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Good practice recommendations for a common EU methodology for the valuation of ecosystem services (monetary and non- monetary)

CCMC will prepare and attach the official title page

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European foreword

This document Good practice recommendations for a common EU methodology for the valuation of ecosystem services (monetary and non-monetary) has been prepared by CEN/WS Good practice recommendations for a common EU methodology for the valuation of ecosystem services (monetary and non- monetary), the secretariat of which is held by Standards Norway.

This document is currently submitted to the CEN Enquiry.

Introduction

This CEN Workshop Agreement is based on the research from Work Package 4 in the EU project MARBEFES.

The MARBEFES project received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement no. 101060937 and from United Kingdom Research and Innovation (UKRI) under grant agreements with the different UK partners.

The objectives of this document are to provide good practice recommendations for the valuation of ecosystem services (monetary and non-monetary). It aims to be applicable and adjustable to fit assessments across Europe. The methodology is proposed by researchers taking part in the Horizon Europe-funded research project MARBEFES (grant agreement no. 101060937). The valuation methods considered include methods to value provisioning services (e.g. food or raw materials), regulating services (e.g. carbon sequestration or water filtration) and cultural services (e.g. nature watching or recreation). The suggested methodology combines natural science, economic, social science, and humanities.

The standardization of such a methodology provides scientists as well as member states within the EU/EEA with an overarching coherent and robust, yet flexible methodology that can be used across countries and varying ecosystems. Thereby, the standardization of such a methodology facilitates both application and harmonization of the valuation of ecosystem services (monetary and non-monetary) through guidelines and flexible methodologies. Thereby, this promotes the valuation of ecosystem services and allows for comparable results across case study areas.

The document is intended to be used by scientists, consultants, and other interested parties who wish to assess ecosystem services and biodiversity. These recommendations may be used to produce comparable outcomes from different valuation studies and can thereby coordinate and improve ecosystem valuation practices.

The following references are in the Bibliography: [\[1\]](#), [\[2\]](#), [\[3\]](#), [\[4\]](#), [\[5\]](#), [\[6\]](#), [\[7\]](#), [\[8\]](#), [\[9\]](#), [\[10\]](#) and [\[11\]](#).

1 Scope

This document provides good practice recommendations for a common EU methodology for valuing ecosystem services (monetary and non-monetary).

The purpose of this document is to present a general overview of a methodological approach, offering guidance on how such a process can be structured in practice rather than detailing specific methods.

By maintaining a general overview, the document provides guidance while preserving the flexibility needed to adapt the methodology to specific contexts, recognizing that implementation will often differ in practice due to variations in disciplines, resources, and related factors.

The purpose of the presented methodology is to support private and public decision-making and to inform policy decisions.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document the following terms and definitions apply.

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

ecosystem

dynamic complex of communities of plants, animals and microorganisms and their non-living environment, interacting as a functional entity

Note 1 to entry: This includes humans.

[SOURCE: ISO 14050:2020, 3.2.3 modified — Note 1 to entry is added.]

3.2

ecosystem services

benefits that humans recognise as obtained from ecosystems that support, directly or indirectly, their survival and quality of life

Note 1 to entry: These include provisioning, regulating, and cultural services that directly benefit people and the supporting services needed to maintain the direct services.

[SOURCE: ISO 18311:2016, 3.9]

3.3

monetary valuation

procedure for determining monetary value

[SOURCE: ISO 14008:2019, 3.2.4]

3.4

monetary value

amount of money representing willingness to pay or willingness to accept compensation

[SOURCE: ISO 14050:2020, 3.12.7]

3.5

non-monetary valuation

procedure for determining non-monetary value

3.6

non-monetary value

the worth attributable to an item or a service without relation to any acceptable cash price and for which a fixed or determinable amount of currency is absent

EXAMPLE This could include any ecosystem services, interpersonal good-will, health and others.

[SOURCE: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Glossary (website version), https://www.ipbes.net/es/node/41584?utm_]

3.7

stakeholder

person, entity or organization that can have an interest in, affect, be affected by, or perceive itself to be affected by a decision or activity

[SOURCE: ISO 37301:2021, 3.2, modified — "entity" is included and "also have an interest in" also the admitted term "stakeholder" is preferred used.]

3.8

participant

person from whom or about whom data are collected

[SOURCE: ISO 19731:2017, 3.27]

4 Principles for ecosystem services valuation

4.1 General

General principles for ecosystem services valuation:

- Soundness. State-of-the-art methods and techniques should be chosen for valuation studies and then applied in a robust way.
- Transparency. Valuation procedures should be thoroughly explained, including the valuation techniques applied, the reasons for their choice instead of the possible alternatives, their application, and their outcomes.

4.2 Additional principles for monetary valuations

Additional principles for monetary valuations:

- Replicability. Techniques and data should be clearly described and made publicly accessible to enable skilled researchers to replicate or reproduce the approach and the results.
- Openness to new models or data. Valuation procedures should be open and flexible enough to adapt to new developments when available, with the goal of continuous improvement in the accuracy of the results. Good practices to achieve this goal include the characterization of logic chains to explain ecosystem services and values.

4.3 Additional principles for non-monetary valuations

Additional principles for non-monetary valuations:

- Inclusiveness. Inclusive of the broad range of stakeholders of the ecosystems and attendant services in question.

- Openness to different knowledge systems (e.g. indigenous ways of knowing) and cultures. Open to and inclusive of all and any knowledge systems and cultures of the stakeholders of the ecosystems and attendant services in question.
- Participation. Seeking input from and relevance to the broad range of stakeholders of the ecosystems and attendant services in question. Levels of participation will range from basic consultation to ongoing decision-making partnerships, and valuation procedures should seek the highest level of participation possible (i.e. ongoing decision-making partnerships).

5 Steps and methods

5.1 Steps

Valuations of ecosystem services should include the following steps, see also [Figure 1](#):

- Identification and characterization of relevant context, for example biophysical, geographical, social, and/or cultural.
- Identification and characterization of ecosystem services to be valued.
- For each ecosystem service, identification and characterization of uses, users, and benefits. For non-monetary valuations, inclusiveness, openness to different knowledge systems and cultures, and participation can be essential.
- Choice and application of an appropriate valuation method, or combination of valuation methods, with respect to the context and data availability.
- For monetary valuations, identification and quantification of human contributions (e.g. labor), and non-human contributions (e.g. apple tree) to the value.
- For non-monetary valuations, validation of results with participants and/or stakeholders.
- Dissemination of results. For non-monetary valuations, results will need to be shared with participants, stakeholders and local communities.

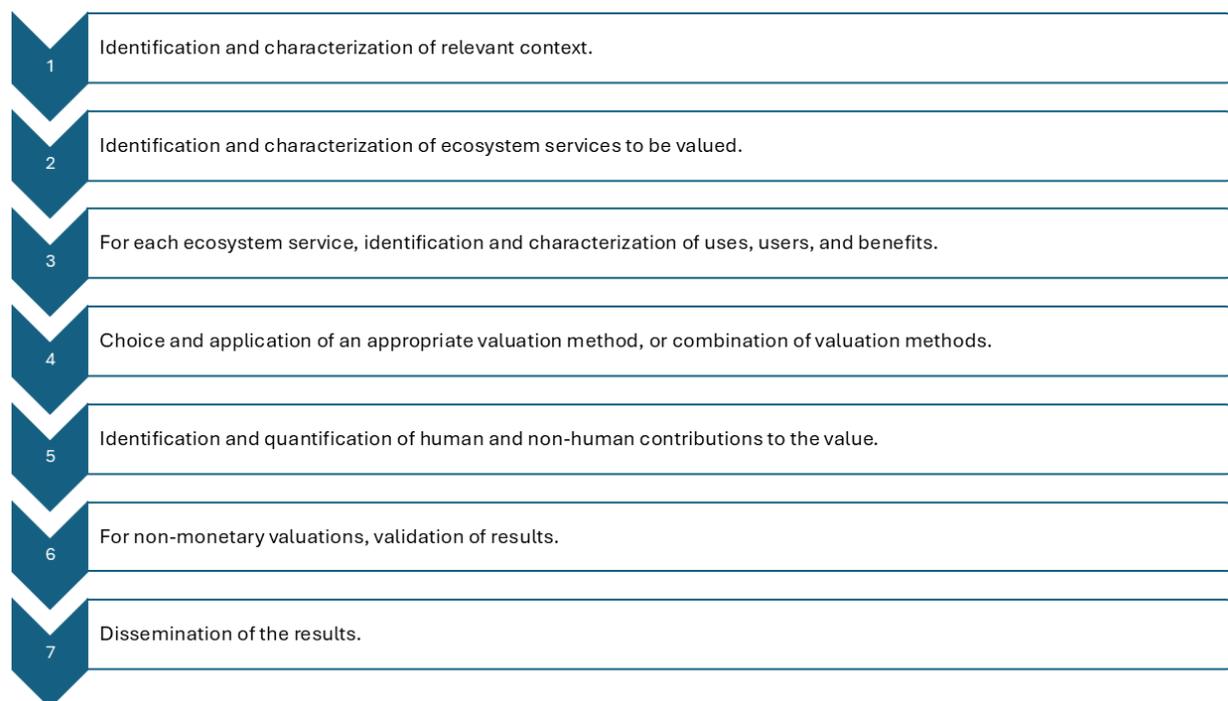


Figure 1 — Step overview

5.2 Methods

5.2.1 General

Monetary valuation and non-monetary valuation provide different but complementary approaches to value.

While monetary valuation delivers results that ease comparability in a standardized metric, namely monetary units, non-monetary valuation delivers results that often reflect deep-rooted emotions, experiences, cultural preferences, and human-nature relationships embedded in particular societies. Whereas monetary valuation emphasises the return of natural assets for society, non-monetary valuation emphasises the variety of interactions between nature and well-being, focusing on social perceptions and dependencies.

A comprehensive valuation requires taking into account both perspectives in order to put together comparability and standardization with the cultural experiences and preferences of social groups; both are needed for appropriate decision-making, and neither can be considered subordinate to the other.

5.2.1.1 Monetary valuation methods

Monetary valuation does not seek to deliver a comprehensive or uncontested estimate of the total economic value of ecosystem services, as the full spectrum of ecological functions, interdependencies, and non-market values cannot be fully captured in monetary terms. Instead, it aims to generate methodologically robust and policy-relevant estimates expressed in monetary units. These estimates are intended to inform decision-making by providing a common metric that facilitates the comparison, prioritization, and integration of ecosystem services within economic and planning frameworks, while acknowledging the inherent limitations and uncertainties involved.

Established monetary valuation methods include:

- Methods based on direct market data, namely prices and costs:
 - Prices: mainly prices that are charged for the enjoyed ecosystem services.

- Costs: including averting behaviour costs, replacement costs, and avoided costs.
- Methods based on revealed preference data:
 - Hedonic pricing methods, if prices are not directly observed but are embodied in transactions of other market goods, such as real estate or jobs.
 - Travel cost methods, if prices are not directly observed but can be gathered from revealed expenditure. Travel cost methods are usually used to measure the recreational value of environmental amenities.
- Methods based on stated preference data can be used when a value cannot be inferred from market data but can be estimated from surveys in which people are asked about their preferences:
 - Contingent valuation.
 - Discrete choice experiment.

Benefit transfer techniques may also be applied to estimate the monetary value of non-market ecosystem services at a target site when an original valuation study is not feasible due to resource or time constraints, by transferring value estimates from original valuation studies previously performed at other sites. In this case, original valuation studies should fulfil the requirements stated above.

5.2.1.2 Non-monetary valuation methods

Non-monetary valuation assesses the plural aspects of the relationship between ecosystems and human well-being. For this reason, there are a suite of potential non-monetary valuation approaches. We recommend taking a social perceptions approach which investigates how different people, social groups or organizations understand and articulate the value of environments [5], [11], [4]. This helps to align valuation with the needs and desires of stakeholders for more socially-attuned decision-making [1]. Non-monetary valuation also recognises that ecosystem values are embodied by people and groups and embedded in specific geographies, therefore it is necessary to take site and context-specific approaches [9]. Non-monetary valuation results in an assessment of the value of ecosystem services in non-monetary units, ranging from quantitative highly aggregated units of measurement, e.g. eco-points or biotope value points on the one hand, to qualitative assessments, e.g. of stakeholders or groups of (formal) experts, on the other hand.

Emerging non-monetary social perceptions valuation methods can include:

- Methods based on observations, such as of environmental spaces or humans interacting with environmental spaces:
 - observations to gain preliminary insights on how people use and perceive environments.
 - more detailed observations, such as cultural ethnography, to gain in-depth or long-term insights on how people use and perceive environments.
- Methods based on explicitly stated social perceptions, either quantitative (numerical or spatial) or qualitative (words, feelings and art). It should be noted that qualitative methods can also be quantitatively analysed. Examples of methods include:
 - individual expert interviews, spatial mapping exercises, or questionnaires to ask direct questions about perceptions of environmental use and value.
 - group expert interviews, workshops, spatial mapping exercises, or focus groups to ask direct questions about perceptions of environmental use and value. Meetings can also involve participant-led agenda setting e.g. democratic open space meetings.

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- large scale public questionnaires to ask direct questions about perceptions of environmental use and value.
- Methods based on implicit or symbolically stated social perceptions of environmental value, either quantitative or qualitative.
 - group (expert or public) arts-based or creative workshops to access deeper or more emotional insights.
 - analysing cultural documents or products (such as films, songs, literature, paintings) to gather qualitative evidence of social perceptions of environmental value or to quantify cultural products associated with an environment.

6 Outcomes

Valuation studies should report, at least, the following outcomes:

- Aims and objectives of the study.
- Identification and characterization of biophysical context:
 - Valued area coordinates.
 - Biome category.
 - Ecosystem description.
 - Ecosystem extent.
 - Ecosystem condition. Condition can be undertaken with different levels of accuracy depending on data availability, from qualitative assessment (good/bad condition) to more specific analysis (matrices and tables with quantitative assessments).
- Identification and characterization of valued ecosystem services and, when suitable, in relation to the ecosystem services classification scheme used.
- For each ecosystem service, identification and characterization of uses, users, and benefits.
- For each ecosystem service, description, justification (compared to alternative methods), and limitations of the chosen valuation method.
- Detailed description of the application of the valuation method, including accessibility to data.
- Synergies or conflicts between types of value or environmental users.

For example wood: can be used for carbon sequestration and recreation (synergy); or if you use wood for timber then you cannot have carbon sequestration nor recreation (conflict/trade-off).
- Decision-making or policy context the valuation is intended to inform (e.g. spatial planning, protected area management, restoration).
- Management or governance level addressed (e.g. local, regional, national, international, transboundary).
- Basic intended use of the results (e.g. awareness-raising, trade-off/cost-benefit analysis, natural capital accounting, conflict management, stakeholder consultation).

For monetary valuations also:

- Value estimate and its confidence intervals.
- Value ranges and value factors. If possible, sensitivity analysis.

- Nature of the estimated value (e.g. exchange value, welfare-based value).
- Human contributions to the value estimate.

For non-monetary valuations also:

- The number and types of participants who informed the study. Outline their relationship to the ecosystem (e.g. residents, caretakers, Indigenous peoples, visitors, authorities).
- Participant sampling strategy and rationale (e.g. simple random sample, snowball sampling, representative sampling).
- Participant demographic information relevant to the assessment (e.g. age, gender, livelihood, place of residence), with due diligence to ethical and privacy constraints.
- How ecosystem services were framed for participants (e.g. terminology used, whether there were narrative or visual aids).
- If available, quantitative indicators (either numerical or spatial) of value. For example, indicators based on numbers of visits to cultural heritage sites, or spatial locations of areas highly valued for scenic views.
- If available, key themes relating to value emerging from qualitative information. For example, sense of place as tied to local birdlife, or sense of cultural loss associated with ecological degradation.
- Stakeholder groups underrepresented or not included, and the potential implications.
- Contextual factors influencing the results (e.g. historical, institutional, ecological).
- Ethical procedures and protocols followed, where applicable.
- Informed consent and data protection procedures and protocols followed, where applicable.

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