



Analysis and deliberation as a mechanism to assess changes in preferences for indicators of sustainable forest management: A case study in Puebla, Mexico



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ABSTRACT

The purpose of this study was to assess changes in forest owners' preferences regarding indicators of sustainable forest management. The analysis and deliberation framework served as a platform upon which to explore these changes in a rural community in Puebla, Mexico. Sixty-two indicators were selected from existing sets to design a five-point Likert survey instrument. The instrument was administered three times: early in the study to capture the forest owners' preferences before intervention (baseline); following an educational meeting in which the participants learned of three alternative forest management plans (analysis); and following a community meeting in which the forest owners deliberated to choose one of the alternatives (deliberation).

As forest owners were exposed to knowledge (analysis) and deliberation, their preferences for the indicators changed significantly. An examination of the instrument demonstrated how the indicators increased or decreased in importance. Social and economic indicators tended to be ranked differently following analysis and again following deliberation because of the commitment to pursue a forest management plan that would benefit the community without jeopardizing stakeholder values. The ecological indicators directly associated with forest structure gained relevance following the analysis meeting. The deliberation process elucidated the importance of forest administration and professional help.

Forest owners' preferences were reflected by the selection of the management plan that included good science and accommodated community values. The forest owners changed their preferences in response to new knowledge, management objectives, and their commitment to safeguarding the future condition of the forest. Analysis and deliberation is a participatory forum that facilitates communication and learning and allows stakeholders to share values; thus, it serves as a mechanism for forest planning.

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1. Introduction

Research has been performed to develop and test Criteria and Indicators (C&I) of Sustainable Forest Management (SFM) for two decades. In 1994, the Center for International Forestry Research (CIFOR) conducted an international assessment to evaluate C&I in Germany, Indonesia, Cote d' Ivoire, Brazil, Austria, India, and Cameroon; this was perhaps one of the first attempts to evaluate the effectiveness of C&I (Woodley et al., 1999). This assessment led to a modified set of C&I, which was further tested in North America in 1998 (CIFOR-NA). Since then, both of these evaluations have served as a platform upon which to develop new methodologies to generate indicators for forest management units (FMU).

Quantitative research methods have been used for this purpose. Mendoza and Prabhu (2000, 2003, 2005), Mrosek et al. (2006), and Sheppard and Meitner (2005) used a multi-criteria analysis tool to develop generic templates that can be tested at the FMU's. To estimate the relative importance of the indicators, a ranking method was used by Mendoza and Prabhu (2000).

Qualitative research regarding C&I has also been prolific. Natcher and Hickey (2002) used interviews and direct observation to develop C&I in the Little Red River Cree Nation in Alberta, Canada. Sherry et al. (2005) used a grounded theory content to develop C&I at the local level and compared them with the most general frameworks: Canadian Council of Forest Ministers, Local Unit Criteria and Indicators (LUCID), and the CIFOR generic template. Pokharel and Larsen (2007) explored local perceptions of SFM by asking community leaders what C&I should be included in the evaluation of the national Ganeshman Singh Forest Conservation Award in Nepal (GSFC).

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All of these templates provide an exceptional theoretical and methodological contribution to develop C&I for FMU and to promote stakeholder participation in the development and testing of C&I. Local participants tend to introduce indicators that are more meaningful to them (Adam and Kneeshaw, 2008; Fraser et al., 2006) because they have first-hand experience with the resource(s) and have their own definitions of sustainability (Sherry et al., 2005). The involvement of local communities in the development of C&I facilitates participatory decision-making and helps to elucidate stakeholder needs and knowledge.

Thus, understanding C&I under participatory approaches is fundamental to assess SFM and to design policies that incorporate both good ecological practices and communities' perspectives.

The purpose of this research was to assess changes in stakeholders' preferences for indicators of sustainable forest management. The analysis and deliberation (A&D) as a participatory decision-making process was instrumental in the evaluation and understanding of changes and in the involvement of the community in the development of a forest management plan. Stakeholder preferences changed in response to management objectives. Small forest communities recognize indicators while having a holistic understanding of forest management.

2. The relationship among community participation, C&I, and SFM

In some parts of the world, SFM serves as a strategy to fight deforestation and overcome poverty. Forest loss is directly associated with poverty under the premise that people who live in or near the forest are forced to convert forest land into agricultural land in search of a better life (Schmidt et al., 1999). However, the dependence on natural resources is not the major cause of poverty (Ali et al., 2006); conversely, poverty is not the major cause of resource degradation (Agudelo et al., 2003; Ravnborg, 2003; Swinton and Quiroz, 2003). The primary causes of both poverty and resource degradation include centralized economic and political structures; concentration of resource ownership and benefits (Dasgupta et al., 2005; Larson et al., 2006; Rodríguez-Piñeros and Lewis, 2005; Swinton et al., 2003); counterproductive legislation that encourages the conversion of forest land to agriculture (Freitas et al., 2004; Southgate and Hitzhusen, 1987); the lack of opportunities and programs that directly address social contributions to forest conservation; and poor coordination among institutions (Schmidt et al., 1999).

Moreover, most rural communities have suffered from internal and external pressures such as migration, acculturation, colonization, issues of land tenure, and conflicts within organizations that have rendered them fragile institutions (Bebbington et al., 1993; Chiranjeeewee and Vacik, 2012; Hurst, 2003). In addition, development facilitators tend to ignore that local organizations have their own political, cultural, and social concerns, which in most cases differ from the concerns of the state and other groups (Ananda, 2007). To overcome some of these difficulties, several development projects have been implemented, demonstrating that the empowerment of the local population leads to a sense of ownership of the resources and thus a greater commitment to the implementation, monitoring, and enforcement of the law (Nygren, 2005). Well-organized poor communities know how to use resources without jeopardizing them while obtaining economic and other benefits (Antinori and Rausser, 2007; Bebbington and Perreault, 1999; Benjade and Ojha, 2005; Loiza-Villegas, 2004; Mitchell, 2006).

SFM and its contribution to community development implies a commitment to understanding local socio-cultural and economic aspects associated with resource management (Ananda and

Herath, 2003; Rice et al., 2001; Rodríguez-Piñeros et al., 2012), which can be achieved through the engagement of the local people in the development and understanding of C&I (Chiranjeeewee and Vacik, 2012; Garcia and Lescuyer, 2008; Mendoza and Prabhu, 2005). However, local participation *per se* is not sufficient to promote SFM. In some cases, participation means that the public is involved but might be a passive recipient of information (Rowe and Frewer, 2004). Stoll-Kleemann and O'Riordan (2002, p. 165) quoting Brandon (1992) observed a legitimate concern when practicing participation, "what would happen if local people decided, through participatory mechanisms, that they wanted to use the resources in an unsustainable way?" This question has serious implications in the practice of participatory approaches; it suggests that stakeholders would not have sufficient and meaningful knowledge of the resources under discussion. This implies that sharing knowledge is a fundamental part of participation; therefore, both expert and community knowledge need to be integrated in policy-making.

Accordingly, the development of C&I to assess SFM must account for good science and for the incorporation of stakeholder values. The A&D framework (Stern and Fineberg, 1996) offers an alternative to improve participation in the development and testing of C&I. Analysis is a systematic process in which theories and methods are discussed for further understanding of an issue. Meanwhile, as explained by Stern and Fineberg (1996 p. 65), "deliberation is any formal or informal process for communication and for raising and collectively considering issues." A&D is conceived as a recursive process in which analysis and deliberation are interdependent components of policy-making; deliberation frames analysis and analysis informs deliberation (Webler, 1998). The A&D framework is a process that increases understanding, implements good science, and involves interested parties and their values (Webler and Tule, 1999); it is a way to learn from others. Hence, A&D offers an alternative to improve participation in the development and testing of C&I because it provides a platform in which to share knowledge, learn about indicators, and to involve the values of the community.

This study used A&D as a participatory mechanism to assess changes in preferences for indicators of sustainable forest management. The indicators under question were selected from three general templates CIFOR-NA, LUCID, and ILO-GTZ; the first two were the basis for the development of C&I at the regional level in Mexico (Woodley et al., 1999; Wright et al., 2002).

3. Study area

*La Preciosita Sangre de Cristo*¹ is a village located along the Sierra Nevada mountain system in the State of Puebla. The village population is 890, according to the 2006 Mexican census, 287 of whom (primarily young and middle aged men) have migrated to the United States for employment, leaving a resident population dominated by children, women, and the elderly. The village economy is based on subsistence farming; corn, beans, and wheat are the principal crops, with seasonal production of vegetables.

La Preciosita is classified as the least developed area of the region due to the lack of basic public services such as potable water, electricity, and schools among others. Despite the unsatisfactory economic situation, the community is known for its cultural richness, which relies on the spiritual importance of its forest resources and its preservation of traditions inherited from the Aztec Empire. In 1972, 100 community citizens (99 men and 1 woman) purchased nearby forestland of 416 ha that serve as home to more than 40

¹ This background was extracted from an unpublished document, *Ordenación Territorial del Municipio de Tlahuapan*, which is part of a project established by the ONG Enlace and the government of Puebla.

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