

# Lessons from the integrated valuation of ecosystem services in a developing country: Three case studies on ecological, socio-cultural and economic valuation



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## ABSTRACT

Over the last decades a large body of literature has been established on the theoretical and methodological development of the economic valuation of ecosystem services and its application in different contexts. More recently, this literature has proposed the need to carry out integrated valuations in order to inform decision-making processes. An integrated valuation allows for the ecological, socio-cultural and economic values of an ecosystem to be identified. This paper explores the experiences of three integrated valuation of ecosystem services in Colombia. Based on the presented case studies, some lessons and challenges on the development of integrated valuation methodologies are discussed.

## 1. Introduction

The role that ecosystems have in supporting human activities and human welfare has been widely recognized in literature (De Groot et al., 2002; Gómez-Baggethun et al., 2010; Millennium Ecosystem Assessment, 2005). Changes in ecological systems have consequences on the inherent properties of ecosystems, which ultimately lead to changing the welfare of the communities of people that benefit from them. (Dominati et al., 2010; Robinson et al., 2013; Van Oudenhoven et al., 2012).

Economic valuation in a monetary sense is a process through which it is possible to obtain an indicator, in monetary units most of the time, of the importance that a change in an ecosystem has on the welfare of human communities. A large body of literature on theoretical and methodological developments, as well as the application of economic valuation techniques in different socio-economic contexts has been developed in this area (e.g., Adamowicks, 2004, Bateman et al., 2011, Fisher and Turner, 2008a). However, including economic values in decision-making has been criticized especially when economic valuation techniques are applied indistinctly to all categories of ecosystem services and are isolated from other types of studies (Bockstael et al., 2000; Ludwig, 2000; Dendoncker et al., 2014; Boeraeve et al., 2015). Authors argue that issues related to ecosystem management are complex, leave room for great uncertainty and that most ecosystems respond to drivers of change in ways that sometimes appear as

stochastic responses or that are delayed over time, in addition to the fact that economic valuation does not necessarily take ecological thresholds into account (Admiraal et al., 2013; Chee, 2004). Furthermore, if the preferences of the population included in the economic valuation are not in line with the ecosystem's sustainability requirements, the result of this valuation will not be in line with sustainability. Therefore, any economic assessment of ecological benefits must be built upon a foundation of biophysical analysis (Admiraal et al., 2013; Banzhaf and Boyd, 2012). Winthrop (2014) argues that limiting the study of the interactions of humans with nature to the language of trade-offs that is used in economic valuation is in many cases, not sufficient. In the methodology arena, an important tool for gathering data in economic valuation studies are surveys. A good survey is the key element for a good valuation study: The design of a survey can be improved taking into consideration lessons from other – complementary – fields as behavioral economics. Carlsson (2010) discuss some issues within behavioral economics that are of interests for economic valuation when using stated preferences techniques: (1) incoherent preferences, (2) learning and constructed preferences, (3) context dependence, and (4) hypothetical bias.

Despite the stress that is placed on the importance of integrating the social, ecological, and monetary aspects of the values of ecosystem services in decision-making, and that international ecosystem service initiatives (MEA, TEEB, IPBES) have demanded that ecosystem services have pluralistic values, most empirical literature has only

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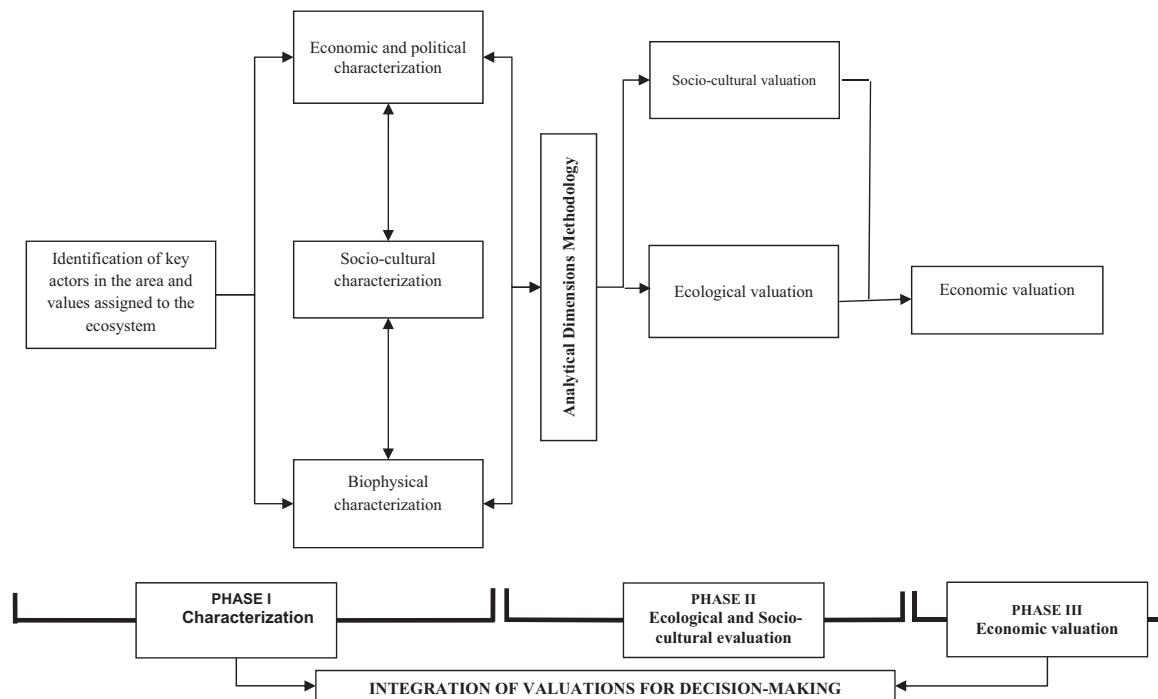


Fig. 1. General methodology for integrated valuation.

addressed single values from disciplinary approaches (Gómez-Baggethun et al., 2014). In this paper three case studies are presented in which integrated valuation has been performed in different ecosystem services in the context of a country that is characterized as being multi-ethnic and multi-cultural, and that has high biological diversity and enormous socio-political complexity. These case studies include: 1.) the Ayapel Wetland, which is located in the northwest region of Colombia; 2) Sapzurro Bay, which is located on the border of Colombia with Panama in the Chocó Caribe region; and 3) a green ecological corridor in the urban area of Medellín, located in the Andean region of Colombia. Provided that all three ecosystems have different biophysical, socio-cultural and political contexts, different methodologies for the integrated valuations were implemented.

In section two, the general methodology used for the integrated valuations of the three case studies is explained. Sections three, four and five present the case studies and lastly some conclusions are provided.

## 2. General methodology

With the aim of performing the integrated valuation in different contexts, a three-phase general methodology was developed (See Fig. 1). In Phase I, the characterization phase, key actors and informants from the region studied are identified by reviewing information that is already available and site visits. In this phase, a series of ethnographic techniques are implemented: semi-structured interviews, participant observation, social cartography workshops, and focus groups including different members representing the community by age, socio-economic status, ethnicity and life experience.

As has been said the integrated valuation take and adapt methodological aspects of the participatory research. The participatory research differs significantly from the traditional forms of research and arises due historical process in western construction of scientific knowledge and social reality in Latin America (Vejarano, 1983). Methodologically many different techniques have been design and adapted, and some techniques have been classified according to research aims and topic. Slocum (2003) present that some techniques that alone or in combination, can be useful in any participatory

processes.

For integrated valuation this participatory approach is valuable given that it allows to obtain information in the language and cultural forms in which the information has been produced, also popularizes the research process, his techniques and results. In addition, through participatory research it is possible to rethink the concepts of scientific knowledge and compare them to local experience (Vejarano, 1983; Ortiz y Borjas, 2008). Four basic themes define this type of research: empowerment of individuals, collaboration based on a participatory process, acquisition of knowledge, and social change (Fals Borda and Rodríguez Brandao, 1987).

In the develop of integrated valuation using the participatory approach we propose tree types of techniques classified according to the purpose of each research stage and the information required. These are: i. characterization techniques: their main objective is compile general information of the topic and study area with all the stakeholders involved. Must be fulfilled at the beginning of the research process, and also helps create relations of confidence between professionals and stakeholders. ii. Specifics techniques: design to gather complex information needed to integrated valuation through local knowledge and specialized of key actors who were previously chosen and analyzed using characterization techniques. iii. Feedback and planning techniques: strategic to motivate discussions, considerations and proposal to use the results of integral valuation linked to public policy and planning process in the study area.

Also it is always advisable in the process of selection of a specific technique to perform triangulation,<sup>1</sup> between different techniques design to access to same information because the reliability of the data increases and allows obtain multiples views to one topic showing his complexity: not always the same information is obtained using different techniques. In Table 1 we present a synthesis of participatory classification made for integrated valuation and the choosing criteria: the time needed to implement the technique, the economic resources

<sup>1</sup> "Triangulation means that the tools, the information sources and the people facilitating the tools all have three different ways to deepen their understanding" (World Food Program WFP, 2001)

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