cordell 2002), research focusing on the

heterogeneity of stakeholder views is still very scarce in India. The aim of the present study is designed in such way to address this gap by examining environmental culture of learning stakeholder. More specifically, the objectives of the research are to determine differences between stakeholder groups in core and secondary beliefs, to investigate whether culture of governance can be used to effectively segregate stakeholders in well-defined segments, as to establish a operational platform for policy making and further research in this direction in India.

II. Methods

a. Instrument

All items included in the instrument were pre-tested using a student sample. Based on pre-test results, scales were modified (i.e., items were rejected or new items were included) to improve scale reliability and validity (see the Results section, under Questionnaire Reliability and Validity). The final version of the questionnaire comprised four subunits. The “value frame”, “sustainable development”, “social and environmental consensus” and “ecotourism development ”and subunits contained 20 items, respectively, which adhered to core environmental governance beliefs. In order to avoid spontaneous, un reflexive responses, a technique based on cognitive conflict was followed, in order to construct questionnaire items (Koskinas and others 2000), namely, most items described a dilemma situation, which participants were requested to respond to.

For each subunit, items were organized in terms of research hypotheses, which referred to main reflections in the field of environmental policy. Within the “value frame” subunit, research hypotheses addressed the following: the issue of nature’s intrinsic value (Morito 2003) and self-regulation (Korfiatis 1999); human intervention (Hull and others 2003); the contribution of science (Louloudis 1998), conceptual controversies between terms, such as the attribution of “nature” to biophilic associations, and the attribution of “environment” to biophobic associations (Harre´ and others 1999, Hovardas and Stamou 2006); and the association of the term “ecology” with “urbanites” and the association of the term “pollution” with “rural people” (Louloudis 1999a).

Accordingly, the “sustainable development” subunit involved the following: the cost of sustainability regarding resource use and various social groups (Harre´ and others 1999); the contribution of sustainable development in maintaining the balance of ecosystems (Palmer 1998); the technocratic approach to sustainability (Louloudis 1999b); ecotourism as a sustainable perspective (Minca and Linda 2000); and the potential of sustainability under current social structures (Palmer 1998).

Within the economic policy agenda, environmental conservation objectives are most often considered by environmental concerns. The first research hypothesis of the

social consensus, subunit involves local participation and local commitment to comprehend innovative environmental conservation initiatives.

The “ecotourism development” subunit of the questionnaire contained hypotheses regarding the following: long-term planning (Brandon 1993); ecotourism monitoring, the supply versus demand controversy and ecotourism-carrying capacity stakeholder participation in ecotourism development (Fennell 1999); the role of Teachers in the definition of ecotourism, the role of environmental awareness.

b. Data Selection

Questionnaires were mailed to six different stakeholder groups involved in teaching, learning in schools, colleges and universities in India. The questionnaire was introduced by an invitation letter as a survey on environmental policy beliefs. Respondents were asked to state whether they agree or disagree with questionnaire items on a five-point Likert scale. Responses were coded as “+2” and “+1” for strong and moderate agreement, respectively, “0” for neutral dispositions, as well as “-1” and “-2” for moderate and strong disagreement, respectively. Respondents also completed a demographic section ascertaining gender, age, level of education, and monthly income. Students include high school, College and Post graduate students.

The research utilized a three-contact procedure (initial mailing, telephone reminder, and follow-up full mailing). In total, 1200 questionnaires were mailed and 973 questionnaires were responded, resulting in a response rate of 81%. Response rate varied significantly per stakeholder group and ranged from about 61% for students to nearly 8 per cent in case of Director and Principals.

c. Data Analyses

For each research hypothesis, respondent replies were summed across items and divided by the number of items included in the hypothesis. This quotient refers to research hypotheses’ scores. Coding for several items was reversed, in order for all items to present the same polarity before computing research hypotheses’ scores.

The coherence of belief systems has been highlighted by previous research as a crucial question to be addressed (Dunlap and others 2000, Hodgkinson and Innes 2000). Inconsistencies between beliefs have been detected in the cases of nature’s intrinsic value (Proctor 1998), sustainability (De Avila-Pires and others 2000, Filho 2000), and locals’ dispositions towards the environment versus economy controversy (Stoll-Kleemann 2001). To study the coherence of stakeholders’ belief systems, contradiction index scores were calculated for a selected number of items. A contradiction between two items arises when a subject is expected to agree or disagree with both items of an item pair, or agree with one item and disagree with

the other; these combined responses are expected on the basis of logical compatibility, namely, a contradiction between two items can be established provided they are formulated in the form “A” and “non-A” (Van der Steen 1993). In this case, items are logically incompatible, that is, each item is the logical negation of the other.

The pair of contradiction indices were grouped into five categories based on importance of each pair of item as perceived by stakeholders (Table 3). Each pair is constructed keeping in view, that the implementation of measure should not be delayed further in this direction.

Scores for contradiction indices were computed as the algebraic sum of respondent replies in the items divided by 4, which is the biggest possible distance between replies in a five-point Likert scale. In the contradiction category of the same polarity, the contradiction index scores were derived by subtracting replies; scores had a positive sign when respondents agreed with the first item of the pair and disagreed with the second item, and a negative sign in the opposite case. In the contradiction category of reversed polarity, the contradiction index scores were derived by adding replies; scores had a positive sign when respondents agreed with both items of the pair, and a negative sign when respondents disagreed with both items of the pair.

III Results

A. Sample Demographics

Aside from gender, differences between stakeholder groups in all other demographic variables were highly significant (Table 1). Directors and Principals presented the highest percentages in the higher age cohort, while students showed the opposite trend. University teachers revealed the highest numbers of postgraduate degrees, whereas school teachers showed the highest percentage among stakeholder groups.

Table 1 Sample characteristics

Category	Directors	Principals	University Teachers	College teachers	School Teachers	Students
male	25	25	50	50	50	300
female	8	15	50	50	50	300
Total	33.00	40.00	100.00	100.00	100.00	600.00
age						
less 15 years						

Male	0	0	0	0	0	122
Female						88
16 - 25 age						
male	0	0	0	0	27	198
female					58	166
26-40 age						
male	0	0	35	32	0	20
female	0	0	20	43	15	6
41 above age						
male	25	25	26	18	0	0
female	8	15	19	7	0	0
Education						
High school						
male						122
female						88
College level						
male						88
female						132
Post graduate level						
male	25	25	50	50	50	88
female	8	15	50	50	50	56
Others						
male						20
female						6

B. Questionnaire Reliability and Validity

The validity of the instrument was examined by means of the Spearman's rank correlation coefficient (Hovardas 2005). For each research hypothesis, items should reveal significant coefficients as well as expected signs, namely, when respondents were expected to agree at the same time with two items, the correlation between these items should reveal a significant, positive coefficient. In cases in which respondents were expected to agree with one item and disagree with the other, there should be a significant, negative correlation. Items presented within research hypotheses all complied with the abovementioned prescriptions of questionnaire validity. Accordingly, all research hypotheses were verified.

C. Research Hypotheses' Scores and Contradiction Index Scores

Research hypotheses' scores are presented in Table 2. There were few hypotheses where differences between stakeholder groups were not significant, namely, "self regulation (1st research hypothesis), "nature Vs. environment"(4th hypothesis), local participation (10th hypothesis), long-term planning" (12th research hypothesis), "environmental education" (16th research hypothesis) and "environmental awareness" (17th hypothesis) (Table 2). This implies that these environmental culture were quite homogenized among stakeholder groups. In all other cases, least significant difference (LSD) tests revealed that school teachers, and university teachers tended to significantly differentiate from other stakeholder groups by lower research hypotheses scores. The only exception to this trend was linking stakeholders participation, environmental education and awareness (15 & 16th and 17th research hypothesis), where the three above-mentioned groups presented relatively higher scores. Across stakeholder groups, disagreement was strongest in two cases long term planning and demand and supply (12th and 14th research hypothesis), where respondents were not willing to undermine the need of long term planning and, where respondents were reluctant to accept the primacy of demand over supply. Accordingly, agreement was higher in first two hypothesis, and last three hypothesis. It should be mentioned that sample demographics did not influence research hypothesis scores significantly, as revealed by chi square tests.

Table 2 Mean score of research hypothesis per stakeholder group

mean score	F	Directors	Principals	University Teachers	College teachers	School Teachers	Students	sample average
self regulation	0.281*	1.5	1.96	1.52	1.23	1.5	1.45	1.53
human intervention	0.457 ^{ns}	1.69	1.52	1.1	1.32	1.88	1.82	1.56
science contribution	0.069*	1.1	0.96	0.89	1.01	1.22	1.1	1.05
Nature vs. environment	0.816*	0.96	0.53	0.52	0.66	1.2	1.52	0.90
Resource use	0.293*	1.25	1.26	1.36	1.85	1.56	1.23	1.42
social group	0.268*	0.99	1.2	1.23	1.69	1.25	1.36	1.29
ecosystem balance	0.24*3	1.23	1.2	0.63	0.89	0.96	1.02	0.99
sustainable ecotourism	0.589*	0.41	0.48	0.96	0.63	0.85	1.33	0.78
sustainable change	0.441*	1.25	1.36	0.96	0.56	0.88	1.22	1.04
local participation	0.186 ^{ns}	1.22	1.36	1.02	1.1	1.2	1.56	1.24
local support	0.106 ^{ns}	1.25	1.23	1.22	1.36	1.45	1.02	1.26
long term planning	0.525 ^{ns}	1.10	0.89	0.65	0.32	0.36	0.96	0.71
ecotourism monitoring	0.331*	0	0.36	0.45	0.26	0.47	0.98	0.42
supply Vs demand	0.309*	1.0	0.41	0.39	0.33	0.41	0.56	0.52
stakeholder participation	0.262 ^{ns}	1.56	1.42	1.69	1.1	1.23	1.2	1.37
environmental education	0.331 ^{ns}	1.36	1.78	1.69	1.48	1.99	1.98	1.71
environmental	0.218 ^{ns}	1.89	1.74	1.36	1.45	1.66	1.82	1.65

awareness								
Carrying Capacity	0.124*	1.59	0.96	1.26	1.78	1.23	1.89	1.28
Nature Intrinsic Value	0.205*	1.92	1.32	1.58	1.12	0.59	1.22	1.29
Technocratic Approach	0.312 ^{ns}	2.56	1.69	1.78	1.96	1.45	1.05	1.74

* significance at $p < 0.05\%$, $p < 0.10\%$ ns = non significant

The first three contradiction index scores varied significantly between stakeholder groups (Table 3). In contrast to trends for research hypotheses' scores, LSD tests showed that school teachers and college teachers responded differently in the case of last two contradictions the former presented the only negative score, whereas the latter the higher score. However, school students and college students presented the lowest absolute value in the score of the last three contradiction index. Concerning the first four contradiction index, scores had all positive signs among stakeholders; Absolute values for scores were relatively high in the last two contradiction index.

Table 3 Mean score of contradiction indices per stakeholder group

contradiction indices	<i>F</i>	Directors	Principals	University Teachers	College teachers	School Teachers	Students
1.Sustainability and stakeholders' participation	<i>0.098^{ns}</i>	0.63	0.52	0.32	0.25	0.41	0.51
2. Environmental education and Environmental awareness	<i>0.114^{ns}</i>	0.98	0.88	0.85	0.94	0.56	0.77
3. Local communities - social change	<i>0.086^{ns}</i>	0.89	0.69	0.89	0.74	0.56	0.66
4.Self regulation and human intervention	<i>0.047*</i>	0.41	0.36	0.26	0.31	0.18	0.44
5. Sustainability - ecosystems' balance	<i>0.106*</i>	0.13	0.09	0.18	0.11	0.1	0.47

Note ns = non significant

IV. Discussion & Management and Research Implications

As an innovation in this direction, we investigated whether the culture of environmental governance can be used effectively to educate different stakeholders for better policy making in the process of green education as well as the world. Students, as part of the scientific community, could be considered responsible for producing innovative solutions in the field of environmental management by better practice and participation; teachers on the other hand, are the organizations that usually translate these solutions in on-site practice by designing curricula in such way to inculcate environmental culture; finally, directors and principals could be seen as the mediators between the public and the learning community, so that innovation can adjust to common views and diffuse in society. Stakeholders are mainly charged with implementing environmental policy innovations in the field of environmental conservation and environmental awareness. This polarity between innovation and implementation can describe the main roles available for social actors to undertake within the frame of decentralized environmental governance (Jonas and Bridge 2003, Keulartz and others 2004).

Our study showed how to bring participation of different learning stakeholders in broad environmental governance. The instrument utilized in this research proved quite reliable and valid in measuring environmental culture of stakeholders involved teaching and learning. The use of such a survey could support participatory approaches proposed by many authors (van den Hove 2000, Burger 2002, Robertson and Hull 2003). Furthermore, the methodology implied that stakeholder groups differ in a significant number of belief-system elements. On the other hand, stakeholder groups were effectively distinguished on a small set of both primary and secondary beliefs. Therefore, the instrument used can be an effective tool for determining and assessing environmental culture of stakeholders.

Cordano and others (2004) argued that the attention given so far to intragroup belief heterogeneity has been very limited. Our findings highlighted the significance of coherence of views, as reflected by contradiction indices and stakeholder group homogeneity revealed by the discriminant analysis, in investigating environmental policy belief systems. More specifically, stakeholder groups within the same sample segment responded quite differently. Moreover, our results showed that the same stakeholder group (i.e., students) could respond differently across different contradiction indices.

Future research should determine the possible reasons behind this apparent complexity in belief aggregates. Apart from looking at specific beliefs separately, one

should examine higher levels of organization of belief systems when determining and monitoring stakeholder beliefs on environmental policy. More specifically, future research should focus on the contradictions revealed in the case of the intrinsic value of nature, which were more often than not highlighted by previous research (Proctor 1998, Hull and others 2003, Rosa and da Silva 2005).

Future research on environmental governance can prove most valuable in this direction: rendering salient divergent views instead of simply focusing on conflicting interests can significantly add to calls for equal stakeholder treatment and thereby reinforce the democratic mandate in environmental policymaking.

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