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Social involvement in environmental governance: The relevance of quality assurance processes in forest planning

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ABSTRACT

Socio-environmental policy issues are characterized by inherent scientific uncertainty, ignorance and frequently by social discrepancies. Lack of recognition of the complexity and uncertainty of environmental issues has given rise to problems that have cast doubt on the adequacy of the science for policy model and traditionally employed evidence-based policy, thus leading to a crisis in science. In this context, there is a need for quality assurance procedures to assess policies and measures resulting from decision-making in environmental governance issues.

Involving quality assurance in decision-making processes recognizes the different types of uncertainty related to an issue and the limits of problem-solving analysis. This approach requires participatory methodological frameworks in which stakeholders analyze the robustness of the assessment process used as well as the validity of assessment results. The approach considers governance as being a relative term depending on the historical, social, economic, political, environmental and cultural context in which it is developed.

A participatory methodology is applied to an assessment of forest track alternatives on the island of Tenerife (Canary Islands). In this study, a social sensitivity analysis explores the social validity of this assessment through the concept of quality understood as 'fitness for use'. Such a methodology facilitates processes of dialogue and consensus needed in decision-making in conflictive situations. As a result this methodology should serve as a reference for other places with similar situations.

1. Introduction

Natural resource management processes have been characterized by uncertain facts, disputed values, high stakes and urgent decisions (Funtowicz and Ravetz, 1991). Likewise, forest management often concerns large areas, long time horizons and multiple stakeholders, which complicates planning processes and increases the uncertainty involved in it (Kangas and Kangas, 2004; Acosta and Corral, 2015). The uncertainty that characterizes environmental systems is also amplified when conflicts among stakeholders with opposing interests are present (Corral Quintana, 2004; Funtowicz and Ravetz, 1993; Funtowicz and De Marchi, 2000; Giampietro et al., 2006a). These circumstances greatly hinder the application of traditional scientific methodologies to tackle environmental governance issues, since available knowledge often consists of a mixture of (partial) knowledge, assumptions, and ignorance.

The traditional model of science for policy was initially based on technocratic decision support systems (DSS) Guimarães and Corral (2002), —such as the Integrated Assessment Models, which emerged in the mid-1980s (van der Sluijs, 1997). They were an example of a 'simplified' way of addressing issues, as they did not recognize complexity and uncertainty (Guimarães and Corral, 2002; Guimarães Pereira et al., 2005). Although they formally presented a multidisciplinary and integrated approach to environmental issues, several authors have highlighted their limitations when acting as tools for environmental decision-making (see for example Pilkey and Pilkey-Jarvis, 2007; Saltelli and Funtowicz, 2015; Sarewitz, 2000). In general, these authors argue that DSS are 'plagued' with assumptions and simplifications, telling us very little about the issues they are considering. In particular, they are seen as ineffective tools offering a perception of illusory and deceptive knowledge and precision (Pilkey and Pilkey-Jarvis, 2007).

Such an inadequate response by traditional 'applied' science to complex problems that concern society has generated a crisis of legitimacy and confidence in decision-making systems (Funtowicz and Ravetz, 1993). This, in turn, has given rise to a governance crisis,

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referred to in works such as those by Funtowicz (2002), Giampietro et al. (2006b) or in the White Paper on European Governance (CEC, 2001).

Given these circumstances, where uncertainty and ignorance are present and clashes between different interests occur; science has sought solutions that allow the participation of society (Ravetz, 2004). Thus, in recent decades, approaches that support decision-making and integrate tools through which stakeholders can be part of the planning process have proliferated, implying a combination of knowledge that should facilitate better understanding of natural resource governance issues (see for instance, the reviews carried out by Acosta and Corral, 2017; Díaz-Balteiro and Romero, 2008; Kangas and Kangas, 2005). Relying solely on formal scientific knowledge to make decisions is short-sighted: public perspectives can also help frame the issues. This is not to say that 'citizen' science or 'indigenous technical knowledge' is better than formal science; simply that engendering a wider range of perspectives can help cope with uncertainty.

Although, the integration of social actors undoubtedly enriches planning processes, there are still key dimensions of uncertainty in the knowledge base of complex environmental problems that need to be addressed. These include technical (inexactness), methodological (unreliability), epistemological (ignorance), and societal (social robustness) ones (Van Der Sluijs et al., 2005).

Authors such as Ravetz (2002), Pereira and Quintana (2009) or Saltelli and Giampietro (2016) explain the need to guarantee quality in political decision-making processes. In the last decades, quality control processes have been considered a fundamental practice for industrial activity, with quality being perceived as essential to satisfy the needs and expectations of the users. However, despite the mentioned uncertainties related to socio-environmental issues, quality assurance procedures in decision-making have not been encouraged (Corral Quintana, 2009). This is in spite of these procedures helping to reveal the robustness of assessment processes and their results.

Often quantitative uncertainty and sensitivity assessment methods are used to evaluate the robustness of technical dimensions of assessment processes. Thus, uncertainty mainstream methods such as Monte Carlo analysis, subjective probability, or Bayesian are not suitable for environmental and societal issues because the main problem of these issues is that unquantifiable uncertainties dominate the quantifiable ones (Van Der Sluijs et al., 2008).

Nevertheless, in situations where conflicting interests prevail, it is not enough to deal just with uncertainties of a technical nature (those related to the information available, the variables used and the model applied). In these cases, the legitimacy of the planning process is affected by epistemological and social uncertainties, putting this process into dispute and hampering decision-making.

On the contrary to manufacturing processes of products and services in which quality guidelines and standards can be designed by experts, the inherent uncertainty in socio-environmental decision issues requires more extended processes. Thus, the involvement of stakeholders should be viewed as a quality assurance step in decision processes to ensure higher quality and identify alternative courses of action (CEC, 2001).

This paper proposes a quality assurance methodology to explore the robustness of assessment processes and environmental planning in conflictive situations by involving different stakeholders. Furthermore, the results and conclusions are presented from the application of this approach to a case of integrated assessment of forest track management on the island of Tenerife.

2. Method

The proposed quality assurance process aims to explore the robustness of environmental governance, mainly natural resource planning processes, often characterized by systemic uncertainty and disagreements among stakeholders. The most commonly used technical approach to measure quantitative aspects of uncertainty, is known as sensitivity analysis (see Mowrer et al., 1996). Thus, the proposed methodology is based on inclusionary processes with the most relevant stakeholders discussing the main characteristics of the assessment process and its outcomes. This is known as Social Sensitivity Analysis (SSA).

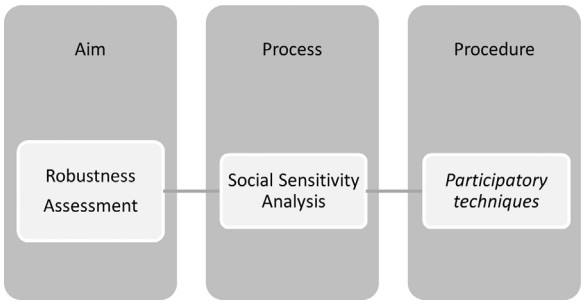

Fig. 1. Social sensitivity analysis approach for socio-environmental issues.

Therefore, participatory techniques are implemented, in which stakeholders assess the robustness of the process, the methods applied and the results obtained from a forest track planning assessment to achieve social validation of that assessment (see Fig. 1). This methodology will allow the robustness of the procedures and processes used to be analyzed. In this sense, although not all results are accepted by all stakeholders (as it is discussed in the next section), "their generation process is an open and transparent process in which the views of all parties are included" (Corral Quintana, 2004, p .193).

Since social values are involved in so many planning processes (Munda, 2008), social sensitivity analysis (SSA) is needed. The main idea behind SSA is to return the planning assessment results to stakeholders, so that they can deal with complex issues in which they defend different/strong positions, even, on occasions, irreconcilable ones. SSA should not, however, be seen as a mere process of informing or consulting citizens, two of the lowest rungs on Arnstein's ladder of citizen participation (Arnstein, 1969). It is a means to climb further up the ladder to levels of citizen power or at least to assess the degree of social acceptance of any policies or measures to be carried out. Furthermore, in cases of strong opposite interest among stakeholders the initial assessment can be used as an excuse to promote a reflexive dialogue among the stakeholders about the issues at hand.

As Funtowicz and Ravetz (1993) point out, the problem solving dynamics in Post Normal Science involve the inclusion of a growing pool of legitimate participants in the process of ensuring the quality of scientific output. It is in this context that the concept of an extended peer community arises:

'Recent experience has shown the need for important modifications in the process of quality assurance, such as changes to the traditional, largely informal, procedures of collegial peer review, in order to take into account the emergence of new forms of science, the increased competitiveness of the research enterprise, the impact of new technologies, and the inclusion of new stakeholders. Collegial peer review is being rapidly transformed to review by an "extended peer community" (Funtowicz and Ravetz, 2015, p. 680).

Consequently, quality in this context of complexity and high uncertainty is not linked to quantitative indicators, or to previously agreed standards. In this case, the interpretation of quality is built on the experience of the 'relevant community', not limited to the scientific community, or to a group of professional experts, but it is extended from the traditional peer review carried out by colleagues to an extended peer community, covering all groups with interests or affected by the issue in question, and ultimately the society.

The quality thus understood is defined from: a) cognitive factors – knowledge of each of the parts –, b) axiological factors – set of values, which are made explicit – and c) procedural factors-ways of acting to solve the issue at hand. This interpretation of quality has, therefore, a multidimensional character, fruit of the dynamic interaction of