BOOK OF ABSTRACTS

This Book of Abstracts provides a comprehensive overview of the session content and is structured into three main sections:

I. Session Description – an introduction to each session, including its objectives and expected outputs
II. Session Program – a detailed schedule for each session, including speakers and timing
III. List of Abstracts – a complete compilation of all accepted abstracts

I. SESSION DESCRIPTION

ID: T6a

Monetary and non-monetary / plural valuation of ecosystems & services: apparently practiced or inherently paradoxical?

Hosts:

	Name	Organisation	E-mail
Host (s):	Carlotta Quagliolo	University of Aveiro	carlotta.quagliolo@ua.pt
Co-host(s):	Vince van 't Hoff	Foundation for Sustainable Development (FSD)	vince.vanthoff@fsd.nl
	Peter Roebeling	University of Aveiro	peter.roebeling@ua.pt
	Conor Kretch	Cohab Initiative Secretariat	conor.kretsch@cohabinitiative.org
	Luiz Magalhães-Filho	University of Aveiro	luizlacerda@ua.pt
	Jarumi Kato-Huerta	University of Trento	jarumi.katohuerta@unitn.it
	Erik Gómez-Baggethun	Norwegian University of Life Sciences	erik.gomez@nmbu.no

Abstract:
To transform current decision-making processes and spatial planning, nature must be mainstreamed across both private sector and public policy instruments. This need is underscored by the IPBES Nexus Assessment (Bio-water-food-health-climate), which highlights (1) the increasingly interwoven nature of society's major crises, (2) the tightly interlinked character of social-ecological systems and (3) the risks and negative consequences of siloed decision frameworks. At the same time, the IPBES Values Assessment promotes plural valuation as crucial for capturing diverse ways people and institutions value nature. This contributes to a stronger support for conservation/restoration actions, helps to prevent conflict, and produces more comprehensive ecosystem services assessments.

ES science offers a wide array of conceptualizations and valuation methods — from market-based, revealed preference and stated preference monetary valuation methods to participatory, social-media and multi-criteria non-monetary valuation methods. Despite extensive methodological developments, there remains limited empirical research that explicitly integrates multiple valuation methods (monetary & non-monetary) while linking these to socio-economic, health and well-being outcomes, distributional effects and governance choices.

This session will focus on methodological advances and empirical applications that align and integrate monetary and non-monetary / plural valuation methods. We seek contributions that demonstrate how plural valuation can be operationalized for policy, accounting (e.g. SEEA-consistent reporting), finance and planning — and that reflect the cross-cutting nexus highlighted by IPBES and Values Assessments. By bringing together examples that combine monetary and non-monetary valuation methods and applications, the session will advance practical pathways to make plural valuation actionable for decision-makers.

Goals and objectives of the session:

Researchers are invited to present their latest findings showcasing research which specifically combines both monetary and non-monetary / plural valuation methods and applications. Specifically, the goal is to:

- Showcase methodological research and empirical studies that combine monetary and non-monetary / plural valuation methods, including examples that link these valuations to socio-economic, health and well-being outcomes, distributional impacts and governance contexts.
- Highlight lessons from stakeholder co-production and deliberative processes that enhance legitimacy, capture cultural values, and reveal distributional concerns alongside monetized indicators.
- Discuss how plural valuation outputs can be integrated for uptake by different user communities — decision makers (at EU, national and sub-national levels and in the private sector), ecosystem accounting practitioners (SEEA), and financial actors.

Planned output / Deliverables:

Journal Special Issue on methodological advances and empirical applications that align and integrate monetary and non-monetary / plural valuation methods.

Session format:

Between 1½ - 2 hours.

10-minute pitches/presentations and 5 minutes for questions.

Workshop format to discuss advances, integration challenges and links to the science-policy interface.

Related to ESP Working Group:

TWG 6 – Integrated valuation of ES

II. SESSION PROGRAM

Room: B2

Date of session: **Thursday 21, May 2026**

Time of session: **09:00 – 12:30 (3 hours)**

For presenters: **10 mins (8mins of presentation + 2mins for one follow-up question)**

Timetable speakers:

Time	First name	Surname	Organization	Title of presentation
09:00-09:05	Carlotta	Quagliolo	University of Aveiro	Introduction
09:05–09:15	Annelies	Boerema	IMDC, Belgium	Integrating Monetary and Non Monetary Valuation in Strategic Planning for Water Security: a case-study for the Kleine Nete Valley in Belgium
09:15-09:25	Simone	Martino	The James Hutton Institute	Innovation in natural capital valuation by participatory approaches to improve decision-making

09:25-09:35	Tigran	Keryan	BOKU University, Vienna	Participatory approaches in aquatic ecosystem services valuation: pathways towards plural and context-specific values
09:35-09:45	Peter	Roebeling	University of Aveiro	Q&A and observations & short discussion
09:45–09:55	Sarai	Pouso	AZTI, Marine Research, Basque Research and Technology Alliance (BRTA)	Linking Marine Ecosystems to Human Wellbeing: Cetacean Watching in the Basque coast
09:55-10:05	Jingzhu	Shan	Ocean University of China	Monetary compensation vs. Ecological restoration for marine ecological damage in China: Theory, practices and policy
10:05-10:15	Golnaz	Darvishi	University of Lodz, Poland	Revealing the Shadow Cost of Forest Conversion: A Spatial Dual-Valuation of Carbon Storage Using InVEST and EU ETS Pricing in the Oder River Basin
10:15-10:30	Jarumi	Kato Huerta	University of Trento	Q&A and observations & short discussion + final thoughts
10:30-11:00			Break	
11:00–11:10	Maritza	Satama Bermeo	WSL Swiss Federal Research Institute	Transformative change to overcome productivist lock-ins? Insights from olive farmers' preferences in Southern Spain
11:10-11:20	Albaluz Ramos	Franco	Universidad Castella La Mancha - Fundación Universitaria Juan de Castellanos	Socioeconomic Valuation of Environmental Damages from Hydrocarbon Spills in the Palagua Swamp (Puerto Boyacá, Colombia)
11:20-11:30	Laura	Pinos	Department of Economics and Statistics (EST), University of Torino, Torino, Italy	Assessing environmental justice of nature-based solutions for urban global change adaptation: Aveiro case study, Portugal
11:30-11:40	Vince	van 't Hoff	Foundation for Sustainable Development	Q&A and observations & short discussion
11:40-11:50	Myriam	Sánchez-Mejía	Corporación Biotec Research Center and Universidad del Valle	Biodiversity policies and the well-being of local communities: a critical connection. The Colombian case. 2004-2024
11:50-12:00	Kaia	Oras	Statistics Estonia	Plural Values Related to Ecosystem Services: Empirical Insights and Methodological Advances
12:00-12:10	Ido	Toxopeus	National Institute for Public Health and the Environment, Bilthoven, Netherlands	To quantify or not to quantify? Do you have to quantify to value ecosystem services?

12:10-12:25	Conor	Kretch	Cohab Initiative	Q&A and observations & short discussion
12:25-12:30	Carlotta	Quagliolo	University of Aveiro	Final thoughts, further steps & closure

III. LIST OF ABSTRACTS

The first author is the presenting author unless indicated otherwise

1. Integrating Monetary and Non Monetary Valuation in Strategic Planning for Water Security: a case-study for the Kleine Nete Valley in Belgium

First author: Annelies Boerema
Affiliation: IMDC, Belgium
Contact: annelies.boerema@imdc.be

Integrating monetary and non-monetary values can support a broader inclusion of hidden external costs and ecosystem service benefits in the development of, for instance, a long-term action plan for flood and drought resilience. The Flemish Government Department of Environment launched a project to develop a new action plan towards long term water security objectives (2030–2050) in the Kleine Nete valley (Belgium). This study aims to specify new water security targets and develop an area specific program for built and open space with measures such as floodplain reconnection and wetland restoration. A social cost-benefit analysis is used to compare scenarios and inform the development towards a preferred scenario optimized for water security and wider social benefits. The Flemish Government has put a lot of emphasis on guaranteeing the inclusion of hidden external costs and benefits. Therefore, we apply a mixed-method cost-benefit analysis with multi-criteria analysis to include both direct costs (e.g. investment costs, avoided flood/drought damages) with hidden external costs (e.g. emissions, nutrient loads, habitat fragmentation) and non market ecosystem services (e.g. groundwater recharge, climate regulation...). This approach will enrich the development of responsible regional planning by balancing public and private interests while delivering robust water security and social benefits.

Keywords: SCBA, MCA, water security, externalities, spatial planning

2. Innovation in natural capital valuation by participatory approaches to improve decision-making

First author: Simone Martino
Other author(s): Maria Nijnik, Samuel Poskitt, Katy Joyce, Chen Wang, Margaret McKeen, David Miller
Affiliation: The James Hutton Institute
Contact: simone.martino@hutton.ac.uk

To develop understanding of natural capital (NC) in tackling climate change (Dasgupta, 2021), we worked to advance NC valuation by the integration of participatory and deliberative approaches exploring a plurality of values that complement economic valuation with social assessment (Pascual et al., 2023).
The project JHI-D5-1 "Bringing in participatory approaches to widen the scope of natural capital valuation" adopts a participatory approach to assess the value of natural resources that people depend upon, recognizing the importance of NC as stated in the Scottish Land Use Strategy 2021-2026.
We developed a valuation framework (Martino et al., 2024) and tested a ranger of methods and tools to elicit intrinsic, relational and instrumental values (Himes et al., 2024) to facilitate collaboration between stakeholders in finding solutions that minimize conflicts in land use management. The proposed toolset is made of seven steps that support discussions on the conditions of NC assets under different scenarios and then contextualise values by exploring relational and instrumental dimensions of the interactions between nature and humans.
While we are still elaborating the data collected at Glensaugh, the Climate Positive farm managed by the

James Hutton Institute, this approach allowed us to:

- discuss values of and valuation approaches for natural resources (stock and ecosystem services) through discussions in focus groups;
- generate narrative scenarios for NC assets under a range of social, technical, economic, ecological and policy drivers;
- contextualise these scenarios at the local level and elicit preferences for a range of instrumental (e.g., ecosystem services) and relational values (identity and place) by adopting GIS participatory mapping, Q method and photo-elicitation.

We expect that this approach may add value to the NC Community Partnerships, landowners and managers, showing how different types of knowledge and values can be included and used in the decision-making process.

Keywords: natural capital, ecosystem services, value plurality, participatory approaches

3. Participatory approaches in aquatic ecosystem services valuation: pathways towards plural and context-specific values

First author: Tigran Keryan
Other author(s): Verena Radinger-Peer, Brenda Maria Zoderer, Rafaela Schinegger, Vardan Asatryan
Affiliation: BOKU University, Vienna
Contact: tigran.keryan@boku.ac.at

Aquatic ecosystems provide a wide range of ecosystem services (ES), including biodiversity support, climate regulation, and cultural benefits, all of which are essential for human well-being. At the same time, these systems are increasingly threatened by anthropogenic pressures and climate change, calling for valuation approaches that better capture diverse values and support inclusive decision-making. This contribution examines the role of participatory approaches in aquatic ecosystem services valuation through a systematic review of the peer-reviewed literature. The review analyses how stakeholder engagement and knowledge co-production are applied across different valuation contexts, with particular attention to non-monetary, plural, and context-specific value dimensions. The findings reveal a wide diversity of participatory methods, ranging from consultative approaches to more deliberative and co-creative formats. No single method emerges as universally effective; instead, the suitability and outcomes of participatory valuation strongly depend on social, cultural, institutional, and geographic contexts. Key enabling factors include transparent communication, trust-building, and the development of a shared understanding of ecosystem service values among stakeholders. While participatory approaches can enhance inclusiveness and legitimacy, especially in settings where local and indigenous knowledge plays a central role, the review also highlights challenges related to power asymmetries, scalability, and the valuation of transboundary aquatic ecosystems. In such contexts, more systematic yet flexible frameworks are needed to complement participatory processes and support policy-relevant decision-making. By synthesising current evidence, this study contributes to ongoing debates on ecosystem services valuation methods. It outlines future research directions for integrating participatory approaches into aquatic ecosystem services valuation to better inform restoration, management, and nature- and people-positive policy outcomes.

Keywords: Freshwater ecosystems; Marine ecosystems; Coastal ecosystems; Participatory valuation; Stakeholder engagement

4. Linking Marine Ecosystems to Human Wellbeing: Cetacean Watching in the Basque coast

First author: Aitziber Olano
Other author(s): María C. Uyarra, Angel Borja, Amaia Astarloa, Isabel García-Barón
Presenting author: Sarai Pouso
Affiliation: AZTI, Marine Research, Basque Research and Technology Alliance (BRTA), Spain

Contact: spouso@azti.es

Marine ecosystem services provide diverse ecological and economic benefits; however, their sustained provision is increasingly threatened by anthropogenic stressors. To ensure environmental integrity and promote human well-being, it is necessary to investigate the functioning of marine ecosystem services. Marine cultural ecosystem services, such as wildlife tourism, are increasingly valued for their contributions to human wellbeing and local economies. This study applies the Common International Classification of Ecosystem Services (CICES) cascade framework to assess the cultural service of "cetacean watching potential" along the Basque coast (Bay of Biscay). We explore this service following three complementary paths, focusing on: (i) Delphinus delphis, (ii) the most common cetacean species, and (iii) the cetacean watching touristic tours. Indicators for each step of the cascade were chosen to link the environmental part and the socioeconomic system. Sociocultural valuation using validated psychological scales (PANAS and ROS) showed that cetacean sightings enhanced participants' emotional wellbeing and restorative experiences, especially among women and those with strong nature connectedness. The economic valuation showed that the number of tours and participants strongly correlated with revenue, though the activity remains small-scale and weather dependent. Our findings demonstrate the utility of the CICES cascade in capturing the complex flow from ecological conditions (biophysical factors, function and services supply) to human benefits and values. This integrated approach highlights the importance of combining ecological, sociocultural and economic valuation to fully understand nature's contributions to human wellbeing.

Keywords: wildlife watching, CICES cascade, cultural ecosystem service, sociocultural value, mental restoration

5. Monetary compensation vs. Ecological restoration for marine ecological damage in China: Theory, practices and policy

First author: Jingzhu Shan
Other author(s): Jingmei Li
Affiliation: Ocean University of China
Contact: oucshanjingzhu@126.com

With the increasing concentration of population and marine industrial activities in coastal areas, marine ecological damage caused by various human activities and unforeseen events has become increasingly severe. Marine ecological damage compensation (MEDC) is a policy designed to regulate and mitigate the ecological impacts of marine development; balance the environmental, economic, and social interests of stakeholders; and ensure the health of marine ecosystems and the sustainable use of marine resources. The MEDC is divided into two modes: compensation in money and compensation in kind, each giving rise to its respective standards: monetary compensation standards and ecological restoration standards. These two compensation standards differ in their theoretical foundations, compensation content, and evaluation methods. Defining the applicable scope and conditions for monetary compensation and ecological restoration is crucial for establishing a scientific, reasonable, and operable MEDC policy. This paper, from a "theory–practice–policy" perspective, begins by comprehensively comparing and analyzing the differences between the two compensation standards in terms of their theoretical basis, compensation content, and assessment methods. Finally, from a policy perspective, applicable conditions and selection recommendations for different compensation standards are proposed. The results provide decision-making references for selecting marine ecological damage compensation modes in different application scenarios and offer guidelines for the government in establishing an "adequate compensation and effective restoration" MEDC standard.

Keywords: Marine ecological damage compensation; Monetary compensation; Ecological restoration; China

6. Revealing the Shadow Cost of Forest Conversion: A Spatial Dual-Valuation of Carbon Storage Using InVEST and EU ETS Pricing in the Oder River Basin

First author: Golnaz Darvishi

***Other author(s)*:** Piotr Krajewski
***Affiliation*:** University of Lodz, Poland
***Contact*:** golnaz.darvishi@edu.uni.lodz.pl

The conversion of high-biomass forest lands into croplands and grasslands significantly drives anthropogenic carbon emissions. However, this degradation often results from a market failure: the economic invisibility of the regulating ecosystem service of carbon storage. While biophysical models can estimate carbon stocks, valuing these stocks monetarily remains difficult. Conventional valuation methods frequently rely on static social cost estimates or voluntary market pricing, which may not reflect current regulatory and financial concerns related to climate change.
This study aimed to quantify the economic "shadow price" of deforestation by integrating spatial ecological modelling with a comparative economic framework. In particular, it looked at the valuation gap, the difference between carbon's social welfare value (Marginal Damage Cost) and its financial market value (Marginal Abatement Cost), in 2018 and 2021. Carbon stocks across forest, grassland, and cropland land covers were quantified using the InVEST, based on Copernicus Land Monitoring Service data and IPCC carbon pool estimates. To translate biophysical carbon losses into decision-relevant values, two complementary monetary valuation approaches were employed. First, European Union Emissions Trading System (EU ETS) allowance prices were used as a revealed-preference proxy for marginal abatement costs, reflecting policy-driven mitigation priorities. Second, the Social Cost of Carbon (SCC) was applied to capture long-term marginal climate damage costs.
The results revealed substantial carbon debts associated with forest-to-grassland and cropland conversion. A spatial comparison of EU ETS-based and SCC-based values exposed a pronounced valuation gap between market-based mitigation costs and welfare-based damage estimates, highlighting a persistent market failure in land-use governance. Also, the economic value of forest carbon storage is not static but varies with carbon market conditions and policy stringency.
Instead of presenting a single price for nature, this study showed how plural valuation could be operationalized to reveal trade-offs, governance blind spots, and policy-relevant inconsistencies in climate and land-use planning.

***Keywords*:** carbon storage valuation, EU ETS, ecosystem services, land-use change, shadow pricing

7. Transformative change to overcome productivist lock-ins? Insights from olive farmers' preferences in Southern Spain

***First author*:** Maritza Satama Bermeo
***Other author(s)*:** Laura García-Espigares, Manuel Gonzalez de Molina, Gloria I. Guzmán, Roland Olschewski
***Affiliation*:** Swiss Federal Research Institute WSL
***Contact*:** maritza.satama@wsl.ch

The productivist agricultural model in the European Union, embedded in the Common Agricultural Policy, has contributed to environmental degradation, including biodiversity loss, soil erosion, water contamination, and the deterioration of traditional landscapes. This outcome is in line with prevailing economic growth model in which yield maximization is prioritized over ecological considerations. The olive sector is as an example of this trajectory, reinforcing a system in which farmers become locked-in production practices that limit the potential for more transformative and environmentally friendly pathways. The objective of the present research is, therefore, to critically analyze the preferences of olive farmers. This was achieved by conducting a two-step choice experiment, complemented by a deliberative workshop. The CE centered on five attributes: (i) the type of production system, (ii) soil erosion control, (iii) recommendations, (iv) olive varieties, and (v) monetary compensation. Our findings demonstrate that after the deliberative workshop olive farmers' preferences remained mostly stable. Farmers demonstrated a clear preference for integrated production systems, indicating a "shift" toward reducing chemical inputs. Nevertheless, the implementation of green cover for the purpose of erosion control was not favored, due to concerns regarding potential temporary yield reductions. The role of cooperatives is pivotal, as farmers prefer to receive recommendations from them compared to scientists or peers. Furthermore, farmers have a clear preference for traditional olive varieties and expressed a strong intention to preserve them within the region. Conversely, the adoption of organic production systems necessitates higher compensation

payments than integrated systems. For a transformative change to become visible in the olive sector, it is essential to critically reflect how agricultural policies can move beyond the narrow focus on yield maximization.

Keywords: choice experiment, deliberation, cooperatives, mixed logit, lock-in

8. Socioeconomic Valuation of Environmental Damages from Hydrocarbon Spills in the Palagua Swamp (Puerto Boyacá, Colombia)

First author: Albaluz Ramos Franco
Other author(s): Federico Gómez Angarita
Affiliation: Universidad Castella La Mancha - Fundación Universitaria Juan de Castellanos
Contact: aramosf@jdc.edu.co

The present study evaluates the socioeconomic impacts of recurrent hydrocarbon spills in the Palagua swamp, located in Puerto Boyacá, Colombia, a territory historically shaped by oil extraction and environmental conflict. The main objective is to identify perceived social impacts and to estimate the monetary value of environmental damages affecting local livelihoods and ecosystem services. A mixed-methods research design was applied. Qualitative information was collected through semi-structured interviews and focus groups with residents, fishermen, and community leaders, allowing an in-depth assessment of social perceptions, institutional trust, and changes in daily practices. Quantitatively, a contingent valuation method was implemented to estimate individuals' willingness to accept monetary compensation for environmental degradation.
Results reveal significant deterioration of key ecosystem services, particularly artisanal fisheries, water quality, and food security, alongside a widespread perception of abandonment by public institutions and extractive companies. The estimated mean willingness to accept compensation was USD 428 monthly, with substantial heterogeneity across socioeconomic groups. Fishermen reported the highest mean willingness to accept, reaching USD 658 monthly, reflecting their direct dependence on the marsh for income and subsistence. Approximately 79% of respondents expressed willingness to accept compensation, while more than half perceived a high probability of losing future benefits derived from the swamp.

These findings highlight the strong link between environmental degradation, economic vulnerability, and social cohesion in extractive territories. The study underscores the importance of incorporating socioeconomic valuation into environmental impact assessments and public decision-making. By providing quantitative evidence of local welfare losses, the results support the design of differentiated compensation schemes, restoration strategies, and policies aimed at strengthening community resilience and environmental justice in regions affected by hydrocarbon activities. Such an approach contributes to more equitable governance, accountability, and long-term sustainability of socioecological systems under persistent extractive pressures at local community levels nationally.

Keywords: Contingent valuation; Willingness to accept; Fisheries; Social perception

9. Assessing environmental justice of nature-based solutions for urban global change adaptation: Aveiro case study, Portugal

First author: Maria Laura Pinos Romero
Other author(s): Carlotta Quagliolo, Peter Roebeling, Vito Frontuto
Affiliation: Department of Economics and Statistics (EST), University of Torino, Torino, Italy
Contact: maria.pinos@edu.unito.it

Nature-based solutions (NBS) aim to enhance urban resilience while improving human health and well-being. Although NBS are often promoted as being developed, implemented and managed through co-creation processes as to enhance their multiple (co-) benefits, these benefits often remain unevenly distributed among social groups. Co-creation is intended to empower communities in the process of planning for sustainability and
resilience; however evidence suggests that wealthier and more educated stakeholders are more likely to

participate. As a result, co-creation may also lead to procedural injustice that reinforces inequalities and stigmatizes non-participants. The objective of this study is to assess the willingness to participate (WTP; i.e. invest time) in the co-development and co-stewardship of NBS, using urban green/blue spaces in the City of Aveiro (Portugal) as a case study. To this end, a choice-experiment is developed and applied to elicit respondents' socio-economic characteristics, willingness to invest time in co-development and/or co-stewardship activities, and distance to the new green/blue space. Time is used as a proxy for the value given to NBS co-creation, showing differences between social groups in their ability to participate and have representation in decision-making processes. A Mixed Logit Model (in R)
is used to account for heterogeneity. Results show that the large majority of respondents prefers to participate in NBS co-creation processes, whereby respondents prefer to contribute to co-stewardship activities (rather than co-development activities) through long-term (2 year) engagement (rather than short term, 1-year, engagement). Results furthermore show that high-income respondents are more willing to participate in co-development activities, while low-income respondents are more willing to participate in co-stewardship activities. To avoid procedural injustice in the co-development of NBS, low-income households should thus be better engaged. The findings aim to inform policy and planning practices seeking mainstream justice considerations in urban adaptation strategies

Keywords: Environmental justice; Nature-Based Solutions; Willingness to volunteer; Urban-planning, Non-monetary valuation

10. Biodiversity policies and the well-being of local communities: a critical connection. The Colombian case. 2004-2024

First author: Myriam Sánchez - Mejía
Affiliation: Corporación Biotec Research Center and Universidad del Valle
Contact: myriams@cgiar.org

This doctoral research examines the relationship between Biodiversity policies and the Well-being of local communities in Colombia, starting from the premise that the challenge is not the absence of policies (Echeverry 2023), but the persistence of structural gaps that limit their transformative impact in biodiverse territories. The study unfolds at a key institutional moment: the adoption of the Kunming-Montreal Global Biodiversity Framework (2022) and the convening of COP16 in Cali (2024), where Colombia presented its Biodiversity Action Plan Colombia 2030.
Conceptually, the research is structured around the interrelation between Biodiversity, Policy Instruments, and the Well-being of local communities, articulated through governance, valuation/metrics, and innovation, and examined across global, national, and local scales, including a Case study in the Colombian Pacific.
Methodologically, the study analyzes national and decentralized levels, acknowledging the coexistence of a highly centralized institutional architecture with unequal local capacities, within a territorial governance.
Preliminar results reveal three structural deficiencies: (1) fragmented governance marked by misalignment between national policy and territorial realities, with limited meaningful community participation within a complex territorial governance; (2) a limited metrics system dominated by biophysical and administrative monetary indicators, lacking integrated socioecological and relational frameworks; (3) modest Well-being impacts, characterized by punctual and non-systemic benefits, excessive institutional mediation, and low community empowerment to produce public value from biodiversity.
The research proposes an epistemological shift: understanding Biodiversity policies as transformative missions that recognize Biodiversity as an ontological mediator of collective Well-being in local communities. This approach requires polycentric governance, plural and integrated metrics, and robust participatory mechanisms that armonize Biodiversity protection and its ecosystem services with well-bieing(Stiglitz et al., 2009).

Keywords: Biodiversity policies, Well-being of local communities, Territorial governance, Valuation/metrics, Beyond GDP

11. Plural Values Related to Ecosystem Services: Empirical Insights and Methodological Advances

***First author*:** Kaia Oras
***Other author(s)*:** Kätlin Aun, Grete Luukas, Sjoerd Schenau, Aldo Femia, prof Aveliina Helm, prof Kalev Sepp, Aija Kosk
Presenting author: Kätlin Aun
***Affiliation*:** Statistics Estonia
***Contact*:** kaia.oras@stat.ee

This contribution presents results from a Eurostat-supported project aimed at clarifying and operationalising plural valuation of ecosystem services (ES) in official statistics. Building on the SEEA EA framework and responding to UN London Group recommendations, we developed a multi-layered valuation scheme distinguishing actual, institutional, hypothetical, and risk-related monetary values. Empirical work focused on Estonia and the Netherlands, covering provisioning (crops, wood), regulating (pollination, climate regulation, air filtration), and cultural services (nature-based tourism). We compiled and tested valuation methods including market-based indicators (resource rents, product values), connected transaction data (tourism expenditures), and hypothetical constructs (soil replacement cost, WTP). Comparative analysis revealed striking contrasts: e.g., crop rents vs. soil replacement cost differ by two orders of magnitude, illustrating the paradox of substitutability assumptions.
Expert evaluation confirmed the framework's conceptual robustness and identified priorities: linking ecological processes to value layers, clarifying stock–flow dynamics and integrating uncertainty indicators. Other planned next steps could be discussed, included the integration with SEEA EA and EEIO tables to enable sectoral dependency analysis and scenario modelling. This work demonstrates how plural valuation can move beyond static classification to become a decision-support tool for policy and accounting, while avoiding misleading hypotheticals and double counting.

***Keywords*:** ecosystem accounting, plural values, empirical valuation, SEEA EA, ecological context, policy relevance, monetary values

12. To quantify or not to quantify? Do you have to quantify to value ecosystem services?

***First author*:** Ido Toxopeus
***Other author(s)*:** Sandra Boekhold
***Affiliation*:** National Institute for Public Health and the Environment, Bilthoven, Netherlands
***Contact*:** ido.toxopeus@rivm.nl

Ecosystem services (ESS) play an important role in illustrating the interconnectedness of people and the environment. Valuating ESS aims to give the environment 'a seat at the table'. To this end, many seek to quantify ESS and to express these in monetary terms. The significant advances made, such as the natural capital accounting framework, have produced many insights on the value of the environment for societies. Nevertheless, one may question whether quantifying and monetising is always the best approach for an integrated assessment. Doubts have been raised whether such an approach does justice to all stakeholder values. Also, many aspects of the interconnectedness of people and the environment remain difficult to quantify, such as the relation between a 'green' environment and health outcomes.
To overcome such difficulties and allow the (perceived) value of the environment to be expressed in a comparable way to other values in society, such as economic prosperity or sovereignty, various (multi criteria decision analysis) methods have been proposed that integrate quantitative and qualitative effects. To this end, two interdependent questions need to be answered. Firstly, how can seemingly incomparable effects (i.e. biodiversity loss, flood prevention and GDP) be expressed at a single scale, based on quantitative or qualitative assessment, to enable transparent and inclusive decision making? The second question depends on the first and asks how to value, i.e. appreciate or weigh, these scaled effects in a way that does justice to all stakeholders?
We pose that evaluation methods that solve these two questions are essential for successful uptake of integrated assessments in different user communities such as decision makers at various governmental levels. We aim for an open discussion on the difference between effects and values, the status of monetisation as a means of valuation, and the different roles of experts and stakeholders.

***Keywords*:** plural valuation, multi criteria decision analysis, integrated evaluation, non-monetary