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: T7d

Dynamic Tools for Valuing Ecosystem Services: From network-based approach to broader applications

Hosts:

	Name	Organisation	E-mail
Host (s):	Nivedha Elango	HAEDES (https://haedes.eu/) (also a PhD student at the University Gent)	nivedha.elango@haedes.eu
Co-host(s):	Dr. Gonzalo Gabriel Villa Cox	HAEDES (https://haedes.eu/) (also a Post doctoral researcher at the University Gent)	gonzalo.villa@haedes.eu
	Prof. Renaat De Sutter	HAEDES	renaat.desutter@haedes.eu
	Prof. Stijn Speelman	University Gent	stijn.speelman@ugent.be

Abstract:

This session explores innovative approaches to ecosystem services valuation that integrate economic logic with dynamic system modelling.

The focus would be on the use of a scenario-based decision-support tool, designed to capture interactions and dynamics, actor behaviour, and policy-relevant outcomes in complex socio-ecological systems.

The session would welcome case studies and methodological advances that apply these or similar tools to real-world decision contexts, preferably under multi-hazard scenarios, land-use change, or climate adaptation planning. Contributions may include valuation logic, cost-benefit frameworks, spatial prioritisation, stakeholder integration, or applications in agriculture, water systems, or ecological restoration.

The session aims to demonstrate how dynamic models can enrich the economic assessment of ecosystem services, enabling planners and policymakers to account for uncertainty, feedback, and trade-offs. By bringing together economists, ecologists, environmentalists, modellers, practitioners, and policy actors. The session aims to foster deeper dialogue on how tools can support ecosystem service valuation for sustainable and inclusive decision-making.

Goals and objectives of the session:

Session Goals

- To advance the integration of economic valuation methods with dynamic systems modeling in the context of ecosystem services.
- To promote interdisciplinary exchange among researchers, practitioners, and policymakers working on socio-ecological systems.

- To support the development and application of decision-support tools that inform sustainable and inclusive environmental planning under conditions of uncertainty.

Session Objectives

- Present and discuss case studies using scenario-based tools for ecosystem service valuation.
- Highlight methodological innovations in valuation logic, cost–benefit analysis, spatial prioritization, and stakeholder integration.
- Explore applications of modeling tools in areas such as agriculture, water systems, land-use planning, and ecological restoration.
- Facilitate dialogue on incorporating feedbacks, trade-offs, and dynamic system behavior into policy-relevant valuation processes.
- Identify practical pathways for improving decision-making in the face of multi-hazard risks and climate adaptation challenges.

Planned output / Deliverables:

- Comparative insights into dynamic valuation methods and their applications
- Shared experiences using tools in stakeholder-rich planning environments
- Identification of integration opportunities with ecosystem accounting and governance
- A roadmap for embedding agent-based and scenario-driven tools in EU policy frameworks

Related to ESP Working Group:

TWG 7 – Economic & Monetary valuation

II. SESSION PROGRAM

Room: B1
Date of session: Friday 22, May 2026
Time of session: 14:00 – 15:30

Timetable speakers:

Time	First name	Surname	Organization	Title of presentation
14:05 – 14:17	Swantje	Gebhardt	Wageningen University	PLACES: A dynamic, participatory tool for exploring ecosystem service tradeoffs and values
14:17 – 14:29	Donya	Davidson	NatureScot	The NatureScot Natural Capital Tool: Making the invisible, visible
14:29 – 14:41	Karine L..	Mahefarisoa	KU Leuven	Who holds coordination power in One Health–ecosystem governance? Lessons from Madagascar.
14:41– 14:53	Katharina	Hecht	Utrecht University	Towards a science-based nexus-platform for ecologically functional building design - Level 1 results from the EcoBUILD Project
14:53– 15:05	Gonzalo/	Villa-Cox	Haedes/Ugent	Network Ecosystem Service Valuation (NESEV)
15:05– 15:30	Nivedha	Elango	Haedes/Ugent	Wrap up and General discussions

III. ABSTRACTS

The first author is the presenting author unless indicated otherwise

1. PLACES: A dynamic, participatory tool for exploring ecosystem service tradeoffs and values

First author: Swantje Gebhardt
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Identifying and resolving tradeoffs between ecosystem services remains a major challenge, particularly when stakeholders value the services differently. Existing tools that support dialogue on sustainable landscape management or land use prioritization often fail to convey how ecosystem services respond dynamically to land management interventions. To address this gap, we present PLACES, the Participatory LAndscape Configuration Effects Simulator. This interactive tool enables users to design their own land use scenarios and provides maps and scores showing the consequences for multiple ecosystem services in real time. Users can adjust their scenarios in response to these outputs with the help of this dynamic modelling of land use impacts. With PLACES, stakeholders can explore alternative futures and discuss their valuation of ecosystem services. We applied PLACES during a stakeholder workshop on agricultural land use conflicts in Noord-Brabant with participants from various sectors. The tool improved the users' understanding of the multiple pressures acting on the landscape and facilitated discussions on how their priorities for ecosystem services shaped their land use decisions. Beyond this application, PLACES is developed to be adaptable to various socio-ecological contexts. Therefore, we assessed options for integrating valuation methods into its ecosystem service impact calculations, enabling the tool to support conversations about values and the policy or behavioral changes they may imply. These valuation components could include accounting for land management interventions whose benefits manifest elsewhere. By linking dynamic spatial planning decisions to valued outcomes, PLACES has the potential to strengthen collaborative decision-making for multifunctional landscapes.

Keywords: participatory planning, ecosystem services, agricultural landscapes, tradeoff, valuation

2. The NatureScot Natural Capital Tool: Making the invisible, visible

First author: Donya Davidson
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Historically, nature and its associated ecosystem services have been undervalued in decision-making, which is considered a key driver of biodiversity loss. Scotland has made ambitious targets of protecting 30% of its land and sea and halting biodiversity loss by 2030; to reach these targets, decision-makers must take a natural capital approach to land management. This approach considers the full suite of benefits that we receive from nature when making land use, economic or political decisions.

To take a natural capital approach, land managers and decision-makers must have the means to quantify ecosystem service provision. As a result, there is growing demand for decision support tools (DSTs) to provide a standardised method by which land managers can examine ecosystem service trade-offs and pursue positive land use change. Although undoubtedly an important means to achieve ecosystem restoration targets, DST uptake is low as these tools often require specialist expertise and upfront capital investment.

To address this barrier, NatureScot have led on the development of the Natural Capital Tool (NCT). This free, spatial tool for mapping and modelling ecosystem service provision is the first of its kind in Scotland. Developed with Liverpool John Moores University and EOLAS Insight, the NCT calls on geospatial and socioeconomic datasets to produce a habitat baseline and a range of models bespoke for Scotland, including ecosystem service capacity and demand models. Users can visualise ecosystem service and habitat network opportunities on their area of interest and quantify the impact of simulated interventions in

relative, economic, and biophysical terms. This way, users can evaluate how restoration activities impact both people and nature, supporting a strategic approach to land use change. By equipping users with tangible, user-friendly outputs rooted in a robust scientific methodology, the NCT can be used to effectively apply natural capital approaches at the landscape scale.

Keywords: ecosystem services, natural capital, decision support tool, landscape-scale restoration

3. Who holds coordination power in One Health–ecosystem governance? Lessons from Madagascar

First author: Karine L. Mahefarisoa
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Across regions, One Health and ecosystem services agendas increasingly recognise linked biodiversity, health, and well-being outcomes, yet implementation often remains fragmented. We use Madagascar, an internationally recognised biodiversity hotspot, as an empirical case to show how governance network structure can enable or constrain integrated action, with lessons applicable to Europe, where multi-level governance and diverse funding streams can similarly shape coordination.
Following the Laumann–Marsden–Prensky framework, we conducted a social network analysis (SNA) survey (14 March–24 June 2022) with 30 senior leaders (≥5 years' experience) spanning biodiversity conservation and public health. Respondents named key collaborators across projects and main funding sources. We quantified the strength of One Health integration and interaction. Indegree, outdegree, and eigenvector centrality identified influential actors; density and centralisation characterised structural cohesion.
Participants identified 287 actors, of which 54.4% were international entities. International organisations occupied structurally central positions in both collaboration and funding networks, while national and local government bodies were comparatively peripheral. Only a small subset of stakeholders reported effective integration of One Health into routine conservation and health governance practices. Overall, the network pattern suggests that access to resources and convening capacity, rather than formal mandates, largely determine coordination power.
One Health is a governance-network challenge as much as a technical one. When coordination and financing concentrate outside accountable public institutions, integration risks becoming project-based and vulnerable to shifting priorities, even in well-resourced settings. We propose SNA as a practical diagnostic for assessing the effectiveness, equity, and institutional anchoring of ecosystem services/One Health policy mixes, and for tracking whether reforms genuinely strengthen durable national and local leadership.

Keywords: One Health; ecosystem services governance; social network analysis; policy assessment; funding networks

4. Integration of Ecosystem Services into Organizational Routines - How Intrinsic Motivation and Learning Changes in a Course of Seven Workshops

First author: Katharina Hecht
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The building construction industry, a major consumer of materials and energy, negatively impacts ecosystem functioning and ecosystem services (ESs) generation. Growing awareness of environmental challenges increasingly leads to laws that promote sustainable building practices, however, practical guidelines for their implementation are lacking. Organizational resistance is another challenge that can be

tackled by effective change management strategies, including training, communication, and stakeholder involvement. We developed a workshop sequence for building developers at the Campus & Facilities department of Utrecht University using participatory action research. The goal of the workshops was to weave ESs into building (re)development processes resulting in ecologically functional and regenerative buildings. The Kirkpatrick model for training evaluation, together with a mixed methods approach, was used to analyze the workshop outcomes. Furthermore, we tested how intrinsic motivation and knowledge on ESs implementation into buildings changes among workshop participants. A initially high intrinsic motivation was observed, with an increase in 'effort and importance', 'perceived competence' and 'relatedness'. The participants also showed a significant learning curve, indicating that the workshops supported the use and implementation of ESs into building projects. Furthermore, first indicators for successful organizational change were recorded through the integration of ESs into binding ambition documents for the university buildings and environment. Workshop participants acted as change agents within their organization inducing more sustainable decision-making through ecological systems thinking, ecological functionality and ESs wherever possible. This research shows that direct collaboration with building development experts can further close the gap between scientific theory and its translation and integration into building (re)development practice. Workshop participants indicated that a digital space where existing building designs are linked to their measured ESs benefits could support informed decision-making towards regenerative buildings. That could be supported by a data-driven platform that facilitates knowledge exchange between scientists and different building professionals, including architects and designers.

Keywords: ecosystem services, regenerative building design, workshops, data-driven platform

5. Network Ecosystem Service Valuation (NESEV)

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Ecosystem services are the benefits humans derive from functioning ecosystems and are central to understanding and managing complex socio-ecological systems. Despite decades of valuation efforts, persistent misconceptions, particularly around socio-economic valuation, continue to hinder scientific dialogue and practical application. The Network Ecosystem Service Valuation (NESEV) framework addresses these challenges by explicitly separating transactions, valuation, and decision support within a multi-dimensional, systems-oriented approach. NESEV integrates ecological, social, and economic dimensions and accommodates diverse measurement scales, ranging from qualitative indicators and biophysical units to monetary metrics, enabling multi-criteria analysis across governance levels and spatial scales.

At the core of NESEV are transactions, representing material/energy flows that define ecosystem services within a socio-ecological network. Transactions capture how these biophysical, social, cultural, or economic flows are exchanged between actors and ecological components, providing foundational data for analysis. Ecosystem services themselves can either be quantified as direct stocks or topologically aggregated/derived from multiple transactions, reflecting the net service outcomes within the system. Actors, including ecological components, individuals, and institutional actors, interact through these transactions, which update actor-specific stocks representing system states or capacities. Services may be directly represented as stocks or derived through the aggregation of multiple transactions, preserving transparency and analytical consistency while reflecting real-world complexity.

Valuation in NESEV is defined as the systematic assessment and comparison of ecosystem service flows and stocks across scenarios, focusing on identifying trade-offs, synergies, and leverage points rather than enforcing monetization. This valuation process is operationalized through a dynamic Decision Support System (DSS) grounded in the CHANS–ABM–NESEV framework, which enables scenario simulation, participatory analysis, and actor-specific decision pathways. The DSS supports transparent, data-driven governance by integrating stakeholder priorities, multi-criteria decision analysis, and adaptive system behaviour.

The practical applicability of NESEV is demonstrated through its implementation in the AquaForest project, which assesses mangrove restoration in the Gulf of Guayaquil, Ecuador as a complex socio-

ecological network. By linking ecological restoration with fisheries, biodiversity, livelihoods, and governance, NESEV supports evidence-based management and participatory planning. Ongoing developments extend the framework to probabilistic and multi-hazard risk assessment, enhancing its relevance for climate adaptation, disaster risk reduction, and sustainable ecosystem governance.

Keywords: Ecosystems; valuation; networks; transactions; stocks