

BOOK OF ABSTRACTS

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I. SESSION DESCRIPTION

ID: S3b

Financing and certifying forest- and tree-based ecosystem services

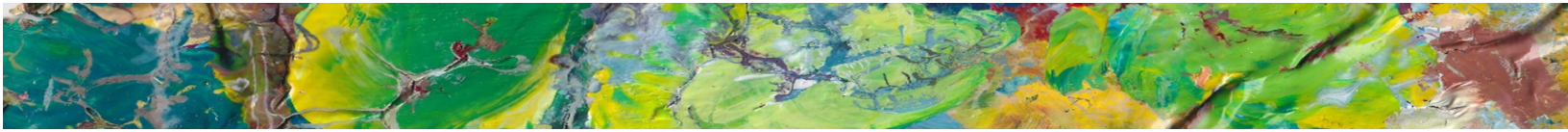
Hosts:

	Name	Organisation	E-mail
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Abstract:

Europe has seen a rise in demand for certified forest products and forest certification in recent years. Major global issues like the need to reduce carbon emissions and mitigate climate change, as well as economic and social demands for fairer trading and nature-based solutions, explain the growing importance given to forest ecosystem services to sustain human well-being and a resilient economy.

However, finance for sustainable forest management and for the development and scaling up of business models based on forest ecosystem services is a bottleneck. The potential of sustainable finance to support the sustainability transition of the sector remains underexploited. Under the concept of sustainable finance, a wide range of environmental, social and governance (ESG)



considerations can be considered when making investment decisions in the financial sector. Different sustainability assessment approaches lead to more or less impactful and long-term investments in sustainable economic activities and projects. There are widespread credibility issues with mainstream decision-support tools expected to guide sustainable investment decisions. This leads to issues of poor targeting of financial resources, unsatisfactory sustainability impacts and in some cases, outright greenwashing concerns.

Forest certification is a case in point. While on the one hand, a number of forest certification schemes have emerged as enabling tools for promoting sustainable forest management and ecosystem services valorization, on the other hand their real impact on harnessing forest ecosystem services and generating new revenue streams for forest owners remains uncertain.

By delving extensively into the complex relationship between forest certification and ecosystem services and their valorization and payment schemes, this session hopes to provide valuable insights, evaluations, and directions for further research. Through empirical research, theoretical frameworks, and real-world case studies, this session will explore novel approaches to understand the potential of forest ecosystem services to drive the development of sustainable business models and to maximize the benefits that forest certification and new funding mechanisms bring to the ecosystem services and altogether to forest owners.

Goals and objectives of the session:

To explain and present practical experiences of tree-based business models;

To discuss relevant models and instruments of sustainable financing;

To develop criteria for successful long-term partnerships and transformative change;

To assess and understand the impact of forest certification on ecosystem services and their changes;

To analyze trade-offs between ecosystem services under certification and strategies for optimizing benefits;

To explore socio-economic implications and valorization of forest certification;

Planned output / Deliverables:

Presentations; summary report of the session including the findings of the discussion; inputs of the interested authors for the upcoming Special Issue of the Ecosystem Services Journal on this topic.



II. SESSION PROGRAM

Room: Expert Street 5

Date of session: 19th of November 2024

Time of session: 14:00–15:30

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
14.00–14.05	Sofia	Corticeiro	Centre for Environmental and Marine Studies and Department of Environment and Planning, Universidade de Aveiro, PT	Welcome/Introduction
	Clémence	Dirac	FOEN	
14.05–14.20	Annerieke	Sleurink	FSC Netherlands	FSC Verified Impact on Ecosystem Services: an added value for forest managers and companies.
14.20–14.30	Claudio	Petucco	Luxembourg Institute of Science and Technology	Multisilva: a web-based decision support system to assess and simulate the provision of forest ecosystem services at the property level
14.30–14.40	Umar	Farooq	Social, Economic and Geographical Sciences Department, The James Hutton Institute	Introducing the DENS Framework: A Holistic Approach to Evaluating Green Finance Investments in Nature-Based Solutions.
14.40–14.50	Laqiqige	Zhu	Trinity Business School, Trinity College Dublin	Enhancing Afforestation in Ireland: Insights from a Choice Experiment Survey and Interviews Among Farmers
14.50–15.00	Sofia	Corticeiro	Centre for Environmental and Marine Studies and Department of Environment and Planning, Universidade de Aveiro, PT	A European View on Forest Certification and Economic Considerations
15.00–15.10	Jiri	Louda	Jan Evangelista Purkyně University in Ústí nad Labem	From nature-based solutions to nature-based governance: behavioural approach to understand human and non-human interactions



Time	First name	Surname	Organization	Title of presentation
15.10– 15.25				Discussion
15.25– 15.30	Sofia	Corticeiro	Centre for Environmental and Marine Studies and Department of Environment and Planning, Universidade de Aveiro, PT	Closing remark
	Clémence	Dirac	FOEN	

III.ABSTRACTS

first author is the presenting author unless indicated otherwise.

1. A European View on Forest Certification and Economic Considerations

First author(s): Sofia Corticeiro

Other author(s): Gonçalo Brás, Margarida Tomé, Ana Lillebø, Helena Vieira

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In recent years, there has been an increasing demand for forest certification and certified forest products in Europe. This trend is related to major worldwide challenges, such as the need to de-carbonize the economy and mitigate climate change but also social and consumer demands for wider fair trade. But can forest certification itself influence investment and economic valorization in forestry? The aim of this study is to determine the level of forest certification in Europe and to highlight the link between forest certification and investment or economic valorization in forest-related markets. Therefore, a complementary methodological approach was adopted, combining empirical inference with knowledge synthesis based on a scoping review.

The findings confirm that certification has not only grown in significance throughout Europe but also suggest that forest certification can indeed be a driver of investment in the sector. Forest certification can support public policies related to the economic, environmental, and social sustainability of the European forest while allowing access to international markets and



drive positive change. This study offers new perspectives to natural and social scientists, combining a multidisciplinary approach, and to industry and policy makers by proving contextualized data to support decision making. By connecting the scientific research, the economic trade-offs of forest certification, and the market value of forestry-related products, this work provides hints for further studies and policy guidelines on sustainable development and impact of forest certification schemes.

Keywords: Forest management; sustainability; FSC; PEFC; research; market share

2. Introducing the DENS Framework: A Holistic Approach to Evaluating Green Finance Investments in Nature-Based Solutions

First author(s): MUHAMMAD UMAR FAROOQ

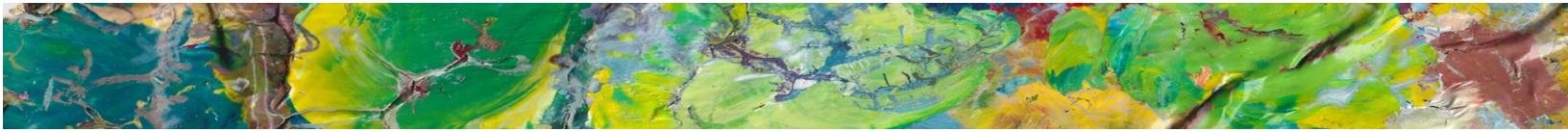
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There is growing interest in green finance, focusing on investments and financial tools that support environmentally friendly projects. However, there are concerns about how best to enable and appraise these new investments.

There are already some standards available to evaluate or guide investments. These include: Environmental, Social, and Governance (ESG) standards; often informed by disclosures, e.g. under the Task Force on Nature-related Financial Disclosures (TNFD); whilst principles like the IUCN Nature-based Solutions (NBS) standards and the Nature Market Framework. Countries such as the UK may have additional standards. However, the differences between these frameworks can be unclear, and furthermore lack clear methodologies for appraising impacts, potentially leading to the misallocation of financial resources, sub-optimal sustainability outcomes, and concerns regarding greenwashing.

This talk proposes a new 'DENS' framework to tackle these issues. It goes beyond traditional ESG criteria by incorporating four dimensions: Development, Economic, Nature, and Social. It builds on and complements existing standards and guidance, enabling a balanced and rigorous approach to quantifying the positive and negative impacts of new investments in natural capital. It provides a set of variables to evaluate the outcomes of investments within each of the four key dimensions, providing insight into how different stakeholders perceive these. DENS can be used to appraise expectations when projects are proposed, and later to evaluate experiences. It should enable investors and decision-makers to make balanced assessments of the



effectiveness of their investments in natural capital solutions, such as afforestation, reforestation, and ecosystem restoration.

This talk will explain how to implement DENS, the insights it may generate, and how this can help appraise the impact of nature-based solutions for ecosystem services, by helping to analyze the trade-offs between different stakeholder groups. The DENS framework can complement and enhance existing standards and certification schemes related to sustainable forestry and land management.

Keywords: Green Finance, Natural Capital Investments, NBS, DENS Framework, Impact Assessment

3. Multisilva: a web-based decision support system to assess and simulate the provision of forest ecosystem services at the property level.

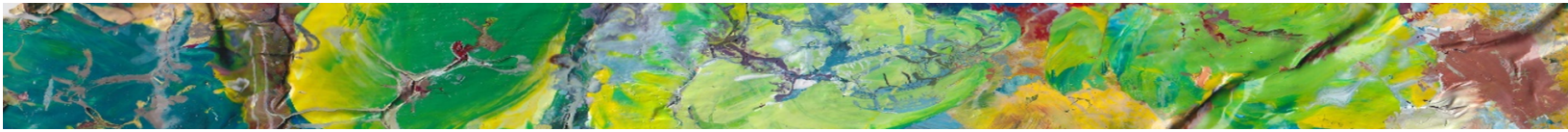
First author(s): Claudio Petucco

Other author(s): Jacek, Stankiewicz, Jérémy, Ludwig, Tomás, Navarrete Gutiérrez

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Forests provide a range of ecosystem services (ES) that enhance societal well-being. The provision of these services is closely linked to the structure and dynamics of forest ecosystems, which are significantly shaped by forest management practices. With societal demands for ecosystem services on the rise, it is crucial to understand and incorporate these complex ecological dynamics into forest management and planning. Furthermore, the recent emergence of ES certification schemes—such as those for carbon, water, biodiversity, and recreation—has also underscored the need to collect information and data to design and plan management actions, as well as to comply with certification procedures. This presents a significant challenge for forest planners. We introduce Multisilva, a decision support system (DSS) designed to facilitate multifunctional forest management. This web-based application features two main tools: the Mapping tool and the Simulation tool. The Mapping tool offers spatial statistics and maps that detail the current provision of ES at the forest property level, utilizing existing ES indicators to identify and highlight ES hotspots. These hotspots are essential for guiding multifunctional management strategies. The Simulation tool, built upon the established 3PGmix forest growth model, incorporates additional modules that assess ES flows and simulate the



impact of management actions designed to enhance ES provision. This tool allows users to compare two management scenarios over time, delivering biophysical estimations of ES and calculating both direct and opportunity costs associated with each scenario. Enhanced by its capability for automatic retrieval of soil and meteorological data, Multisilva supports effective management and certification of ecosystem services in Europe.

Keywords: Forest management, Decision support system, Simulation, Mapping, Certification.

4. Enhancing Afforestation in Ireland: Insights from a Choice Experiment Survey and Interviews Among Farmers

First author(s): Laqiqige Zhu

Other author(s): Oscar Mooney, Martha O'Hagan Luff

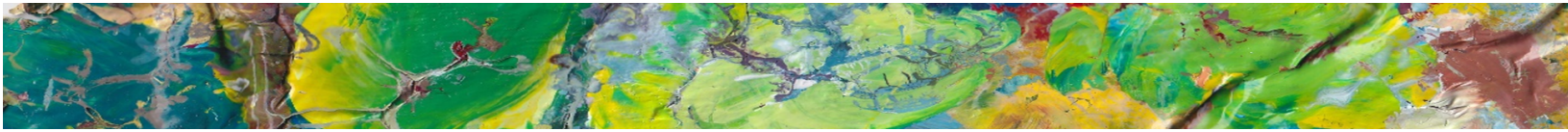
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Ireland's forest cover, markedly lower than the European average, presents a significant environmental challenge. With only 11.6% of land under forestation compared to Europe's 38.6%, Ireland struggles to meet its afforestation goals despite substantial government incentives. This study seeks to understand the reluctance of Irish farmers towards afforestation and to quantify the effectiveness of financial incentives required for increasing forest coverage. Utilizing a Choice Experiment, we explored the willingness-to-accept (WTA) of Irish farmers for participating in afforestation programs.

Our research employed a mixed-methods approach, combining a Choice Experiment survey with in-depth interviews. The survey presented farmers with a series of choice cards depicting various afforestation scenarios differentiated by attributes such as tree species, land replanting requirements, subsidy payment duration, and annual premium payment amounts. Concurrently, interviews were conducted to gather qualitative insights that explore the nuances of farmers' perceptions and decision-making processes regarding these scenarios. The integration of quantitative data from the surveys and qualitative feedback from the interviews allows for a comprehensive exploration of the trade-offs and incentives that significantly influence farmers' participation in afforestation.

The study's findings play a critical role in reassessing and refining Ireland's forest policy. The insights gained from this research are expected to guide policymakers in developing more



effective and farmer-aligned strategies to increase forest coverage. By pinpointing the key financial and decision-making factors in afforestation, this study contributes significantly to Ireland's efforts in enhancing forest cover, which is pivotal for ecological sustainability and climate change mitigation.

Keywords: Choice experiment, Afforestation, Financial Incentives, Forest Policy

5. FSC Verified Impact on Ecosystem Services: an added value for forest managers and companies

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Forests provide essential ecosystem services and the management of those areas has a significant impact on their regulation. FSC certification allows forest managers to demonstrate their commitment to responsible forest management and the preservation of the services it provides.

However, forest managers are not always adequately rewarded for implementing good practices that contribute to the maintenance, improvement or restoration of ecosystem services. FSC has developed the Ecosystem Services Procedure as a tool for forest managers being recognized for the implementation of responsible practices, allowing them to communicate how they are making a measurable and verified difference on the forest.

This procedure provides a framework for impact verification in five ecosystem services – Biodiversity, Carbon, Water, Soil and Recreation – allowing the forest manager to relate activities implemented on the ground with the result being verified. This allows the manager to have a credible and verified basis (by an external and independent entity) based on high integrity data, for the communication of positive impacts on the ecosystem services provided by its forest and gives them the opportunity to attract businesses to sponsor their responsible forestry projects.

In addition to self-communication, the forest manager can also use verified impacts to attract companies and organizations that are interested in demonstrating their commitment to



sustainability by supporting ecosystem services projects. Companies can communicate about this support and have access to quantifiable data that can be integrated into their sustainability and social reports.

FSC verified impact is an instrument that enables remuneration for ecosystem services, allowing effective support to forest managers in the monitoring, maintenance, and improvement of forests.

Presently there are 87 FSC ES projects implemented on the ground in 24 different countries.

Keywords: FSC certification, Ecosystem Services, Sponsorship

6. From nature-based solutions to nature-based governance: behavioural approach to understand human and non-human interactions

First author(s): Tatiana Kluvánková

Presenting author: Jiri Louda

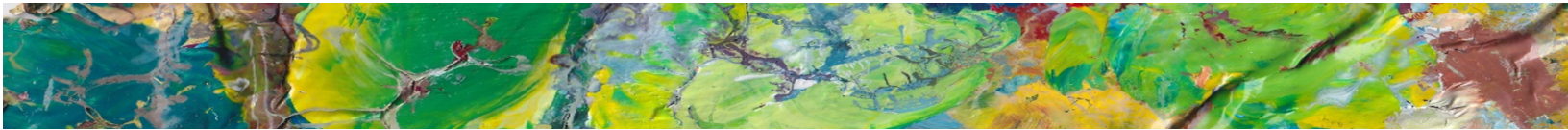
Other author(s): Martin Špaček, Jiří Louda, Stanislava Brnkaláková, Julius Janáček, Tomáš Szabo; Dominik Horváth, Simo Sarkki, Juha Hiedanpää,

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Nature-based solutions (NBS) are socio-ecological arrangements that benefit both humans and non-humans. Traditionally NBS builds upon natural dynamics but little attention has been given to how nature can inspire governance. Nature-based governance (NBG) integrates co-evolutionary potential through co-creative approaches, hence including more-than-human perspective into environmental decision-making. By responding to human and non-human needs nature-based governance cultivates collective action and transformation pathways towards more inclusive and resilient communities.

In this paper, we present a behavioural approach as a method to simulate multi-species involvement in nature-based governance. The method applies an algorithm of common pool resource game, originally developed by Elinor Ostrom, to solve social-ecological dilemmas in diverse cultural, ecological and geopolitical settings. The behavioural game uses role-playing as a tool for enhancing multispecies collaboration and learning. Role-board game (RBG), as an



interactive agent-based model, enables to simulate resource dynamics, enable mutual learning and fair collective decision-making by human players stepping into the roles of diverse human and non-human actors.

The RBG reveals for discussion and deliberation: How non-human and human actors behave strategically in different situations and what can be the relevance of game playing to understand complex social-ecological dilemmas? By answering these questions, we build ideas on the often-hidden perspectives of non-human and human actors that can underpin emerging nature-based governance approaches in the real world. More-than-human perspectives integrated in the RBG are tested in 7 communities across Europe as part of the Horizon Europe project COEVOLVERS (2022-2026).

In particular, we compare decision situations where i) NBS implementation is seen as environmental fixes, ii) organic co-design of full diversity of adaptive actions responds to the NBS by human and non-human actors, and iii) institutional co-design of human decisions is inspired by organic co-designs.

We believe that through game-based learning we can help to understand and navigate purposeful behavioural change for long-term sustainability and community well-being as a target of coevolutionary nature-based governance.

Keywords: Role board game; nature-based governance; co-creative approaches; multi-species involvement; co-evolution