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The tension between nature conservation and economic valuation of ecosystem services

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Summary

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The general topic of this thesis is how a strong focus on nature conservation can be maintained in a situation where economic valuation of nature has become a dominant but troubled approach in the governance and management of the environment. This valuation approach rests on an earlier introduced paradigm of ecosystem services, in which nature is seen as a source that provides services to society. The ecosystem services and economic valuation of nature approach has created both opportunities and challenges for nature conservation. Both its effectiveness in nature conservation and the moral and ethical consequences are heavily debated. This thesis puts a focus on some of those challenges where the goals of nature conservation themselves are in danger of being lost, and provides a contribution towards solving these issues.

The goals of nature conservation are formed by the way we see the relationship between humans and nature. Ecosystem services is the current popular approach to express this relationship and causes friction with earlier frames, because it involves human well-being as a measure of conservation success, while the frame of protection of nature against human pressures sees humanity increasing its wellbeing as a threat to conservation. Many nature conservationists viewed the ecosystem services concept and the additional step of monetization of services as a promising development in the battle to prevent biodiversity loss. From the perspective of economics, the concept was very useful, because it allowed economists to incorporate the effects of environmental damages and benefits from nature into an updated view of human welfare. The applicability and flexibility of ecosystem services is broad, and the potential use of the concept partly depends on the institutional context. In the vaguest sense, it can be a buzzword to mean that we take into account nature conservation, human happiness and economic development in one package.

A large number of critiques appeared in scientific literature about ecosystem services and economic valuation. From the perspective of nature conservation, the main problem that the ecosystem services frame poses, is that the justification of nature conservation changes to a strongly anthropocentric outlook. What ecosystem services does, is specifically naming the function and use of nature for humans as the justification for conservation. This makes it considerably more difficult to justify the protection of rare species, and diversity itself. Economic valuation of ecosystem services further narrows the justification of nature conservation, and rare species hardly ever carry the greatest monetary values. Nature conservation itself may even be in direct conflict with maintaining ecosystem services and may be in competition for space and resources.

It is argued further that human-nature relationships, which motivate the goals of nature conservation, cannot be adequately expressed through economic valuation. A commodification of nature would see ecosystems and individual species as exchangeable with other commodities and land uses, which devalues nature, may create fragmentation of landscapes, and disregards certain values that humans attribute to nature. There is accumulating evidence that an imposition of monetary rewards as an incentive to get people motivated to act has limits and undesirable consequences. There is also a danger that economic valuation and commodification of nature will further disenfranchise the poor and

empower the rich, and it doesn't change the institutional context enough to solve the environmental problems.

From the point of view of a policy maker, the criticism exhibits a layered complexity, in which it is unknown how to deal properly with these concerns. One way forward is to channel these critiques into practical adjustments of the way ecosystem services and economic valuation are implemented now. This thesis works towards that aim, leading to the following research questions.

1. What do practitioners think about economic valuation?

This chapter takes all the available information about the virtues and limits of economic valuation of biodiversity and its alternatives and investigates the current opinions about these concepts among people who are involved in the field and carry out such economic valuation in projects.

2. How do EU research subsidy documents communicate the importance of biodiversity conservation?

This chapter investigates how the value of biodiversity is communicated within European policy networks, and whether there are any trends visible through the years in how this value is communicated to European scientists.

3. How can we combine economic valuation with notions of sustainable use of ecosystems?

This chapter looks into the economic methods that are used to value ecosystem services and to explore whether these methods could be augmented with ecological knowledge.

4. What are stakeholders' ideas about good indicators for conservation action success by farmers?

This chapter investigates stakeholders' ideas about ecological indicators in how farmers are judged in their performance in biodiversity conservation, and whether such indicators are a viable way to use ecological knowledge in market-based approaches.

5. What are the motivations underlying committed conservation action?

In the final chapter, the aim was to find people who already are passionate about protecting nature, and ask them what makes them motivated to do their work. This information informs us of the values of nature that need to be given freedom of expression in biodiversity conservation to trigger motivation.

Answers to the Research Questions

Q1: What do practitioners think about economic valuation?

Four coherent viewpoints could be identified concerning economic valuation of biodiversity and ecosystems: *enthusiasm*, *value pluralism*, *social justice concerns* and *eco-deliberation*. The discourses show that the same arguments for or against economic valuation may be used for different collections of ideas. Furthermore, the sequence of salience of the four identified discourses illustrates a polarization of opinions. Only one discourse is in clear agreement with economic valuation of ecosystems and biodiversity and it is the most salient one. The three discourses besides *enthusiasm* express different forms of disagreement with economic valuation, and are nevertheless strongly expressed in the debate.

Q2: How do EU research subsidy documents communicate the importance of biodiversity conservation?

A clear shift in word use is visible in the environment themes of the FP7 and Horizon 2020 work programs towards using 'ecosystem services' as the foremost way to express the value of biodiversity. There is little explicit referral to economic valuation of biodiversity in the documents. Coupled with a simultaneous decrease of other expressions of values and goals such as 'conservation' and 'sustainability', 'ecosystem services' substitutes other expressions of value in the work programs.

Q3: How can we combine economic valuation with notions of sustainable use of ecosystems?

Ecological theory of resilience has a role to play in sustainable use of ecosystems, and this can be connected to the approach of economic valuation via the metaphor of biodiversity having an insurance value for future provision of ecosystem services. The specific biodiversity-related ideas about functional diversity and how that relates to stability and resilience is what is useful in this framework, because it relates to sustained ecosystem functioning. Portfolio theory in turn justifies an investment in diversity.

Q4: What are stakeholders' ideas about good indicators for conservation action success by farmers?

The three types of ecological indicators received significantly different scores, suggesting that a rating system based on (1) the preconditions necessary to obtain biodiversity success and (2) the attained biodiversity results will be experienced as most acceptable throughout the chain of agricultural production. The third type, being "the farmer's effort in nature management" will be experienced as less acceptable. There are no clear differences in opinion between the chain parties. Within a market-based approach, stakeholders can come to agreements such as over the right indicators for biodiversity success.

Q5: What are the motivations underlying committed conservation action?

A basic palette of motivations appears to exist for committed action in general, but small specific differences are found between biodiversity and non-biodiversity actors. The basic palette is broad, including *curiosity and learning*, *living a worthwhile life*, *future generations* and *value in itself*. Especially *living a worthwhile life* is a motivation curiously absent from the current communication about the value of nature conservation.

Discussion

Using the answers to the research questions, we come to a deeper understanding of the roles ecosystem services and economic valuation of nature could play in nature conservation and where it creates problems.

To lay out the debate, the first study (chapter 2) illuminates that within the ecosystem services community, the debate about economic valuation is polarized into one discourse of enthusiasm and a couple of negative discourses whose concerns refer to personal and societal values that are perceived as ignored or under threat. The arguments for and against economic valuation refer to different

understandings of hypothetical consequences. This result could be a consequence of that the effectiveness of economic valuation to protect nature is still unknown. As empirical evidence for or against economic valuation approaches for the goal of nature conservation mounts, the debate on this topic might shift from imagined applicability and side-effects to more clearly defined limits and usefulness.

One perceived danger of economic valuation of ecosystem services is that non-anthropocentric reasons for nature conservation and the personal values underlying these reasons will be discarded. This danger becomes more tangible when the study on word use in EU research programmes shows that nature conservation as a goal itself disappears from higher policy levels, while the ecosystem services idea becomes the foremost way to express the value of biodiversity. It is argued that arguments based on ecosystem services could be used in tandem with arguments from the intrinsic value of nature, but the results suggest that that may not be the case.

If nature conservation goals are repackaged as ecosystem services provision and economic value goals, can ecological knowledge still inform environmental policy? The third study shows that economic valuation of nature can still be combined with notions of sustainable use of ecosystems. The proposed solution of portfolio theory is however only a partial solution in the grand scheme of ignored values, because it still refers to economic values and to desired ecosystem functions from an anthropological point of view. From the perspective of nature conservation however, the portfolio approach is a tortured, roundabout way of arguing for conservation.

A biodiversity label based on accepted ecological indicators would be a second way to combine economic valuation of nature with ecological knowledge for biodiversity conservation. The indicators that are regarded as most important are those informed by ecological science. Within a market-based approach, stakeholders can come to agreements such as over the right indicators for biodiversity success. Where portfolios of biodiversity are meant to protect ecosystems from regime shifts and uphold ecological resilience, biodiversity labels give an indication whether the ecological goals for protecting ecosystems are actually upheld. Both solutions could help to give voice to values underlying biodiversity conservation.

The question remains how to motivate society to protect nature. When discussing how economic valuation of nature relates to personal motivation, it should first be mentioned that the techniques used to value nature in this way, such as contingent valuation, hedonic pricing etc., are not meant to motivate people personally. However, since personal values are seen as under threat by economic valuation in the identified discourses, the relationship between motivation and economic valuation bears scrutiny. The strongest motivations for nature conservation refer to values that are either difficult to describe and to value as services, such as care for future generations and intrinsic value, or not part of a services framework, such as living a worthwhile life. Our study suggests that ecosystem services fails to motivate because it is too abstract and misrepresents the relationship between humans and nature.

Recommendations for future research

First of all, empirical evidence is lacking about either the dangers or the effectiveness of economic valuation and Payment for Ecosystem Services (PES) schemes. A common argument is that ecosystem services thinking is a slippery slope towards economic valuation, and economic valuation a slippery slope towards financial mechanisms such as biodiversity offsetting. What remains unknown is how often economic valuation leads to these practices and under what conditions, and what the precise consequences are of offsetting schemes. Payment for Ecosystem Services schemes' effectiveness in conservation also remains unclear and so does its impact on the intrinsic motivations of stakeholders. Since our investigation into word use discovered that the ecosystem services framing replaces other frames that could stand alongside it, ecosystem services could no longer be seen as just a tool in a toolbox of strategies for nature conservationists. Further investigation into whether this trend is replicated in other policy documents would be very important to investigate the usefulness or danger of ecosystem services as a frame for nature conservation. Further research could either resolve some of the worries of critics or support the validity of their critiques.

Secondly, the two solutions proposed in this thesis to give ecological knowledge an important role in PES schemes, namely the portfolio approach and the use of ecological indicators for a biodiversity label, also lack empirical evidence about their feasibility. In addition, a successful application of these approaches rests on ecological knowledge; especially on the relationships between biodiversity and ecosystem functioning. A deeper understanding of these relationships remains essential.

Finally, the great pressing question remains how to motivate society to protect nature. The economic valuation of ecosystem services promises a solution, but simultaneously creates complications. The research question about the motivations that underlie successful biodiversity conservation concluded that economic values tell only a part of the story when it comes to motivating people. Morals based on intrinsic values and especially the concept of a worthwhile life appear to play an important role. But will stressing the worthwhile life concept for nature conservation lead to more effective action?

Recommendations for policy makers

It is recommended to policy makers that the use of economic valuation of nature is restricted to two instances. First, as a facilitation for financial schemes for nature conservation, but only if clear conservation goals are respected. Secondly, as a communication of the value of nature, but only if it is framed in a combination with other values that reflect human-nature relationships.

Conservation goals will need safeguarding so that vaguer notions of nature conservation do not become the status quo in higher policy levels. Technical uses in the form of financial instruments may however lead to cooperation on an institutional level, but the sustainable use of ecosystems and conservation goals will need safeguarding in that case against perverse outcomes.

In making trade-offs in environmental management, in negotiating between stakeholders and in making strategic management decisions, the economic valuation approach seems better replaced by an

alternative method that creates space for unaddressed personal values. To bring rationality to the process of coming to a decision, alternative valuation methods arguably fill the same criteria. Also, using economic valuation for awareness-raising and general motivation is a truncated method that is better used in combination with two other messages: that of intrinsic value of nature and the role of nature in a meaningful life.

Reframe or reposition ecosystem services in such a way that its positive aspects are maintained, while human-nature relationships are given a stronger expression and structural causes of environmental degradation are illuminated. Ecosystem services is just one metaphor and should find its place among multiple metaphors about human-nature relationships, so that each metaphor could be granted space in ecosystem management.