



# ESP 10

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### BOOK OF ABSTRACT

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#### I. SESSION DESCRIPTION

ID: T18a

Towards governance innovations for ES provision: Legal aspects, economic instruments, and policy mixes

	Title	Name	Organisation	E-mail
<b>Host:</b>	Dr.	Lasse Loft	Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany	lasse.loft@zalf.de
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	Prof. Dr.	Carsten Mann	Eberswalde University for Sustainable Development, Eberswalde, Germany	carsten.mann@hnee.de
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**Abstract:**

Ecosystem services (ES) governance largely draws on the relations and feedbacks between humans and the natural environment based on the ES concept. On the one hand, such relations are heavily influenced by elements of authority, legal processes and structures for shaping peoples’ priorities and coordinating peoples’ actions. On the other hand, management decisions for natural resources provision and use are mainly driven by economic reasoning and market valuation of ecosystem services. However, due to the public goods character of many ecosystem services, the appearance of externalities, imperfect property rights and insufficient knowledge and information, the future provision of the wide range of ecosystem services bears challenges policy makers have to deal with. Various attempts have been undergone in the past decade for internalizing positive and negative externalities in economic decision-making. In this regard, incentive-based policy instruments have been designed and



implemented all over the world to remunerate land owners and managers for the provision of these services. However, most of the lessons learned from the implementation of these approaches indicate that markets alone often fail to efficiently allocate natural resources. This requires adaptation of formal institutions, precautionary legal instruments and forward-looking approaches in ecosystem management and in the policies and interventions that govern these.

This session seeks to explore pathways towards policy mixes for governance innovations facilitating sustainable ES provision. Thereby, legal aspects related to ES shall be addressed (such as regulatory frameworks for ES, ES in the courts, contracts, taxation, property rights), as well as, market based approaches (as payments for ecosystem services, nature based solutions etc.), and also further governance mechanisms (as information and cooperation). We are interested in conceptual and empirical work on policy and the design and impacts of policy mixes, in particular elaborating on the interplay between legal and economic instruments, and on the necessary institutional context conditions.

We want to gather international experiences with PES schemes in combination with regulatory and informational policy instruments in a range of institutional contexts for comparison and learning, and to stimulate a constructive science-policy-practice discourse on governance innovations for ES provision.

### Goals and objectives of the session:

We consider this session as integral parts of the activities conducted under ESP's TWG 18 on Governance and Institutional Aspects which is led by the session hosts. The goal of the session is to gain insights into the interplay of law and economics in terms of regulated markets and policy mixes for the sustainable provision of ecosystem services. Therefore, the session seeks to provide a rich and insightful analysis of incentive-based interventions such as PES with other policy instruments, its chances and dilemmas, and the necessary institutional framework conditions. It further aims to highlight innovative governance approaches to facilitate a debate on possible ways forward in terms of policy design and strategies.

### Planned output / Deliverables:

The outcome will be empirical insights of selected papers, an in-depth discussion and a synthesis of chances and challenges in policy design, policy mixes and necessary context conditions for ES governance innovations. This might be compiled to a joint discussion paper and/or policy brief as a timely contribution to an emerging science-policy discourse in Europe and worldwide.



Related to ESP Working Group/National Network:

[Thematic working group: TWG 18 – Governance & Institutional aspects](#)

**II. SESSION PROGRAM**

**Date of session:** Tuesday, 22 October 2019

**Time of session:** 10:30 – 18:00

**Timetable speakers**

Time	First name	Surname	Organization	Title of presentation
10:30–10:45		Loft et al & Altmann	Leibniz Centre for Agricultural Landscape Research (ZALF), University of Caxias do Sul	Introduction to the Session & Introduction to the sub-session on Law and Ecosystem Services
10:45–11:00	Alexandre	Altmann	University of Caxias do Sul	Law and Ecosystem Services: from 'law in the books' to 'law in action'
11:00–11:15	Francesca	Leucci	University of Bologna; Rotterdam Erasmus Universiteit; Hamburg Universität	Integrating ecosystem services assessments in judicial reasoning: The European environmental liability legislation
11:15–11:30	Marie	Dade	McGill University	The role of property rights in the protection and accessibility of ecosystem service benefits in the Adirondack Park, New York.
11:30–11:45	Camilla	Rezende	Brazilian Foundation for Sustainable Development	Combining legislation compliance and large-scale restoration in the Brazilian Atlantic Forest
11:45–12:00	Claas	Meyer	Leibniz Centre for Agricultural	Moderated discussion





Time	First name	Surname	Organization	Title of presentation
			Landscape Research (ZALF)	
13:30–13:45	Carsten	Mann	Eberswalde University for Sustainable Development, Eberswalde, Germany	Introduction to sub session on Payments for Ecosystem Services
13:45–14:00	Clémence	Dirac	Federal Office for the Environment (FOEN)	Switzerland sets up a new market-based policy instrument to support carbon sequestration in forest
14:00–14:15	Christoph	Schulze	Leibniz Centre for Agricultural Landscape Research (ZALF)	Land managers' attitudes towards privately financed Agri- Environmental Schemes
14:15–14:30	Cheng	Chen	Leibniz Centre for Agricultural Landscape Research (ZALF)	Payment for ecosystem services in an online-marketplace: The transaction cost for providing certified nature conservation project
14:30–14:45	Lasse	Loft	Leibniz Centre for Agricultural Landscape Research (ZALF)	Does fairness pay out? Investigating the causal link between equity and effectiveness in Payments for Ecosystem Services
14:45–15:00	Carsten	Mann	Eberswalde University for Sustainable Development, Eberswalde, Germany	Moderation of sub-session discussion



Time	First name	Surname	Organization	Title of presentation
16:30–16:45	Bartosz	Bartkowski	Helmholtz Centre for Environmental Research – UFZ	Implementing result-based agri- environmental payments by means of modelling
16:45–17:00	Nathalie	Pipart	Nathalie	Forest governance innovations: Co-constructing a sustainability self-assessment tool through participatory action research
17:00–17:15	Solen	Le Clec'h	ETH Zurich	Spatial grassland portfolio to optimize ecosystem services provision in a multifunctional landscape
17:15–17:30	Maria D.	López- Rodríguez	Universitat Oberta de Catalunya	The role of formal and informal governance arrangements in protected area management. Insights from the Sierra de Guadarrama National Park, Spain
17:30–17:45	Rob	Bugter	Wageningen Environmental Research	Policy streamlining for biodiversity and ecosystem services
17:45–18:00				Discussion



### III. ABSTRACTS

*The abstracts appear in alphabetic order based on the last name of the first author. The first author is the presenting author unless indicated otherwise.*

#### 1. Type of submission: **Abstract**

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## Law and Ecosystem Services: from ‘law in the books’ to ‘law in action’

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The concept of ecosystem services is being increasingly used, be it in norms, judgments, state aid, and in various public policies. Nevertheless, the emergence of a legal context for the concept of ecosystem services has been mostly symbolic, with limited practical effects, due to the absence of legal instruments to operationalize it. This requires much more than merely writing it down in legal texts. The major challenge of moving from "law in the books" to "law in action.", is to derive legal consequences from the loss or gain of ecosystem services. Human activities that are beneficial to ecosystem services should have proportionally favourable legal consequences. The activities that are harmful to ES should be regulated. Furthermore, incentives or deterrent consequences should not be limited to monetary transfers between public authorities and those responsible for such activities (economic incentives) or vice versa (economic sanctions), but rather should also take forms such as land use controls, industrial permit restrictions, and similar regulatory controls.

The concept of ecosystem services brings a new rationality to law, enhancing the protection of biodiversity and ecosystems with greater social equity and higher environmental justice. Besides, environmental justice criteria can and should be used in integrated valuation of ecosystem services, bringing more effectiveness to such assessments. The debate on the creation and implementation of legal instruments aimed at the preservation and promotion of ecosystem services has become necessary and urgent.





*Keywords:* Ecosystem services, Environmental Law, Legal Aspects, Environmental Justice, Legal Instruments

2. *Type of submission: Abstract*

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## Implementing result-based agri-environmental payments by means of modelling

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Agricultural production is inherently linked to environmental externalities, both positive (public goods) and negative (pollution). In an attempt to internalize these externalities, agri-environmental payments are offered to farmers within the European Union's Common Agricultural Policy. Recently, calls have been voiced for a shift from the relatively ineffective and costly action-based payment schemes to result-based schemes, whereby farmers are remunerated for achieving a result (reaching an environmental objective), rather than for undertaking a specific action (applying a particular management practice). Two main challenges for implementing result-based payments are: (i) the difficulty to measure the result at an acceptable cost, and (ii) the payment uncertainty for participating farmers arising from uncertainty whether their efforts to bring about the result will be offset by natural variability. To address both challenges, we propose substituting the measurement of results by their modelling. In a model-informed result-based agri-environmental payment (MIRBAP) scheme, farmers would be presented with a menu of site-specific management practices, their model-predicted environmental outcomes and associated payments if the practices are implemented. Based on their knowledge of the costs and their own preferences, farmers could choose the management practices that suit them best without any uncertainty about payments (as these are made according to the model-predicted results). We discuss what such a MIRBAP scheme would look like, how it may be implemented and what models are suitable for its implementation. To illustrate the workings of a MIRBAP scheme, we propose the outline of an



online tool within which the model-based predictions could be embedded and provide an example in the context of payments for soil functions. Furthermore, we critically discuss the significance of the MIRBAP concept for agri-environmental policy, including a comparison of its advantages and disadvantages with those of the conventional variants of agri-environmental payments, namely action-based and (measured) result-based schemes.

*Keywords:* agriculture, agri-environmental policy, governance, incentives

3. *Type of submission: Abstract*

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## Policy streamlining for biodiversity and ecosystem services

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The European Environment Agency (EEA) recently commissioned WENR to investigate the issue of 'Policy streamlining for biodiversity and ecosystem services'. Policy streamlining in this case, is the process of bringing together different policy measures in order to achieve improved delivery of policy objectives. For example: how could different, occasionally conflicting legislation or regulations, such as the Rural Development Payments, the Water Framework Directive and the Nature Directives be 'streamlined' to provide synergies at European, Member State and local levels?

A (relatively restricted) review identified many published articles and reports that, in one way or another, review and reflect on the potential for policy measures to be used in concert. We integrated findings in storylines describing examples and opportunities for river basin management and pollination, around which the conference presentation will be centred. There is a general recognition that policy streamlining is a missed opportunity in the effort to increase the effectiveness of policy delivery. However, the number of studies that specifically deal with cross-cutting policies is rather limited and few if any examples of policy integration currently extend beyond more than two policies.





The policy level is clearly different from delivery level. Delivery is usually part of a local decision process. Which suggests that EU policy should provide the framework for bottom-up solutions. An example is Green Infrastructure which has a variety of international, national, and regional drivers linked to policy, maps and spatial approach. However, it is only ever going to be realised at municipal/local level. It is here that the policy streamlining and integration takes place.

*Keywords:* Environmental policy, policy streamlining, biodiversity, ecosystem services

4. *Type of submission:* **Abstract**

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## **Payment for ecosystem services in an online-marketplace: The transaction cost for providing certified nature conservation project**

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While there has been growing interest in payments for ecosystem services (PES) as a potential market-based solution, current payments are primarily financed by the government. In order to generate additional funds beyond the existing governmental spending, an online-marketplace is designed for certificated nature conservation program in Germany. To bring the ecosystem services (ES) providers and private buyers to the front negotiation, transaction cost (TC) may occur due to the difficulty in measuring and monitoring the actual ES and information asymmetry.

However, the question of to what extent the TC in PES should be viewed as cost-effectiveness is rather debatable. For example, good communication and quantified monitoring can help to secure the ecological objective but also means higher TC. Particularly, the role of intermediaries in the private-financed online-marketplace is not been yet examined. To fill the knowledge gap, this study aimed to understand the TC of developing and implementing private PES projects with particular interest of the intermediaries. The German Landcare



Associations (LCA) is designed to facilitate the transaction between providers and the online-marketplace through their close relationship with local practice partners and knowledge in nature conservation. Based on a national wide online survey with LCA, the TC was measured and determinants were investigated. Implications were made to improve the cost-effectiveness of such a flexible, non-governmental PES program.

*Keywords:* Payment for ecosystem services, transaction cost, intermediaries, online-marketplace, institutional economics

5. *Type of submission: Abstract*

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## The role of property rights in the protection and accessibility of ecosystem service benefits in the Adirondack Park, New York

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Landscapes can provide multiple ecosystem services important to human wellbeing but, without careful management, these ecosystem services can become over-exploited. Property rights (the right to use and benefit from land resources) can restrict where and how people can access ecosystem service benefits, potentially protecting ecosystem services from over-exploitation, but also then excludes others from enjoying potential benefits. For example, property rights may give only the property owner the right to access timber. Though many studies have focused on how land use or management impacts ecosystem services, there is limited empirical knowledge on the impact of property rights. We identify how property rights affect people's ability to access multiple ecosystem services on different types of properties, using the Adirondack Park – a mixed-use landscape containing a wide variety of different public and private properties located in the State of New York, USA. We first identified the property rights attached to different property types (such as state conservation and private residential) across the park landscape. We then determined the user groups (property owner, manager, permit holder, general public) who can access ecosystem service benefits on each



property, based on the property right restrictions in place. Overall, among different service types accessed on public properties used for conservation (49.75% of the park), cultural services are least restricted as the property rights allow more people to enter public properties for recreational activities, but provisioning services, such as timber and water, are highly restricted. On the other hand, the property rights attached to private properties (44.08% of the park) highly restrict access to all ecosystem service benefits, except for the owners of the property. This study demonstrates that property rights affect access to multiple ecosystem services differently. By strategically allocating property rights across landscapes it may be possible to help protect multiple ecosystem services from over-exploitation.

*Keywords:* Ecosystem services, property rights, landscape management, ecosystem service benefit

6. *Type of submission:* **Abstract**

[T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes](#)

## Switzerland sets up a new market-based policy instrument to support carbon sequestration in forest

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While provisioning forest ecosystem services (FES) tend to be private, regulating and cultural ones are in most cases public goods. However, forests providing FES often belong to private or public landowners without fiscal sovereignty, who have economic objectives for their forests, which could be different from those of providing public goods. This creates a gap between the supply and the societal demand for FES. Policy-makers are therefore required to design and implement policies and tools that can encourage forest owners to provide regulating and cultural FES. Non-market-based (n-MBIs) and market-based (MBIs) policy instruments can be used to improve quantity and quality of FES. While n-MBIs include e.g. command and control approaches, MBIs consist in supporting already existing markets or the creation of new markets.





The Federal Office for the Environment in Switzerland has recognized this gap of supply and demand of FES. It supports the implementation of policies and tools that encourage forest owners to provide regulating and cultural FES. In this presentation, the legal, political and economic contexts of FES in Switzerland are firstly outlined. Then, the policy tools implemented in Switzerland to support different FES are presented. As one example, the recently certified method developed for forest projects on the voluntary carbon market is brought to light. Following this method, forest owners can sell carbon credits on the voluntary CO<sub>2</sub>-market thanks to validated CO<sub>2</sub>-certificates. Different types of verified forest projects (e.g. decrease in wood production or creation of forest reserves) can be set up to produce CO<sub>2</sub>-certificates. On 7th Mai 2019, a national association for forest sinks has been founded in order to facilitate the implementation of this MBI at national level. In the presentation, the chances and dilemmas of this new-implemented MBI, which should encourage forest owners to support the regulating FES of carbon sequestration, are discussed.

*Keywords:* Switzerland, forest ecosystem services, policy instruments, voluntary carbon market

7. *Type of submission: Abstract*

[T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes](#)

## **Spatial grassland portfolio to optimize ecosystem services provision in a multifunctional landscape**

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Grassland regimes and intensities provide specific bundles of ecosystem services. The spatial allocation of these regimes and intensities in a multifunctional agricultural landscapes lead to trade-offs in the provision of these ecosystem services on a landscape scale. Research has shown that a spatial re-allocation of how farmers use their grassland could increase the efficiency and effectiveness of agri-environmental schemes that support low-intensive grassland.



In small-scaled and diversified farming systems, however, an optimal allocation is difficult to achieve because of the spatial variability of multiple ecosystem services and the fact that the optimization of ecosystem services on landscape level is constraint by the farmers' individual land-use decision. Foremost, a social planner is confronted with the risk of spatial leakage e.g., that farmers shift the environmental-friendly activities elsewhere in space where they do not reduce production but also do not effectively support other ecosystem services.

In this contribution, we use empirical plot and farm specific information on grassland use to assess the risk of spatial leakage of ecosystem services in a spatial heterogeneous, multifunctional landscape given a portfolio of four grassland regimes and intensities. We analyze the monetary value of grassland ecosystem services with an increasing share of low-intensive grassland using different spatial level for the policy target (farm, municipality, regional level). In addition, we analyze potential leakage effects when targeting multiple ecosystem services (forage provision, biodiversity conservation and climate regulation).

The results from our study help to identify the most appropriate design of an agri-environmental measure in the context of grassland ecosystem services i.e., whether policies should be input- or output oriented and whether the provision should be based on individual (farm) level or rather collectively by a network of farmers. This forms an important basis to assess effectively the gains in ecosystem service provision from spatial re-allocation of land-uses.

*Keywords:* grassland, management practices, leakage, agri-environmental measures, Switzerland



8. *Type of submission: Abstract*

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## **Integrating ecosystem services assessments in judicial reasoning:**

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The present contribution wants to explore the opportunities and challenges of implementing the ecosystem-services conceptual framework within the case law related to environmental liability. The adoption of the European Directive on Environmental Liability (ELD) in 2004 brought about a significant change in national legislations regarding liability for damages to the environment and, namely, to biodiversity. The Directive in object aimed at a better protection of protected areas, protected waters and soil through a stronger strict liability regime. Strict liability is deemed as more efficient in terms of incentives of care for potential polluters from a law and economic perspective. Besides that, the ELD specifically refers to ecosystem services when dealing with remediation of impaired natural resources. However, the path to an effective implementation of the ELD in national legislations is still far from the European goals. Apparently, lack of clear rules brings to divergent judicial approaches. As a consequence, monetary compensations for environmental damages tend to be unpredictable and courts usually end up to award kinds of equity sums for environmental damages.

Our research wishes to address the following questions: what are the gaps in legislation at the European and domestic level that are more likely to facilitate judicial discretion in assessing damages? What methodology do judges adopt when they need to quantify environmental damages in monetary terms? In order to answer these general questions, we will first carry out a comparative legislative analysis of liability regimes across Europe, especially after the introduction of the ELD. Then we will show tendencies on how judges assess damages to the environment and what kind of methodology they use in cases related to environmental liability. Finally, we will imply whether guidelines and databases for implementing integrated ecosystem services would address and solve the legislative gap on quantifying damages to the environment.





*Keywords:* environmental liability, judicial reasoning, compensation, ecosystem services, monetary compensation

9. *Type of submission:* **Abstract**

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## The European environmental liability legislation and the ecosystem services

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The present contribution wants to explore the application of the ecosystem–services conceptual framework in environmental liability laws at the European level and at national level by means of a comparative approach. The adoption of the Directive on Environmental Liability (ELD) in 2004 brought about a significant change in national legislations on prevention of damages to the environment and, namely, to biodiversity. The Directive in object aimed at a better protection of protected areas, protected waters and soil through a stronger strict liability regime. Strict liability is indeed more efficient in terms of incentives to care for potential polluters from a law and economic perspective. Besides that, the ELD specifically refers to ecosystem services when dealing with remediation of impaired natural resources. The new attention paid to ecosystem services represented a great novelty within the European policies on the environment. In the light of that, we believe that legislation on environmental liability plays a crucial role among the main drivers of governance innovations for the provision of ecosystem services. It is straightforward that inefficient liability regimes are more likely to produce a negative impact on environmental protection. Nevertheless, this new piece of legislation has been slowly transposed and implemented across Europe. Lack of effective implementation or divergent approaches across States represent thus a weak link of the chain of ES governance. Our research will start by focusing on the scope of the ecosystem–services approach in European sources of law. Then, we will look at various domestic experiences in order to assess whether ecosystem services have been effectively embedded in national legislations. Special attention will be paid to the legal consequences of environmental damages and to monetary compensation as alternative solution to remediation. We will ultimately draw



conclusions on the role of environmental liability regimes in the governance of ecosystem services.

*Keywords:* ecosystem services, liability, environmental damages, European policy, national implementation

*10. Type of submission: Abstract*

[T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes](#)

## **Does fairness pay out? Investigating the causal link between equity and effectiveness in Payments for Ecosystem Services**

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The success of Payments for Ecosystem Services (PES) critically depends on the distribution of rights, duties, and payments among program participants. Typical challenges are the exclusion of minorities, poor people, women, the re-enforcement of existing power structures, and biased allocation procedures which often result in an unjust benefit distribution.

Besides equity representing a normative ideal in sustainable development policies, calls to the instrumental value of equity for environmental effectiveness of policy instruments have been amounting in the literature. While some see important causal links between equity and ecological outcomes, a more traditional view in the PES literature poses that equity should present its own policy objective, not to be conflated with ecological goals.

Robust empirical evidence for a causal link between environmental effectiveness and perceived equity is rare, because the methodological challenges are vast: (1) Usually, there is no counterfactual which allows to compare an “inequitable” with an “equitable” intervention; (2) environmental effectiveness is hard to measure, and typically there are delays between efforts and outcomes; (3) equity is difficult to manipulate.



We employ a lab-in-the-field experiment to accommodate these issues and to estimate the effect of distributive fairness on conservation benefits. We use a real-effort task that is inspired by a real-world conservation activity that produces tangible environmental outputs. Our study population are land users in and near a Vietnamese National Park, where PES have been in place for several years.

The main finding of our initial analysis of 448 local villagers from 14 different villages suggests that disadvantageous inequality (being paid a low rate when others are paid a high rate) has a substantial negative impact on conservation effort, compared to a scenario where everyone is being paid the same rate. Further analysis will adjust for the impact of gender, training round data, prior experience, attitudes, and socio-economic characteristics.

*Keywords:* Payments for Ecosystem Services; Environmental Justice; Lab-in-the-field experiment; Vietnam; South East Asia

*11. Type of submission: Abstract*

[T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes](#)

## **The role of formal and informal governance arrangements in protected area management. Insights from the Sierra de Guadarrama National Park, Spain**

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Protected Areas (PAs) offer a means for promoting in situ conservation of biodiversity and ecosystem services provision. When managed by governments, like in the case of National Parks, engaging stakeholders in planning and management of these spaces is increasingly considered pivotal to achieve conservation objectives. To address the participatory challenge, governance arrangements can be established between PA's management bodies and stakeholders through formal or informal collaborations. Although considerable research has focused on exploring governance arrangements and formal participatory processes, how





formal and informal collaboration mechanisms are developed and contribute to European PAs governance, and particularly National Parks, is an under-researched field of study. As an attempt to fill this knowledge gap, we explore who, how and why is involved in collaborations for planning and managing the Sierra de Guadarrama National Park (Spain), and what type of mechanisms are used to establish such collaborations. In order to map relevant stakeholders in the governance network and identify mechanisms for collaboration, we 1) conducted in-depth interviews with key informants, representatives of all institutions, collectives and individuals with a stake in the governance of the site, and 2) reviewed policy documents (on e.g. legal norms, participatory processes, planning and management actions). We then examined how these stakeholders are involved in the governance of the National Park, analyzed the role of both formal and informal arrangements and reflected about the implications in terms of equity and inclusiveness. The results provide empirical evidence for debate about the prominent role that informal collaborative arrangements can play in PA's in Spain and other regions from the Global North, whether it would be desirable to undertake its formalization and how it could be accomplished.

*Keywords:* biodiversity, conservation governance, ecosystem services, inclusive conservation, political ecology

12. Type of submission: **Abstract**

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## **Forest governance innovations: Co-constructing a sustainability self-assessment tool through participatory action research**

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Balancing forest conservation and ecosystem services (ES) provision to meet broad societal demands requires innovations, both in terms of the spectrum of ES to address and the type of governance mechanisms to implement. We report here an ongoing research in SINCERE (a European H2020 funded project, 2018–2021, <https://sincereforests.eu/>) on the design and



implementation of forest governance innovations, from novel policies to governance and business models. These innovations are being developed with a participatory action research approach in 11 case studies spread mainly over Europe and two beyond. Our case studies present a variety of innovation profiles: e.g. from introduction of market logic in subsidy systems (Belgium) to new institutions for cooperation between stakeholders and design of a fund acting as intermediary in a PES scheme (Spain).

Our research aims at 1) analyzing the sustainability issues arising in the design and implementation processes of those innovations, 2) co-constructing a sustainability self-assessment tool with the practitioners partners in the project to support the design of such mechanisms. We will report the lessons learned so far from this ongoing multi-phase co-construction process.

We used an adapted Delphi technique to collectively define, with all project partners, a set of sustainability Principles and Criteria specific to the kind of governance mechanisms being developed. On this basis, each case study carried out a first participative qualitative assessment with local stakeholders. We are currently moving toward identification of indicators and the specific design of the tool.

With this participatory action research approach, we aim at co-producing knowledge that is directly relevant and applicable for action. The purpose is to provide support for our case studies and eventually to further inform research and action on the sustainability potentials and/or threats related to these governance innovations for ecosystem services provision.

*Keywords:* Forest, PES , Europe, sustainability, self-assessment



13. *Type of submission: Abstract*

T. Thematic Working Group sessions: T18a Towards governance innovation for ecosystem services provision: legal & economic instruments, and policy mixes

## Combining legislation compliance and large-scale restoration in the Brazilian Atlantic Forest

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One of the most important mechanisms for the protection of ecosystem services in Brazil are the Areas of Permanent Preservation (APP), an area-based conservation measure stipulated by the Brazilian legislation aiming to protect water resources, landscape features, geological stability, biodiversity, conserve soil, and ensure human well-being. The APP comprises all riparian areas, hilltops, slopes, high elevations and certain types of fragile ecosystems. Those areas must be preserved and, in certain situations, restored by landowners. We used unprecedented high-resolution satellite imagery to map APP in the Atlantic Forest biome, one of the most important global biodiversity hotspots. We found 7.2 million hectares (Mha) of degraded APP that must be restored by landowners for legislation compliance. Restoring this debt could increase total vegetation cover of the biome up to 35%, rising it to above the critical biodiversity threshold established for different taxonomic groups. Besides, restoring these areas is essential to ensure water and consequently energy security in a biome that houses 125 million people. However, this large-scale restoration process will require substantial amounts of resources, as conservative estimates point to an average cost of USD 5,000.00 per hectare of forest actively restored. Therefore, we also analyzed the economic feasibility of restoration, using the State of Rio de Janeiro as a case study. Results pointed a spatial cluster for both vegetation debt and vulnerability to poverty, which requires specific measures to promote large-scale restoration such as programs of payment for ecosystem services. Oil royalties are a potential funding source, as 3% of those annual revenues could pay the restoration of 39% of the state's vegetation debt. Thus, policy mixes that combine existing regulatory and incentive mechanisms represent a significant opportunity for the State of Rio de Janeiro and for Atlantic Forest biome as a whole, promoting landscape restoration in tandem with poverty reduction.





*Keywords:* land use policy, large-scale restoration, remote sensing, Atlantic Forest

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## **Land managers' attitudes towards privately financed Agri-Environmental Schemes**

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Stakeholder attitudes play a crucial role for the successful implementation of environmental policies. Based on psychological frameworks, such as the "Theory of Planned Behaviour", attitudes resemble predecessors of behaviour and thus their understanding constitutes predictive power for the acceptance of new policy schemes.

As governmental resources for Payments for Ecosystem Services (PES) are limited and agricultural landscapes provide large territories for the implementation of nature conservation projects, novel mechanisms with additional sources for funding (and potentially investment) call for attention.

This study applies Q-Methodology to assess land managers attitudes towards different contract design features for privately financed PES schemes. Conventionally, the financial resources for PES schemes are provided by governments under the fulfilment of certain land use restrictions. However, privately financed schemes are not subject to these governmental obligations and offer more freedom with respect to the institutional design of Agri-Environmental measures.

Q-Methodology has been widely applied in the realm of environmental science to assess attitudes towards the establishment of wind parks (Ellis et al. 2007), Marine Protected Areas (Gall and Rodwell 2016) or views on biodiversity conservation (Primmer et al. 2017). However,



land managers opinions towards the contract design of Agri-Environmental Schemes have not been subject of Q-Methodology studies.

In this regard, this study assesses the attitudes of farmers' and intermediaries towards institutional design features to analyse whether or not current governmental restrictions constitute a major burden for land managers to conduct nature conservation projects on their land.

*Keywords:* Q-Methodology, Contract Design, Stakeholder Attitudes, PES