Session ID: T6

Title of session: Integrated Valuation of Ecosystem Services in science-policy-practice

Hosts:

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Abstract:

Value Integration is the challenge of consistently combining a diversity of value systems in land and natural resource use decisions. An effective ecosystem service assessment includes the multitude of values of nature, taking into account local and planetary boundaries. The central aim of ecosystem service assessments is to raise awareness and inform decisions on more equitably distributed benefits and burdens from the use of nature within and across societies and generations. Valuation methodologies and allegedly neutral technical decision–support technologies affect the representation of equity, efficiency, ecological sustainability and procedural legitimacy of the final outcomes. Integrated valuation aims to identify the conditions under which such ecosystem service assessments lead to sustainability and environmental justice. In our session we would therefore focus on the integration of these aspects in practical contexts, building on the work within EU FP7 project OpenNESS and other projects and platforms like IPBES engaged in this science–policy–practice frontier.

Additional information:

Workshop of the TWG 6D Value Integration, in cooperation with the OpenNESS project

Planned output:

Further development of practical guidance for scientists, practitioners and policy makers on integrated valuation of ES within ecosystem service assessments.
Voluntary contributions accepted:

We welcome contributions which shed light on social, ecological, and economic implications of valuation choices, or demonstrate integration of different value systems in local case studies, specific methodological assessment steps or on-going policy processes and implementation.

SPECIAL ABSTRACT REQUIREMENTS FOR PUBLICATION

This session is linked to a special issue in ecosystem services. Presentations/case studies that fit the scope of this issue, are encouraged to submit a developed 3–4 page draft paper. This offers the option to receive immediate thorough feedback from the WG session and team, and submit your paper to our special issue.


If your contribution to the session is not aimed for publication in the special issue, a short abstract will do.

SPEAKERS

Invited speakers (if applicable)

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Using integrated valuation of ecosystem services as indicators of agroecosystem socioeconomic and environmental performances

Presenting author: Louise Bellet  
Affiliation: Participatory Experimental Farm, France  
Contact: louise.bellet@gmail.com

Pressured by the need to increase production with fewer resources, many countries are searching for a new model of agriculture referred as “high performance agriculture”. Largely based on integrated protection and conservation agriculture, this model is expected to respond to today’s ecological challenges while bringing added competitiveness. Important challenges remain to scientifically optimize such systems and facilitate their wide adoption by farmers.

The development of effective integrated assessment to evaluate agricultural systems’ performance is on many countries’ agenda. Research initiatives are bringing a diversity of valuation approaches and methods. However, in a mean to enhance the practical use of ecosystem services as a tool for ecological sustainability, there is a need to harmonize and generalize a standard integrated valuation of ecosystem services.

In an effort to link science and practice, an experimental farm based in northern France is leading a participatory research program including farmers, researchers and agro–industries to conceptualize a high performance system based on leverage agro-ecological practices. Ecosystem services will be quantified and evaluated as indicators of socio-economic and environmental performance. This project will contribute to highlighting the transition phase of agricultural systems, assessing the socio–economical capacity of farmers to think through ecosystem services and manage the transition. A two year phase of stakeholders’ consultation will take place from September 2015 until March 2017 before launching the transitionary itinerary towards high performance.

Keywords: Participatory research, transition itinerary, high performance, integrated evaluation
Type of submission: Voluntary contribution

T6 Integrated valuation of ecosystem services in science–policy–practice

Socio–cultural valuation of ecosystem services: The case of the Araçá Bay (Brazil)

Presenting author: Cauê Dias Carrilho
Other authors: Paulo de Almeida
Affiliation: Universidade de São Paulo – USP, Brazil
Contact: cauecarrilho@gmail.com

Ecosystem services sustain life and contribute to human well-being. Despite of that, they have received little attention in decision-making. To contribute to this issue, it is important to highlight these services and the benefits provided by them, mainly for the local community. There was an increase in the number of scientific papers focused on ecosystem services, including valuation practices, since the last decade. Economic techniques of valuation of ecosystem services are the most used, while the socio–cultural valuation is rarely addressed. This article presents the socio–cultural valuation of the ecosystem services of the Araçá Bay (Brazil). This Bay has a significant environmental importance and has been facing strong pressures from human activities over the years. The Araçá Bay may be impacted by a future harbor expansion. The ecosystem services are not properly recognized in the decision making process, including their sociocultural value. We identified the ecosystem services using literature review and the opinion of specialists and of the local community. The valuation methodology adopted was based on a new approach developed for the valuation of the ecosystem services of Marujá Island (Brazil). We interviewed 68 residents of the nearest neighborhood of Araçá Bay. They were asked about their relationship (utilitarian, personal and community) with the Bay. We used the free–listing technique in the interviews and the items answered were categorized in the previously identified ecosystem services when it was possible. We calculate the Smiths Salience Index for each service mentioned. With this, we create a ranking of the ecosystem services based on the importance for the local community. The service with the highest socio–cultural value was “food supply”, followed by “leisure and recreation” and “heritage and cultural identity and sense of place”. The results obtained can help in the local decisions, since they highlight values that are not normally considered.

Keywords: Sociocultural valuation, ecosystem services, decision making, Araçá Bay
A methodological framework to account for biodiversity in policy making

Presenting author: Silvie Daniels
Other authors: Nele Witters, Jaco Vangronsveld, Steven Van Passel
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Biodiversity plays a key role in ecological processes and the delivery of ecosystem services in agricultural areas and contains an intrinsic, an ecological and a socio-economic component. Depending on the context, the intrinsic value argument for biodiversity conservation in maintaining ecosystem services could be complemented by an economic component quantifying the importance of the ecological role of species in the ecosystem. In many cases, policy measures to safeguard biodiversity and resource developments are mutually exclusive and hence biodiversity conservation implies the decision to bear opportunity costs. Being confronted with budget constraints, policy makers need to justify decision-making by supporting evidence of biodiversity benefits outweighing the opportunity costs incurred. Quantifiable measures of the harm caused and assigning a value to marginal changes in species diversity could significantly support the argument mix for biodiversity conservation. The exceptional complexity of habitat and species diversity, might just overstretch the capacity of the usual stated preference valuation techniques for the valuation of increased biodiversity protection.

Therefore in this paper we introduce a novel methodological framework for the valuation of non-marketable species based on the ecological role of species in the agroecosystem. The framework both (i) quantifies the contribution of biodiversity to the decrease in costs in agroecosystems through the use of a production function technique, and (ii) attributes an objective monetary value to increased species diversity through the changes in the provisioning of a marketable good. The aim of the methodological framework is to provide objective measurements for the justification of biodiversity conservation through the delivery of comparable monetary standards which can be employed when considering trade-offs in policy making. The methodology has been tested to guide policy decisions with regards to the use of insecticides in order to maintain biological pest control provided by natural predators, in close collaboration with BEES (Belgian Ecosystem Services).

Keywords: Methodological framework, functional diversity, biodiversity conservation, agroecosystems, policy recommendation
Improving decision–making for hydroelectric dam development through valuing local ecosystem services: Case study of the São Luiz de Tapajós Hydroelectric project, Brazil

Presenting author: Camila Jericó–Daminello  
Other authors: Susan Edda, Irene Burgues  
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The Tapajós River Basin is one of the best–conserved areas of the Amazon biome. It is home to many traditional communities who depend heavily on local ecosystem services. These services are at risk from plans to develop large–scale hydroelectric facilities in the basin. While the infrastructure decision–making process in Brazil depends on the approval of an environmental impact assessment, this document does not objectively integrate the value of ecosystem services. Moreover, while potentially affected communities must legally be consulted, their participation is limited by a huge information gap related to how they will be impacted. Thus, we aim to estimate the economic impacts of the proposed hydroelectric project on local populations. Key challenges in ensuring that this information can support good decision–making relate to the need to generate results quickly, and to do so in a data–poor context. We therefore draw on a literature review of the impact of dams to tropical forest communities to identify expected changes in key ecosystem services, and estimate the value of these changes based on secondary data from the region and the judicious application of benefit transfer. In particular, existing production functions are used to value provisioning services for three main goods (fish, timber, and non–timber forest products); foregone income from the potential REDD market is used to value greenhouse gas emissions from deforestation and flooding; changes in water quality are valued using existing observations of avoided costs; and impacts on tourism are calculated based on projections of foregone income due to flooding and decreased environmental quality. In the process of conducting the analysis, we ensure findings are communicated to and involve both local and international stakeholders.

Keywords: Ecosystem service values, Amazon, dams, traditional people, decision–making
Urban planners face a variety of demands when they decide about the places for new construction. Suitability of the ground for building, distance to infrastructure (streets, water pipes, electricity, etc.), distance to services (food stores, kindergartens, schools, health care, recreation facilities, etc.), accessibility to public transport and price of land are some of the important things to consider in planning. On the other hand, construction should not threaten natural values or provision of vital ecosystem services. Nature has long been seen as a restriction to new development but with the concept of ecosystem services also benefits of nature are better seen.

Spatial planners have become more and more interested in integrating also ecosystem services in the set of planning determinants in addition to the more technical or social ones. But how to take all these different aspects into account simultaneously, being able to weigh them against each other? There are physical facts, monetary viewpoints and social values together with ecological ones. And to make it even more complex, the ecosystem services alone are subject to e.g. differing social values.

City of Järvenpää, Finland, has an ambition to place new infill development inside the compact city structure taking into account all these different aspects. We have produced a green and blue area typology for the city and applied a variety of methods to assess the ecosystem service provision potential of the different green and blue elements, as well as the values local inhabitants, schools and kindergartens attach to these elements both generally and place–specifically. We have combined the results with data on valuable habitats and species. To aid decision–making about infill development we produced a spatial multi–criteria decision analysis tree, which can be used for integrating all the different aspects into making an informed decision of the new construction sites.

Keywords: Ecosystem services, spatial planning, infill development, spatial multi–criteria decision analysis, cities
Integrated valuation of a green infrastructure for water pollution control using ecosystem services concepts

Presenting author: Camino Liquete
Other authors: Angel Udias, Giulio Conte, Bruna Grizzetti, David Barton
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The Gorla Maggiore water park (Italy) is a constructed wetland system to reduce water pollution from the neighbouring urban area before it is discharged in the Olona river. It includes a flood prevention area, a pollutant removal area and a recreational zone. This study assesses the multiple benefits provided by this green infrastructure and compares them with two other alternatives: a standard grey infrastructure and the previously existing poplar plantation. The approach follows a Multi-Criteria Decision Analysis (MCDA) built and applied by experts and stakeholders.

There are six major objectives in the decision matrix. The selected criteria include five ecosystem services (water purification, flood protection, wildlife support, recreation and timber extraction) and an analysis of public costs, each of them quantified through 1 to 4 indicators. The experts and stakeholders assigned relative weights to each criterion in a dedicated meeting, which was analysed following an analytic hierarchy process. A preliminary sensitivity analysis shows very high robustness in the ranking of alternatives.

In general, the poplar plantation has the lowest values in all criteria but the timber exploitation, where the net benefits are private. The grey and the green infrastructures have a similar performance in the water-related criteria (with a slight gain of the green one) and the construction and maintenance costs; while the green infrastructure provides larger benefits in terms of biodiversity and recreation. As a result of the MCDA and the uncertainty analysis, the green infrastructure came up as the single best alternative.

The MCDA highlights the multi-functionality of the green infrastructure and, at the same time, integrates several objectives and interests in the decision analysis. This case study integrates also different policies relevant to the territorial planning, which is particularly relevant for the regional authorities involved in the development of the River Basin Management Plans under the EU Water Framework Directive.

Keywords: Green infrastructure, non-monetary valuation, water management, multi-criteria analysis, participatory method, constructed wetland
Valuing ecosystem services using life–years instead of dollars

Presenting author: Francesca Louise McGrath
Other author: Luis Roman Carrasco
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Current economic valuation methods of Ecosystem Services (ES) fail to: (i) incorporate the relative importance of dollar values to different individuals; and (ii) capture the level of dependence of individuals on ES. Assessing the human wellbeing derived from ES has been proposed as an alternative to overcome these limitations, however, universal wellbeing metrics are lacking. Human health, one of the main pillars of wellbeing, could be used as a complement to the economic valuation of ES, using Disability-Adjusted Life Years (DALYs) averted. DALYs are a simple metric that is already supported from public health literature and the World Health Organization. Using examples of Yellowstone and Xingu national parks, we illustrate the differences between dollar and DALY valuations. Using DALYs gives an opportunity to transfer global systematic knowledge from public health into conservation science. DALY valuation helps identify the importance of conservation projects in significant cultural and ecological areas.
Integrated valuation of ecosystem services as a tool for landscape management and decision making at regional and local level (Case study Trnava, Slovakia)

Presenting author: Peter Mederly
Other authors: Peter Bezák, Zita Izakovičová, František Petrovič
Affiliation: Constantine the Philosopher University in Nitra, Slovakia
Contact: pmederly@ukf.sk

This presentation describes a possible approach to the integrated valuation of ecosystem services (ESS). Case study is conducted in scope of OpenNESS Project and it is based on the framework for integration of ESS valuation (D.4.2 Deliverable). Used approach consists of five “building blocks” – policy context, biophysical assessment, socio-economic assessment, valuation process and integration of values. Study context was also evaluated according to criteria for integrated ESS valuation. The policy context is related to the Biodiversity 2020 Strategy in Slovakia and its Action plan, the study is aimed mainly at the local and regional level.

The main goal of biophysical assessment is to recognize the state of ecosystems in the study area and their capacity for ESS provision. This step is based on geo-ecosystem mapping, land cover and habitat mapping. As a result several map outputs were elaborated, e.g. ESS supply map and ESS actual use maps for 10 selected ESS.

The socio-economic assessment in the study includes the mapping of main stakeholders, their influence, interests and motivation for ESS use and maintenance. Following step is to map the demand for ESS provision (population and their needs, economic activities, initial supply/demand balance).

The valuation process is based on participatory approach. Main stakeholders and experts are involved in the process. The tables of ESS benefits/costs and preferences for ESS use/maintenance are elaborated. Meetings, questionnaires and interviews are organized, selected non-monetary and monetary methods are used (preference assessment, deliberative valuation, market price, benefit/value transfer...).

The final integration will be a multi-level process that requires involvement of main stakeholders. Final supply/demand balance and cost/benefit analyses will be used, other
factors will be reflected (main scenarios and trends, development activities). Final goal is to develop and discuss the tool for ESS valuation in the framework of landscape management and spatial/urban planning in Slovakia.

*Keywords:* Ecosystem services, integrated valuation, landscape management, urban planning, integrated decision making
Beyond Anthropocentrism – Biophysical Valuation of Ecological Processes and the Relationship to the Ecosystem Services Paradigm

Presenting author: Murray Patterson
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Ecosystem services is fundamentally an anthropocentric concept. Therefore not surprisingly methods for valuing ecosystem services have been based on utilitarian and human-centred ideas of value, to a complete exclusion of biophysical measures of value. Case closed – or is it? Is there any point of pursuing non-anthropocentric methods of valuation? If so, what are the non-anthropocentric methods of valuation that could be used, and how might they be operationalised? Indeed, is it even possible to have non-anthropocentric methods of valuation? These are the questions that will be addressed in this paper, in the spirit of methodological pluralism.

The paper will first of all review the philosophical and theoretical literature that supports the idea of non-anthropocentric (biocentric value), drawing on the debates between ‘deep ecologists’ and other viewpoints, as well as ecological concepts of value which make no reference to human wants or needs. From a more human-centred perspective, the practical rationale for biophysical valuation approaches is also argued. That is, it is argued that economic valuation methods (such as willingness to pay) tend to only to capture those who value of ecological processes and species that are known and visible. For example, it is well-known that high values are usually ascribed to the ‘charismatic mega-fauna’ (whales, dolphins, penguins) in marine ecosystems, whereas the equally and possibly more important processes, species, and functional groups (phytoplankton, zooplankton) are overlooked and hence are ascribed zero value. Whereas, from an ecological standpoint these overlooked species are critically important in terms of the functioning of the ecosystem.

The paper will then focus on how ecological processes and species can be valued, from a non-anthropocentric point of view using the ‘contributory value’ concept. That is that different species/ecological processes in ecosystem ‘contribute’ to each other in–so–far as that they ‘receive’ value and ‘donate’ value to each species/ecological processes. This contributory value is measured by solving a system of simultaneous equations, which describes the energy and mass flows in ecosystems and food webs. The solution of these equations enables and intensive property akin to ‘prices’ to be determined, with those processes/species with the highest prices having the highest contributory value. The
mathematical basis to this methodology has recently been summarised in two articles in the journal Ecological Modelling (Patterson, 2012; Patterson, 2014).

Finally the role that this contributory value method can play to understand ecosystem services values which are not captured by conventional economic methods is evaluated. In this context, it is argued that measuring biophysical value of ecological processes which support both well-being of humans and the well-being of other species (aka contributory value), simply: (a) highlights how ecological processes contribute to both human and nonhuman well-being, even though we may not capture these values in conventional economic valuation methods. (b) Identifies the ‘upper limit’ of the value of ecosystem services, by quantifying and comparing the contributory value appropriated by humans and nonhuman species.

Keywords: Biophysical valuation, contributory value, ecosystem services, anthropocentrism
This paper discusses the interconnection of environmental and social impacts and the consequences of non-integrated valuation in the context of major resource extraction projects. We base our discussion on a recent study that examines how quality of life has been influenced in regional communities affected by four coal seam gas megaprojects in Southeast Queensland, Australia. Quantitative and qualitative data were collected from 428 participants using a cross-sectional survey which included structured and open-ended questionnaire items, semi-structured interviews and direct observations. The integrated mixed-methods design, coupled with factor analysis and structural equation modelling (SEM) facilitated a thematic structure for evaluating social externalities and changes to quality of life at a community level. Results reveal a unique set of relationships between social and environmental concerns, governance issues, distribution of benefits, and life-satisfaction. For example, we found that perceptions of fairness and inequity weigh heavily on land owners and disrupt meaningful participation leading to negative psychosocial effects. Correlations using SEM demonstrate that dissatisfaction with governance leads to lower levels of economic participation and sustained environmental and social concerns. Our analysis also shows that unresolved concerns of community residents about environmental and social impacts contribute to lower life-satisfaction, inhibit the community to plan for the future, and lead to a weaker local economy. We conclude by providing criteria for evaluating social externalities of major resource projects as a tool for identifying inclusive development and shared value opportunities.

**Keywords:** Social externalities, quality of life, major resource projects, extractive industries, shared value
An integrated valuation framework for the assessment of Ecosystem Services at the Walloon regional scale

Presenting author: Nathalie Pipart
Other authors: Laura Maebe, Marc Dufrêne, Nicolas Dendoncker
Affiliation: University of Namur, Belgium
Contact: nathalie.pipart@unamur.be

If the diversity of values related to ES is increasingly recognized in scientific literature, still too many regional assessment studies focus on assessing biophysical or monetary values of ES only, without integrating the plurality of value dimensions. This observation strongly influenced the work setting of the science–policy platform (WalES), created a year ago in Wallonia, Belgium. With the aim of mainstreaming the ES approach in Walloon decision-making processes, WalES created conceptual and valuation frameworks designed to guide further Walloon ES assessments at the regional and local scales. Emphasis has been put on the necessity to consider and integrate all dimensions of ES values in the valuation process.

This presentation will introduce the reasons to favour an integrated ES valuation framework. We argue that the ES approach inherently implies two kinds of biases in the perceptions of human–nature relations. First the concept of ES is normative: it causes to consider only the ecosystems’ functions which contribute "in one way or another" to human well-being. How we assess the way in which ES contribute to well-being introduces a second bias: methods and instruments are not neutral and work as prisms, allowing only partial perception of the studied object and carrying their own values, beliefs, and principles of actions. Therefore, to grasp a diversity of value dimensions, a variety of valuation methods addressing these dimensions must be used.

The 4-steps valuation framework developed by the WalES platform will then be presented in more detail: from the definition of the purposes and the objects of study, to the integration of three domains of values, revealed through biophysical and social valuations (and under certain conditions through economic valuation). We suggest how such valuation framework can guide future land-use and resource management policies for sustainability and increased well-being.

Keywords: Integrated ES valuation, regional assessment, local assessment, conceptual framework
Type of submission: Invited speaker

T6 Integrated valuation of ecosystem services in science–policy–practice

Environmental conflicts and integrated valuation of biodiversity and ecosystem services: a case study in Orotoy river basin (Colombia)

Presenting author: Alexander Rincón Ruiz  
Other authors: Diana Lara, Luis Guillermo Castro, Cesar Rojas  
Affiliation: Alexander von Humboldt Institute, Colombia  
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In recent years significant progress has been made in what is known as Integrated Valuation of Biodiversity and Ecosystem Services (IVBES). This article addresses those developments, particularly in (Rincón–Ruiz et al., 2014) for the Colombian case and proposes: 1) the justification and importance of carrying out a more integrated valuation in contexts such as Colombia, which are complex, conflictive, dynamic and heterogeneous realities common to other developing countries; 2) Developed a study case using IVBES in the Orotoy river basin (Colombia), the heterogeneous context of the basin has elements associated with environmental conflicts and IVBES can contribute to include the community in finding solutions in a participatory way with technical basis, based on the construction of governance, and according with this evaluation choose the best policy instruments and the implementation of local decisions on the territory.

Keywords: Integrated valuation, biodiversity, ecosystem services, Colombia
What does it take to make integrated ecosystem service valuation feasible in urban environmental decisions? Decision-makers’ view on value pluralism of ecosystem services

Presenting author: Katharina Janja Sevecke
Other authors: Sylvie Geisendorf
Affiliation: ESCP Europe, Germany
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The low use of ecosystem service valuation (ESV) in environmental policy and management calls for a change of ESV research. In order to spread from academia to practice, the development of ESV methodologies and tools should incorporate input from environmental decision-makers. The current research progress on integrated ESV methodologies for decision-making is still at an early stage and can thus benefit from this attempt. Acknowledging value pluralism of ecosystem services, integrated ESV does not just independently assess biophysical, socio-cultural and economic values but should also consider associated trade-offs between these value-domains. In order to ensure integrated ESV methodologies are likely to be used in practice, it is important to understand the underlying interests, beliefs and potential applications of value pluralism in environmental decision-making. However, a state-of-the-art analysis in an urban context is missing. Given the complexity of urban ecosystems and associated stakeholders in limited space, integrated ESV promises to be particularly appropriate to reflect the benefits of urban ecosystem services that contribute to urban resilience and human-wellbeing. Based on semi-structured interviews of urban environmental decision-makers in Germany, this paper investigates the practical perspective on value pluralism and integrated ESV. One aim of this study is to shed light on decision-makers knowledge and acceptance of different ecosystem values. A further step assesses the practice of independent inclusion of different valuation metrics into decisions to date. The scope is finally broadened to a truly integrated ESV to learn if the potential of the approach for urban ecosystem policy is recognized by and relevant for environmental decision-makers. On the basis of our results we identify potential implementation drawbacks of integrated ESV in practice as well as drivers to increase its application in urban environmental decision-making. The results mark an important starting point for the ongoing research of the construction of integrated ESV frameworks for urban ecosystem services.
Keywords: Value pluralism, integrated valuation, urban ecosystem services, environmental decision-making
Socio–economic value of goods and services provided by Mediterranean forests

Presenting author: Nelly Bourlion
Other authors: Magali Maire
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Mediterranean forests are subject to human pressures and climate change. Therefore, deforestation and forest degradation is significant in the MENA countries. This is even more evident than population are strongly dependent on forest ecosystems. In this context, the FFEM funded project aims at “optimizing the production of goods and services of Mediterranean forest ecosystems in the context of global changes" in Algeria, Morocco, Tunisia, Lebanon, and Turkey.

One part of this project is the evaluation of the economic and social value of goods and services provided by Mediterranean forest ecosystems, through the study of multiple issues related to environmental changes and their potential effects on the socio–economic development of Mediterranean territories. This approach can contribute to increasing recognition of their importance, to fostering dialogue, thus promoting integration between the policies for various sectors, to integrating the value of these services into policies and into macro–economic indicators, facilitating the analysis of the impacts of changes in the provision of goods and services to users depending on political choices that can change this availability.

This approach is innovative in the region and is extremely necessary knowing that the most important Mediterranean forests assets is not carbon storage or quality wood production but rather all other goods and services.

In this framework, a state of the art methods and tools for the socio–economic assessment of the goods and services supplied by forests was developed. These methods were then adapted and implemented in five pilot sites; goods and services prioritized, factors and levers of changes identified, scenarios chosen, and vulnerability analysis performed. The results will be capitalized on to get a regional perspective to the issue and the generalization of the approach to the whole region. The direct beneficiaries of this study are populations of rural forest lands, ecosystem managers and forest services.

Keywords: Mediterranean forest, socio–economic valuation, anthropic pressure
Visible values of invisible values: the economics of ecosystems services in Mexico

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This paper presents a literature review of economic values of ecosystem goods and services in Mexico from previous studies. We analyzed 79 studies that estimate an economic value of environmental good or service in the country. We classified them in a matrix based on the CICES classification and on the TEEB ecosystem classification. We find that land use change from forests, mangroves to agriculture is not cost-effective. We discuss 2 cases of how our work could serve as a policy tool. In particular, we discuss the price of greenhouse emissions offsets in forests, which we estimate at a range between 8.2 and 15.2 USD/tCO$_2$e, and the value of 9 of 37 mangrove services which have a total value between 21,891 and 38,889 USD/hectare/year. We present an econometric model to test the predictive power of the information we gathered, which we find to be high (R-squared of 64.1%). The virtue of this model is that reduces the effect of observations with extreme values, which are common in some ecosystems, such as mangroves.

Keywords: Ecosystem services, economic valuation of nature, Mexico, Meta-analysis
Content analysis of ecosystem service concepts in comprehensive plans for Malmö municipality in southern Sweden

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Supported by the Swedish Environmental Protection Agency a research project is developed in close collaboration with seven coastal municipalities in the county of Skåne in southern Sweden. Since the municipalities along the coastline face a range of environmental challenges, several case studies are aimed at understanding local municipality planning processes. The overall research objective is to understand the premises of implementing the Ecosystem Service (ES) approach in municipal planning and decision making. This case study examines to what extent ES concepts are accounted for in Malmö municipality comprehensive plans through a content analysis of ES concepts in the 1980, 1990, 2000, and 2012 plans. The ES concepts were categorized according to the 2005 Millennium Ecosystem Assessment into supporting, provisioning, regulating and cultural services. Preliminary results show that the “ecosystem service” concept itself is not used before the 2012 comprehensive plan. Quantitative analysis of the total number of different ES concepts used in the comprehensive plans shows a large increase from 1980 to 1990 and thereafter a gradual decrease to 2000 and 2012, where 2012 is lower than 1980. The introduction of the Swedish natural resources law in 1987 could explain the peaking number in 1990. If latter comprehensive plans build upon former, the concept usage can be interpreted as increasing from 1980 and forward. These results indicate a shift into using the ES approach in municipality planning processes. Qualitative analysis shows that there is a change in the ES concepts used, e.g. “land use” and “green areas” in 1980 and “biological life cycle” and “biodiversity” in 2000 indicates a shift in municipality planning processes towards a more holistic view of the importance of ecosystems for a sustainable society and healthy life. Although somewhat uncertain, these results could indicate an introduction of the ES approach in the Malmö municipality planning processes.