ESMERALDA

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Preface

This report provides an overview of main social approaches for assessment of ecosystem services. It tries to address the challenge of how to improve the applicability of these techniques. Although many have argued for ES assessments based on social, i.e. non-monetary methods, these approaches do not yet constitute a formalized methodological framework. The methods frequently involve the use of coarse and arbitrary indicators, and so the results are often difficult to apply. This report will also try to complement ESMERALDA Deliverable 4.2 on economic assessment methods, and will explore ways of linking biophysical assessments to the representation of social needs and preferences, as well as how to capture people's cognitive, emotional, ethical responses to nature, as a way of addressing some of the methodological difficulties of monetary valuation.

In the context of this report 'Assessment' refers to the translation of scientific evidence into information that is understandable for policy and decision-making; while 'Mapping' stands for the spatial delineation of ecosystems as well as the quantification of their condition and the services they supply. In some cases social *assessment* methods may use ecosystem service *maps* as inputs, but the relevant mapping methods are described in ESMERALDA reports D3.1-D3.3, dealing with social, economic and biophysical mapping methods respectively.

In this report, seven social assessment methods are described and in some cases illustrated with example applications. During the course of the ESMERALDA project, further example applications, particularly with respect to the MAES process and the ESMERALDA case studies, will be collected and included in the final version of this report.

Summary

There is a broad spectrum of possibilities to assess ecosystem services from it social dimension depending on the type of data and the objective of the assessment. In this report and with the purpose to provide a general comprehensive review, we focus on seven methods: Preference assessment; Time-use; Photo-elicitation; Participatory scenario planning; Public participatory GIS; Narrative approaches; Deliberative approaches.

With this report we are trying to highlight the need that ecosystem service assessments should incorporate social methods to assess individual and collective preferences in order to identify services that are relevant for people, potential social conflicts due to different needs and perceptions, trade-offs among ecosystem services and stakeholders and ecosystem service bundles.

Social assessment approaches can be applied at various stages of ecosystem planning and management, e.g. in problem framing, mapping, valuation, and decision-making. They examine the importance, preferences, needs or demands expressed by people towards nature, and articulate plural values through qualitative and quantitative measures other than money. They can demonstrate the multi-dimensional nature of human well-being and that monetary values are just one aspect of importance amongst others, e.g. symbolic, cultural, ecological and spiritual values.

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This draft version of the social methods report is one necessary first step toward the ESMERALDA main objective to develop a flexible methodology for ES mapping and assessment activities in the EU. However, the ultimate goal of this task is to contribute to the mainstreaming of social assessment methods into all levels of decision-making (policies, plans, programs and projects) as well as economic accounting and reporting.

1. Introduction to social assessment methods

Any assessment of ecosystem services requires an integrated analysis, taking into account the multiple dimensions associated with the supply and demand of ecosystem services, considering the biophysical, social and economic dimensions of *value* (TEEB, 2010; Gómez-Baggethun and Martín-López 2015). In particular, an integrated assessment should offer clear results about the interdependencies between the multiple dimensions associated with different ecosystem services. For example, the biophysical dimension, i.e. an ecosystem's capacity to supply services, determines the range of potential uses by society, which also influences its social and economic values. Social values might also have an influence on monetary values because ethical and moral motivations determine the 'utility' a person obtains from a particular service (Martín-López et al., 2007). These interdependencies between assessment dimensions and the different information provided by them justify the need to combine the three assessment domains (biophysical, social and economic) to properly inform the environmental decision-making process (Martín-López et al. 2014). However, recent literature has noticed that many ecosystem service assessment contributions still use the term 'value' in a narrow monetary sense (e.g. Chan et al., 2012; Jax et al., 2013), ignoring the contributions of ecosystems and biodiversity to culture and society in terms of artistic, inspirational, educational, spiritual, health or aesthetic values (Costanza et al. 1997).

To counteract the hegemonic position of economic assessment approaches, the literature of socio-cultural assessments of ecosystem services has grown in the last ten years, mostly related to the category of cultural ecosystem services. Although social assessment methods are often used to elicit cultural ecosystem services it is important to highlight that these are basically two different things. For example, you can highlight provisioning or regulating services with social assessment methods; and you can assess cultural ecosystem services with economic or biophysical approaches. Additional the recent increase of scientific papers on social assessment methods coincides with the development of the Intergovernmental Platform of Biodiversity and Ecosystem Services (IPBES), contributing to address some of its challenges, such as the inclusion of different knowledge-systems or the recognition of integrated assessment approaches (Díaz et al. 2015).

In spite of such increasing trend, social assessment approaches do not yet constitute a formalized methodological framework. Therefore, a major future challenge is to design a methodological framework able to explore ways of representing cognitive, emotional, ethical responses to nature, alongside ways of expressing preferences, needs, and the desires of people in the frame of ecosystem services. In this context, ESMERALDA in general and this Deliverable report in particular aims to contribute to this challenge through the review of the main social assessment methods which have been frequently used to elicit socio-cultural values of ecosystem services.

In this report, social assessment is used as an umbrella term for those methods that aim to analyse human preferences towards ecosystem services in non-monetary terms. Under this umbrella, terms, such as 'socio-cultural valuation', 'social valuation', ´Non-Monetary valuation´ (NMV), 'deliberative valuation', 'qualitative valuation' and 'subjective assessment', are examples of the assessment approaches that aim to uncover individual and group values and perceptions of ecosystem services without relying on market logics and monetary metrics (Kelemen et al. 2014).

2. A comprehensive review of social assessment methods

There is a broad range of possibilities to uncover social values of and preferences for ecosystem services depending on the type of data and the assessment process. Social assessment methods include quantitative and qualitative research techniques (i.e. surveys, interviews), participatory and deliberative tools (focus groups, citizens juries, participatory or rapid rural appraisal (PRA/RRA), Delphi panels, etc.), as well as methods of expressing preferences in quantifiable terms (i.e. preference assessment, time use studies, Q-methodology). Some studies also consider the spatial representation of ESs (i.e. Participatory Public GIS) (Kelemen et al. 2014).

Due to this large heterogeneity, the OpenNESS project developed a formalization of Non-Monetary Valuation (NMV) methods with the objective to characterize smaller and more coherent subgroups of similar techniques, maintaining the plurality of methodological approaches within the field. Figure 1 represents a first attempt of this formalization.
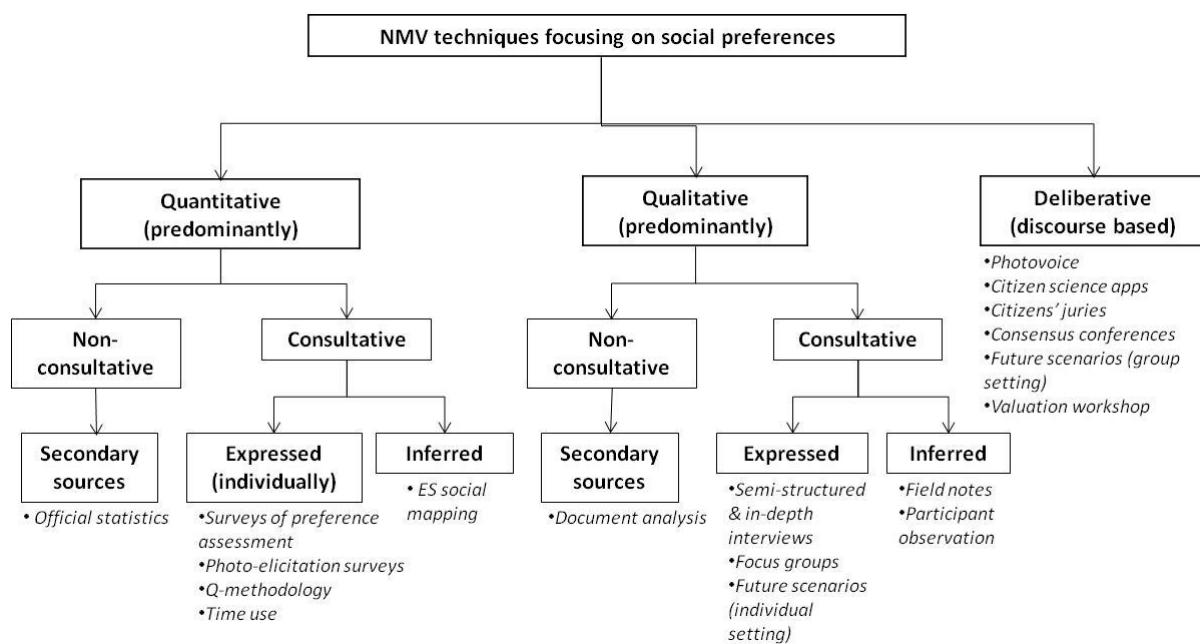

Figure 1: Classification of Non-Monetary valuation (NMV) approaches according to methodological similarities in data collection. Source: OpeNESS (Kelemen et al. 2014).

In this report and with the purpose to provide a general comprehensive review of the different classes of approaches, we focus on seven social assessment methods: Preference assessment; Time-use; Photo-elicitation; Participatory scenario planning; Public participatory GIS; Narrative approaches; and Deliberative approaches. In the next paragraphs we are going to briefly describe each of those social methods according to how they cover the characteristics explained above.

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2.1. Preference assessment

Preference assessment is a direct consultative method to demonstrate the social importance of ecosystem services by analysing social motivations, perceptions, knowledge and associated values of ecosystem services demand or use. Data can be collected through free-listing exercises, ecosystem service ranking, rating or selection mechanisms.

2.2. Time-use assessment

This method estimates the value of ecosystem services by directly asking people how much time they are willing to invest (WTT) for a change in the quantity or quality of a given ecosystem service or conservation plan. Methodological is in the same line as preference assessment, but with the objective to create a new indicator to measure social support towards conservation, time use studies create hypothetical scenarios for willingness to invest time.

2.3. Photo-elicitation surveys

Photo-elicitation surveys, although still quantitative by nature, follow a different logic to explore and translate people's visual experiences and perceptions of landscapes related to ecosystem services. Photo elicitation is based on the simple idea of inserting a photograph into a research interview. The difference between interviews using images and text, and interviews using words alone lies in the ways we respond to these two forms of symbolic representation. This is some of the reasons why photo elicitation interview are not simply an interview process that elicits more information, but rather one that evokes a different kind of information.

2.4 Narrative assessment

Narrative methods differ from the previous three in terms of collecting mainly qualitative data. By using narrative methods (e.g. in-depth and semi structured interviews, observations, voice and video recording of events, artistic expressions), it allow research participants to articulate the plural and heterogeneous values of ecosystem services through their own stories and direct actions (both verbally and visually).

2.5. Participatory mapping and assessment of ecosystem services (PGIS)

Participatory mapping and assessment of ecosystem services (PGIS) evaluates the spatial distribution of ecosystem services according to the perceptions and knowledge of stakeholders via workshops and/or surveys. PGIS allows for the participation of various stakeholders in the creation of an ES map (e.g. community members, environmental professionals, NGO representatives, decision-makers) and integrates their perceptions, knowledge and values in the final maps of ecosystem services. Frequently used in social assessment methods it focus on the integration across knowledge sources, disciplines and data types.

Here, we illustrate a deliberative approach that tries to represent the demand side of ecosystem service. For that aim, and as ecosystem service assessment should be "inspired by" and "useful to" users, the authors organized a deliberative workshop with researchers and policy-makers to map ecosystem service flows in Doñana and Sierra Nevada, Spain (see Palomo et al., 2013 for full details). During the workshops, several ecosystem services were mapped, allowing further ecosystem service trade-offs and bundle analyses, and in which the spatial mismatch between ecosystem services
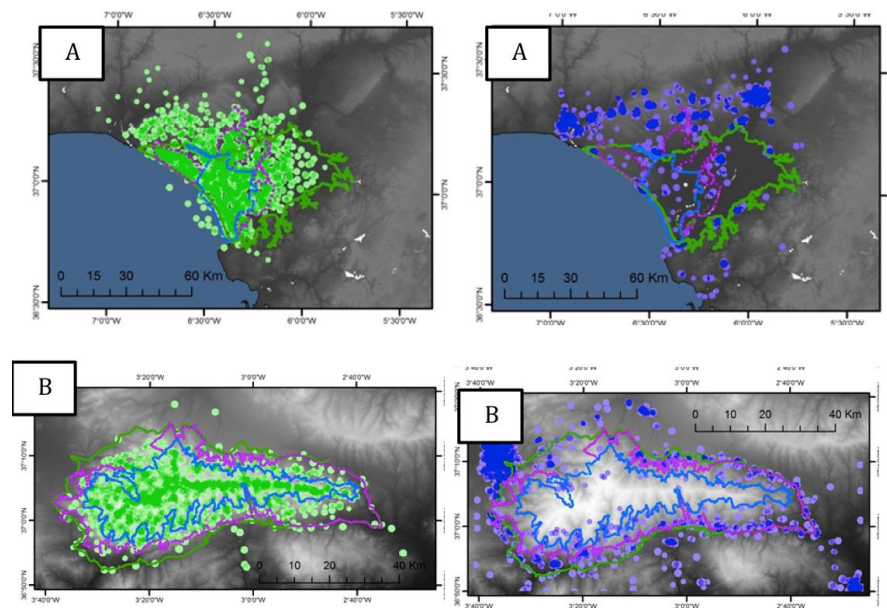
supply and demand was highlighted (Figure 2).

Figure 2. Spatial representation of Ecosystem Service Provision Hotspots (green) and Ecosystem Service Beneficiaries (blue) in Doñana (A) and Sierra Nevada (B). The Figures highlight spatial mismatches between ES supply and demand.

Being Sierra Nevada and Doñana two National Parks, the ecosystem service assessment highlights the different benefits that ecosystems covered by protected areas provide, which shall foster support for the conservation and sustainable use of these areas. These maps also give insights for establishing priority areas for conservation and show how protected areas, rather than being isolated entities, are connected in many ways to society and ecosystem services beneficiaries.

2.6. Scenario planning

Scenario planning applies various tools and techniques (e.g. individual interviews, brainstorming or visioning exercises in workshops, often complemented with modelling) to develop plausible and internally consistent descriptions of alternative future options. Assumptions about future events or trends are questioned, and uncertainties are made explicit to establish transparent links between changes of ecosystem services and human well-being.

2.7. Deliberative assessment

Deliberative methods – an umbrella term for various tools and techniques engaging and empowering non-scientist participants – ask stakeholders and citizens to form their preferences for ecosystem services together through an open dialogue. Deliberative methods (e.g. valuation workshops, citizens' juries, photo-voice, etc.) allow for the consideration of ethical beliefs, moral commitments and social norms beyond individual and collective utility, and are often used in combination with other approaches (e.g. mapping or monetary valuation).

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3. Variability of social assessment methods

Social assessment methods for ecosystem services were developed and have been applied widely in various scientific disciplines, ranging from ethnography and sociology to political ecology, geography or alternative approaches to economics such as ecological or feminist economics (Kelemen et al., 2014). As a consequence of this diversity of disciplines, these tools and techniques vary greatly in terms of which processes and measures they elicit and how they express the values of ecosystem services. Nevertheless, they have some fundamental commonalities – both ontological (what reality is?) and epistemological (what can be known and how?) ones – which can be used to group them under the umbrella term of social assessment methods(IPBES, 2015).

A key ontological similarity of social methods is the assumption that values of ecosystem services are rooted in individuals, and at the same time shaped by the social and cultural context in which individuals are embedded (Turnley et al., 2008). In fact, as Kenter et al. (2015) pointed out, some social approaches have the capacity to elicit collective and shared values of ecosystem services through participatory and deliberative techniques that go beyond the aggregation of individual preferences. Therefore they aim at assessing ecosystem services in a contextualized way by discovering the psychological, historical, cultural, social, ecological and political contexts and conditions, as well as social perceptions that shape individually held or commonly shared values (Chan et al., 2012). To this end, social assessment methods apply a hermeneutic approach to the process of assessment – in other words, they are based on interpreting and understanding various ways of communication – which holds their common epistemological basis.

Variability among assessment methods makes social approaches capable to adapt flexibly to specific worldviews and decision contexts. Key aspects of this variability include:

(1) Assessment methods focusing on individuals versus methods focusing on the society

According to Kenter et al. (2015), values can be considered at the level of the individual (what is considered useful, important, good, morally acceptable etc. by a person), and at higher levels of societal organization, including a group, a community or the society as a whole. The latter type is called (shared) social and cultural values, and refers to the fact that societies hold "shared principles and virtues as well as a shared sense of what is worthwhile and meaningful" (Kenter et al., 2015: 90). Shared social values influence individual values as all of us are part of, and have been socialized within, a specific community and social context. However, assessment methods differ in terms of focusing on personal (individual) understandings of value, or eliciting those value dimensions that are shared by a group of people and culturally embedded within a society.

(2) Self-oriented versus others-oriented methodological approaches

We can distinguish individual (I) rationality and collective (We) rationality as the two main rules of thumb behind reasonable actions. When following the "I" rationality, we consider individual benefits and costs of our actions and choose the most beneficial option for ourselves. On the other hand, following the "We" rationality means that before acting we consider what is good and bad in our community/society, and how our actions can impact others. Therefore, "I" rationality refers to self-oriented actions and choices, while "We" rationality refers to other-regarding actions and choices. Whether following an 'I' or 'We' rationality in an ES assessment is determined by the institutional context (i.e. by the structure and processes of the valuation process).

(3) The process of including participants in the assessment: observation, consultation or engagement methods

There are three options to gain knowledge on preferences, depending on whether preferences (values) are considered as already existing or being under formation: 1) Preferences can be observed and reported, if participants have a direct relation with the subject of valuation (e.g. they frequently use or enjoy some specific ES). However, not having a direct relation to the subject of assessment does not necessarily mean that participants do not attribute value to it. To explore non-observable preferences, 2) participants can be consulted (e.g. they can be asked via questionnaires or interviews about their perceptions of ES). In case we suppose that preferences have not yet existed or are still in the forming phase (i.e. participants do not have a priori knowledge about, or have not faced others' perceptions of certain ES), 3) we can engage participants in a joint preference formation process.

(4) The dominant approach of handling data: predominantly quantitative, predominantly qualitative, and mixed methodological approaches

Social assessment methods can be used to collect quantitative as well as qualitative data. Quantitative data can be collected in a numerical form from large populations, and if representative, can provide results generalizable, to a certain degree, from local to regional or even higher spatial scales (Punch, 2014). Quantitative data can be collected both at the individual and the group level, then it is aggregated to generalize the results from the sample to larger populations. Qualitative data allows an in-depth understanding of values and underlying motivations, but usually for a much smaller (and often non-representative) sample. Qualitative data can be collected at the individual and group level in forms of narrative arguments (mainly words, but also pictures, drawings, etc.) (Punch, 2014). Due to the heterogeneity of data forms, aggregation is often impossible, and other means of synthesizing have to be used (e.g. narrative synthesis or deliberation). In practice, quantitative and qualitative approaches can be placed along a continuum, and in many cases they are used in a mixed complementary form. Key aspects of variability for ecosystem services explained above are summarized in Table 1.

Table 1. Key variability aspects of social assessment methods for ecosystem services.

Methods	Preference/ Value elicited	Rationality	Contacting participants	Data handling processes
Preference assessment	Individual (social)	Self-oriented (others-oriented)	Consultation	Quantitative & qualitative
Time-use	Individual	Self-oriented	Consultation (observation)	Quantitative
Photo-elicitation	Individual	Self-oriented	Consultation	Quantitative (qualitative)
Participatory scenario planning	Social	Others-oriented	Engagement	Quantitative & qualitative
Public participatory GIS	Social (Individual)	Others-oriented (self-oriented)	Engagement (consultation)	Quantitative & qualitative
Narrative approaches (e.g. interviews)	Individual (social)	Self-oriented (others-oriented)	Consultation (observation)	Qualitative (quantitative)
Deliberative approaches (e.g. citizens juries)	Social	Others-oriented	Engagement	Qualitative (quantitative)

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4. Scrutiny of specific social assessment methods

The diversity of social assessment methods described above is determined by different methodological requirements and ability to provide different outputs (Table 2), as well as their capacity to uncover different type of values (Table 3). Regarding methodological requirements, social methods can be clustered into 3 different groups: (1) methods that require many new data and collaboration with scholars from the same field (i.e. preference assessment, time-use and photo-elicitation), (2) methods that require lots of new data and collaboration with non-academic stakeholders (i.e. narratives), (3) methods that require less new data and are able to contribute with qualitative data by collaborating with scholars from other fields and non-academic stakeholders (i.e., participatory scenario planning, deliberative valuation and public participatory GIS (PPGIS)); called integrated approaches (Table 2). This third group of methods is also able to assess ecosystem services at national scales while the first two groups are not appropriate for this task. Further, this third group of methods can contribute to social learning and knowledge coproduction as it fosters the discussion between different stakeholder groups regarding the importance of different ecosystem services (deliberative valuation), their future trends and its implications to human wellbeing (participatory scenario planning) and their spatial distribution (PPGIS).

PPGIS is also the most suitable method to provide spatial outputs, although preference assessment, time use and photo-elicitation might also contribute with spatially explicit results by estimating the average value in different geographical areas. In this way, PPGIS is particularly able to identify ecosystem services benefiting areas, i.e. places where use, demand, or value of ecosystem services converged. Further research and innovative techniques are also being tested to find the link between preference assessment and mapping as is the case of SolVES. Through this technique, social values collected during preference assessment methods are translated into spatially explicit formats.

Table 2. Methodological requirements of social methods for assessing ecosystem services. Methods are evaluated according to their suitability to assess ecosystem services at different spatial scales and to uncover quantitative or qualitative data -*(🟢)* highly appropriate, *(🟡)* less suitable, (⚫) not appropriate- and according to the level of requirements in terms of data, collaboration, time and resources -*(⚫)* high degree, (◐) medium degree, *(◔)* low degree-.

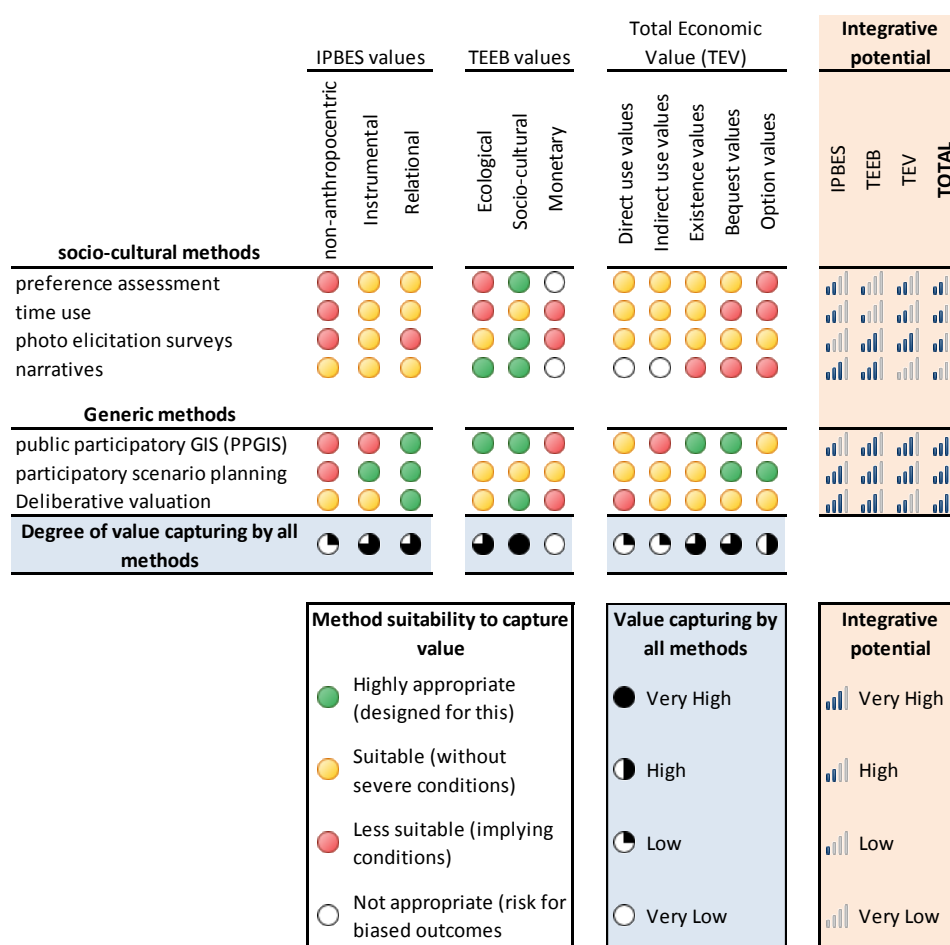|	SPATIAL SCALE			DATA REQUIREMENTS			COLLABORATION LEVEL			RESOURCES REQUIREMENT	
	Local	Regional	National	Amount of data	Qualitative	Quantitative	Researchers own field	Researchers other field	academic stakeh.	Time requirement	Economic requirement
Socio-cultural techniques											
Preference assessment	🟢	🟢	🔴	⚫	🟡	🟢	⚫	⚫	◔	◐	◐
Time use	🟢	🟢	🔴	⚫	🔴	🟢	⚫	◐	◔	◐	◐
Photo-elicitation surveys	🟢	🟢	🔴	⚫	🟡	🟢	⚫	⚫	◔	◐	◐
Narratives	🟢	🟢	🔴	⚫	🟢	🟡	◔	◔	⚫	◐	◐
Integrated approaches											
Public Participatory GIS (PPGIS)	🟢	🟢	🟡	◐	🟢	🟢	◔	⚫	⚫	◐	◐
Participatory scenarios planning	🟢	🟢	🟡	◐	🟢	🟡	◔	⚫	⚫	◔	◐
Deliberative valuation	🟢	🟢	🟡	◐	🟢	🟢	◔	⚫	⚫	◐	◐

One important question that remains is how social assessment methods can capture the broad range of values associated with Nature. For example, within the IPBES framework, ecosystem services are considered part of instrumental values (valuing 'nature's benefits'). Practical and common sense application of assessment methodologies often crosses these theoretical borders and attempts to capture the important but elusive categories. Following the conceptual definitions provided for value categories of the TEV, TEEB and IPBES typologies, a considerable overlap and integration but also a broadening of the assessment scope can be assumed (Table 3).

Broadly, the results show that some social assessment methods are specialized towards certain value types, while others are generalist methods able to capture multiple values but not necessarily designed for those. All value types are appropriately covered by one or more methods, but all

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methods have blind spots, which imply conditional application or bias risks. Consequently, selection of a set of methods is a key step in the valuation process, if one wants to obtain a balanced coverage of all values.

The resulting analyses reflect the extent to which diverse assessment methods capture specific value types, the extent to which methods have integrative potential as well as which set of complementary methods can be applied to capture multiple values, as estimated by the researchers that developed the methods.

Table 3. Main socio-cultural methods are presented in relation to their capacity to integrate different types of values. Source: Based on OpenNESS D4.3. Methods are evaluated according to their suitability of capture value -*(●)* highly appropriate, *(●)* less suitable, (●) not appropriate- and value capturing by all methods -*(●)* high degree, (◑) medium degree, *(◔)* low degree-.

5. Operationalizing social assessment methods in decision-support

Ecosystem service assessments have increasingly been used to support environmental policies, mainly based on biophysical and economic indicators. However, few studies have coped with the social-cultural dimension of ecosystem services, despite being considered a research priority. Overlooking social awareness of ecosystem services can blind society to the variety of services

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provided by ecosystems and can act as an obstacle for mainstreaming ecosystem services across societal sectors and decision-support.

In this section, we try to highlight how social assessment approaches can be applied at various stages of ecosystem planning and management, e.g. in problem-framing, mapping, valuation, and decision making. They examine the importance, preferences, needs or demands expressed by people towards nature, and articulate plural values through qualitative and quantitative measures other than money. They can demonstrate the multi-dimensional nature of human well-being and that monetary values are just one aspect of importance amongst others, e.g. symbolic, cultural, ecological and spiritual values. To achieve this goal, we formulate several arguments regarding why social assessment methods should be operationalized to meet decision-support needs:

1. Social approaches can help to broaden valuation scopes and to capture multiple values that other assessment methods are not capable of. Cultural valuation methods can identify how different stakeholders hold different values and perceptions toward ecosystem services and offer insights into the motivations for conserving nature, and the symbolic, cultural and spiritual values that are frequently invisible in other valuations approaches. Additionally, social assessment methods can address relational values. For example deliberative methods allow the consideration of ethical beliefs, moral commitments and social norms. Therefore they are more likely to identify values related to virtues and principles if they are of concern to stakeholders, but socio-cultural metrics have to be purpose-built for specific situations.

2. Social assessment methods can be based on large samples and can cover different spatial scales. Assessment methods that claim to be representative for a population are based on large samples and require multivariate analysis to explain values if the population is heterogeneous. However, a number of socio-cultural methods are small-sample approaches aiming at describing specific actor and place-based values.

3. Social assessment methods emerge as a useful tool to describe the relationship between multiple stakeholders. They can help identify plural and heterogeneous values that are relevant for different people (e.g. different socio-demographic profiles, different cultures or cosmologies) across different spatial and temporal scales (e.g. in different localities or seasons of the year). They are supposed to recognize perceived changes in the flows of ecosystem services, which can be an early warning signs of ecosystem degradation. They are also considered to explore how plural and heterogeneous values are interlinked (i.e. having bundled qualities) and contribute to human well-being. Therefore, ecosystem service assessments should incorporate social assessment methods to measure social preferences in order to identify relevant services for people, potential social conflicts due to different needs and perceptions, trade-offs among ecosystem services, and ecosystem service bundles.

4. Social assessment methods using alternative metrics and 'narrative' approaches are more suited to addressing 'intangible' aspects of ecosystem services. Aiming for an in-depth understanding of human-nature relationships, social methods integrate different forms of knowledge (e.g. relations between knowledge, practices and beliefs) and potential social conflicts related to different perceptions, needs and uses. Some studies suggest that monetary valuation methods are appropriate in low/non-conflict situations involving routine trade-offs, i.e. where stakeholders can be expected to have established some measure of preferences. Social methods are often associated with principles and virtues, and contexts in which trade-offs and compensation against income are

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ill-defined and/or not accepted. Social methods also cover a wide range of 'tangibility', from some market-mediated, self-oriented individual physical recreational experiences that are routinely valued using travel costs and entry fees, to other-oriented, metaphysical and transformative experiences that are highly intangible.

5. Social preferences can serve as a tool to identify the impact of different management options on an ecosystem's capacity to deliver services and as a basis for decision-making processes. Based on socio-cultural preferences, the concept of ecosystem service bundles emerge as a useful tool for identifying ecosystem service synergies and trade-offs resulting from stakeholders' diverging interests and knowledge. Given the growing demand for the incorporation of the socio-cultural dimension of ecosystem services in environmental policy agendas, understanding social preferences toward the protection of ecosystem services has become a research priority For example trade-offs can be identified from socio-cultural preferences as people's willingness to trade-off conservation of one ecosystem service against another. Additionally ecosystem service bundles can be identified from people's systemic representations of interrelationships between ecosystem services.

As a summary it is important to recognise that the social assessment approaches described in this report are each applicable to different policy instruments and decision contexts (Table 4). The choice of which assessment method to use will largely be determined by the type of decision problem and the availability of relevant information and other resources.

Table 4. Operationalizing social assessment methods in relation to specific policy instrument that are used in decision-support process.

	Problem framing	Land-planning	Legislation	Social awareness	Public participation	Economic Instrument
Preference assessment	X	X	X			X
Time use					X	X
Photo-elicitation surveys		X				
Narratives	X			X	X	
Public Participatory GIS (PPGIS)		X		X	X	
Participatory scenarios planning					X	
Deliberative valuation	X				X	

6. Next Steps

This draft version of the social assessment methods report is the necessary first step in the development of the ESMERALDA main objective to develop a flexible methodology for mapping and assessment activities in the EU member states. However, the ultimate goal of this task is to contribute to the mainstreaming of social assessment methods into all levels of decision-making (policies, plans, programmes and projects), as well as economic accounting and reporting. Therefore, we plan a set of new actions in the following months that will help to achieve these objectives and doing so complement and improve the current version of this report:

1. Provide a more detailed list of social assessment methods and models that have been used in different studies in Europe and can help in the implementation of Action 5 of the EU Biodiversity Strategy.

2. Analyse further social assessment methods that were used in relation to a set of individual variables (i.e. study dimension, scales, ecosystems or ecosystem services).

3. Identify possible methodological or thematic gaps in how social assessment methods are being used in scientific and policy environments and look for potential solutions on how to overcome them.

4. Present all these results as base line information to the ESMERALDA partners to trigger the process of developing the flexible methodology for mapping and assessment activities.

7. Acknowledgements

8. References

Castro AJ, Martín-López B, García-Llorente M, Aguilera PA, López E, Cabello J (2011) Social preferences regarding the delivery of ecosystem services in a semiarid Mediterranean region. J Arid Environ 75:1201–1208

Chan, K., T. Satterfield and J. Goldstein (2012), 'Rethinking ecosystem services to better address and navigate cultural values', Ecological Economics, 74, 8–18

Chan, K.M.A., Guerry, A.D., Balvanera, P., et al. (2012b): Where are Cultural and Social in Ecosystem Services? A Framework for Constructive Engagement. BioScience 62(8): 744-756.

Díaz S, et al. (2015) The IPBES Conceptual Framework - connecting nature and people. Current Opinion in Environmental Sustainability 14: 1-16.

García-Llorente M, Martín-López B, Iniesta-Arandia I, López-Santiago CA, Aguilera PA, Montes C (2012) The role of multi- functionality in social preferences toward semi-arid rural land- scapes: an ecosystem service approach. Environ Sci Pol 19–20:136–146

Gómez-Baggethun E, Martín-López B (2015) Ecological Economics perspective in ecosystem services valuation. In: Martínez-Alier J, Muradian R. (eds) Handbook of Ecological Economics. Pp: 260-282. Edward Elgar, London.

IPBES (2015): Preliminary guide regarding diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem functions and services, IPBES 15 Deliverable 3 (d)

_____

Kelemen, E., García-Llorente, M., Pataki G., Martín-Lopez, B., Gómez-Baggethun, E. (2014): Non-monetary techniques for the valuation of ecosystem services. OpenNESS Syntehsis Papers No. 6.

Kenter et al. (2015). What are shared and social values of ecosystems? Ecological Economics 111: 86-99ñ

Kovács, E., Kelemen, E., Kalóczkai, Á., Margóczi, K., Pataki, G., Gébert, J., Málovics, G., Balázs, B., Roboz, Á., Kovács, E.K. and Mihók, B., 2015. Understanding the links between ecosystem service trade-offs and conflicts in protected areas. Ecosystem Services, 12, pp.117-127.

Lamarque P, Que ´tier F, Lavorel S (2011b) The diversity of the ecosystem services concept and its implications for their assessment and management. C R Biol 334:441–449

Martín-López B, Iniesta-Arandia I, García-Llorente M, Palomo I, Casado-Arzuaga I, Del Amo DDG, Gómez-Baggethun E, Oteros-Rozas E, Palacios-Agundez I, Willaarts B, González JA, Santos-Martín F, Onaindia M, López-Santiago C, Montes C (2012) Uncovering ecosystem service bundles through social preferences. PLoS ONE 7(6):e38970

Plieninger T, Bieling C, Ohnesorge B, Schaich H, Schleyer C, Wolff F (2013) Exploring futures of ecosystem services in cultural landscapes through participatory scenario development in the Swabian Alb, Germany. Ecol Soc 18(3):39

Punch, K. F. (2013). Introduction to social research: Quantitative and qualitative approaches. Sage.

Sandifer, P.A., Sutton-Grier, A.E., Ward, B.P. (2015) Exploring connections among nature, biodiversity, ecosystem services and human health and well-being: Opportunities to enhance health and biodiversity conservation. Ecosystem Services 12: 1-15.

Teddlie, C., & Tashakkori, A. (Eds.). (2009). Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences. Sage Publications Inc.

Turnley, J.G., Kaplowitz, M.D., Loucks, O.L., McGee, B.L., Dietz, T. (2008) Sociocultural valuation of ecological resources. In: Stahl, R.G.Jr., Kapustka, W.R.M.Jr., Bruins, R.J.F. (eds): Valuation of Ecological Resources: Integration of Ecology and Socioeconomics in Environmental Decision Making. CRC Press.