

Acknowledgements

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Valuation without action? On the use of economic valuations of ecosystem services

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1. QUESTIONING THE PRAGMATISM OF ECOSYSTEM SERVICES VALUATIONS

Economic valuations have raised high expectations to influence policy and alleviate the accelerating degradation of the environment. This was reaffirmed by the publication of *The Economics of Ecosystems and Biodiversity* (TEEB) report, during the Tenth Conference of the Parties to the Convention on Biological Diversity in Nagoya in 2010. Decision IV/10 of COP 10¹ recognizes economic valuation as a key tool for a more effective mainstreaming of biodiversity-related considerations. In many scientific publications as well, the “measurement” of monetary values that reflect the social importance of ecosystem services is seen as a prerequisite for better management decisions (e.g. Daily *et al.*, 2009).

But heated debates have been ongoing for years. While ecologists Myers and Richert (1997) declared their faith in economics (“We don’t protect what we don’t value”), economist Heal (2000), in contrast, stated: “Valuation is neither necessary nor sufficient for conservation. We conserve much that we do not value, and do not conserve much that we value”. Balmford *et al.* (2011) even made it a positive statement: “[For many reasons] there is validity in calling for societal choices, especially in the domain of environmental decision-making, to be made without recourse to valuation or with the results of a cost-benefit analysis being a single component in a larger body of evidence”. Though the debate exists, it is undeniable that international discussions and publications are now massively promoting Ecosystem Services Economic Valuation (ESV) as a tool susceptible to make key contributions to biodiversity protection. Questioning the supposed pragmatism and influence of ESV, while standing clear from ideological statements, is thus both timely and vital.

ESV methods are now highly mature. They have been the subject of a large and growing literature since the beginning of the 1990s (e.g. Adamowicz, 2004). Yet, economic valuation is not sufficient in itself. The hope that it will become an efficient political lever to alleviate

1. <http://www.cbd.int/doc/quarterly/qr-10-en.pdf>

environmental degradation supposes above all that it actually be used for decision-making.

For this reason, one of the key issues relating to the development of ESV is understanding how and to what extent they are actually used. This policy brief synthesizes some key elements of a systematic review of scientific literature—the first of its kind—recently conducted on that topic (see Laurans *et al.*).

2. HOW ARE ECOSYSTEM SERVICES VALUATIONS SUPPOSED TO BE USED?

An extensive bibliographic analysis, reviewing over 700 references of both scientific and grey literature, allows us to identify how ESV is supposed to be used in decision-making. We distinguish between three main categories of use depending on whether ESV is considered as being primarily decisive, technical, or informative.

2.1. Decisive ESV (for a specific decision)

This first category involves cases where the valuation aims to facilitate a specific decision. In this case, ESV can be seen as contributing to a process in which a given choice is to be made, *ex ante*, by a decision-maker facing alternatives. These options may involve a project or a policy, such as a regulatory proposal to be examined. It is then up to ESV, when incorporated into a cost-benefit analysis, to provide elements on the opportunity of the project and its economic consequences with regard to ecosystem services, thus enabling choice. Within this category, three variants of ESV can be distinguished:

- **ESV for trade-offs:** by factoring environmental concerns into the cost-benefit analyses that are underpinning decision-makers' trade-offs, the purpose is to optimize social well-being by making choices that balance out preference criteria.
- **Participative ESV:** instead of providing a social optimum to a given decision maker, ESV is seen here as a basis for discussion. Through an open debate on ESV parameters and assumptions, stakeholders negotiate and define a project that is adjusted and enhanced in terms of compromise and the sum of interests.
- **ESV as a criterion for environmental management:** ESV can also help allocating conservation efforts within an organization, in an optimal way. It can facilitate identifying ecosystem management scenarios likely to maximize benefits, or even identifying the territories that contribute most to ecosystem services, thus defining priorities for investments of a specific organisation.

2.2. “Technical” ESV (for the design of an instrument)

This second category involves those cases where ESV is applied *after* the choice of a policy or project, to adjust the economic instrument that will implement the decision. It covers two possible types of Use of Ecosystem Services Economic Valuation (UESV):

- **ESV for establishing levels of damage compensation:** compensation may be *a priori* (i.e. compensating the anticipated effect of an operation) or *a posteriori* (i.e. remediating damages caused by an accident).
- **ESV for price-setting:** in cases where an economic instrument has been decided, ESV can be used to determine the amounts payable on the basis of a willingness-to-pay or willingness-to-receive logic: typically payments made by the beneficiaries of services in the case of Payments for Environmental Services, entrance fees to protected areas, etc.

2.3. Informative ESV (for decision-making in general)

Aside from its decisive and technical role, ESV can also be viewed as a means to provide information intended to have an indirect influence on decision-making, considered in a very broad sense. In this case, the expectation is not that ESV determine a choice with respect to a specific decision, but rather that it contribute to discussions, modify points of view, demonstrate the interest of certain policy options. This category of UESV has three variants:

- **ESV for awareness-raising:** informative ESV may be seen as the vector for a broad message concerning the preferences that should be mainstreamed into society, particularly to ensure that ecosystem services considerations are integrated into public choice. ESV is then a form of “advocacy”.
- **ESV for justification and support:** in this variant, informative ESV is used by a stakeholder to promote a given course of action, as opposed to ESV for trade-offs where valuations are deemed neutral and inform an optimal choice. Here the issue is to show that an already identified choice is justified either *a priori*, to demonstrate the economic rationality of the measures decided, or *a posteriori*, as a tool for verification.
- **ESV for producing “accounting indicators”:** this last category involves situations where valuation is designed to allow decision-makers, or the public opinion, to remain informed of the state of the natural capital and to integrate this information into their decisions in general. This category encompasses ESV which aim at constructing natural heritage accounts.

3. THE USE OF ECOSYSTEM SERVICES VALUATIONS IN DECISION-MAKING: A STRIKINGLY UNDER-INVESTIGATED ISSUE

While the bibliographic survey allowed to establish categories of expected UESV in decision-making, it also revealed that a very small number of authors have published works going deeply into this issue. Figure 1 summarizes, for the eight sub-categories of uses introduced above, the number of reviewed papers that address the issue by (i) a cursory reference to a potential use; (ii) an analysis of the use issue; and (iii) use cases.

A key result of this analysis is the paucity of papers that describe, through a case study, how a specific ESV has played a role in a decision. Indeed, the review indicates that, for the most part, UESV receives no more than a cursory reference in the form of an expected or proposed use.

Furthermore, these simple mentions of a potential use often envisage an “informative” use in the form of general advocacy to protect biodiversity or to justify conservation choices; or they envisage valuation as enabling decision-makers to decide on trade-offs (though without identifying a specific decision).

4. QUESTIONING AN INTERNATIONAL LITERATURE BLINDSPOT

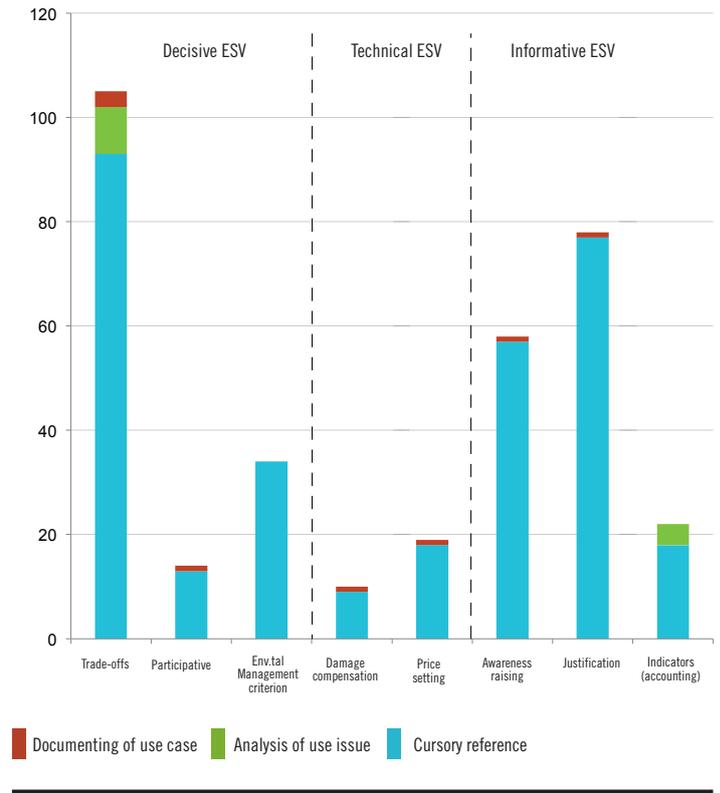
In this section we examine possible explanations for the discrepancy between expectations and available information on the use of ESV: either the use of economic valuation is common practice, but is absent from the literature; or the use is effectively rare.

4.1. The literature may not be suited to address UESV

It is conceivable that UESV be seldom addressed by the literature although it would be widely found in practice. It would generally go unnoticed in the targeted community of authors, and would not appear in the results of a keyword search like the one we conducted, even were it to produce a vast number of titles, including grey literature. This could be reinforced by a potential time lag between economic valuations, their presentation in the literature, and their use for decision making. Nevertheless, it is unlikely to be a major source of mismeasurement in our review since ESVs have been abundant in the literature for over 15 years, not even mentioning environmental economic valuations produced before the “ecosystem services” terminology emerged in the late 1990s, and included in our review.

In addition, observing and describing UESV in peer-reviewed literature is certainly more difficult

Figure 1. Typology of ESV and treatment in the literature



for an “informative” type of use. In that case, tracing use cases takes a specific methodology based on decision-process analysis, examining the resources used by stakeholders, and considering ESG among other factors.

4.2. Use may fall short of ambitions in practice

Beside the problems of selection that may explain why the literature makes scant reference to uses, it should also be conjectured that the use of valuations may be limited in reality, which would explain its relative absence in the literature. Here six hypotheses can be investigated:

- ESV may be too often inaccurate: it could be considered that valuation still has to be improved in terms of methods and techniques so as to yield more robust results.
- ESV may contain fundamental inadequacies: some posit that the lack of UESV stems from the fact that the valuation is in most cases too incomplete and not relevant enough to inform socially optimal decisions. Others argue that the objects measured by ESV do not represent the real issues at stake for decision-making, like distributional concerns. Even when they do, they may not be conclusive: knowing who loses and who wins does not tell which decision to make.
- The cost of ESV may restrict their use: it may be too high compared to the means that the contexts for their use would justify and/or allow to

mobilize. This is reinforced by the fact that the situations associated with biodiversity are very site- and problem-specific; they do not allow transferring values easily.

- Decision-makers may not have sufficient training in the language and axioms of economic analysis: they are unfamiliar with its logic or inexperienced and apprehensive at using poorly mastered tools.
- Regulatory frameworks may not be conducive to the use of ESV: the degree of UESV would be tightly linked to the scope and precision of the regulations that require economic analyses.
- ESV, by enhancing transparency, may hamper political strategies that require a certain opacity. Less intensive use of ESV may be due to the preference of decision-makers for processes that leave the distributive effects of their decisions in the dark, or, worse, that obscure arrangements that are indefensible with respect to the public interest.

5. CONCLUSION

ESV are abundantly produced and disseminated within the current trend of a utilitarian view of the environment. These economic valuations are therefore promoted on the assumption that they respond to decision-makers' needs and/or that they help guiding decisions towards more and better conservation. The positive economic impacts of maintaining or increasing ecosystem services are demonstrated and supposedly taken into account; as are, conversely, the negative economic impacts of their degradation or destruction.

The pivotal finding of our review is that the issue of valuation use for decision-making is rarely addressed beyond general statements and suggestions about possible uses. The common rule is to present an economic valuation, then suggest that it be used for decision-making, but without this use being either explicated or contextualized, and without concrete examples being provided or analyzed. This finding is all the more striking as the literature often argues that valuations are highly useful for decisions: even when deemed ethically debatable they are called for in the name of pragmatism.

Various hypotheses can be put forward to help explain this blindspot. They open up avenues of research to give greater weight to the issue of UESV, provide deeper insight into the subject and step up efforts to find ways to enhance use. These hypotheses can be combined to explain the literature blindspot and/or the shortcomings of UESV to date. Evidence provided by the literature review

leads to the conclusion that: (1) the vast majority of ESV are produced in a "supply-side logic"; (2) it is thus uncertain that the type of tools offered for use purposes are the best match for real decision-making needs; and (3) ESV is primarily geared towards an informative role for overall influence and awareness-raising.

The paucity of UESV in the available literature is not only a puzzle that needs clarification but also a major concern for biodiversity. If ESV are supposed to be a decisive key for action, it hardly seems reasonable to sideline for much longer the question of the use of tools that occupy a central place in today's discourse, thinking and debate around biodiversity. Or else economic valuation could lead to the type of disillusionment against which Redford and Adams (2009) give us due warning: "Conservation has a history of placing great faith in new ideas and approaches that appear to offer dramatic solutions to humanity's chronic disregard for nature... only to become disillusioned with them a few years later". ■

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