



ESP 10

WORLD CONFERENCE

HANNOVER, GERMANY 21-25 OCTOBER 2019

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BOOK OF ABSTRACT

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I. SESSION DESCRIPTION

ID: T10

Does modelling trade-offs gives the full picture, or can stakeholders tell it all? The complementarity of models and participative methods

	Title	Name	Organisation	E-mail
Host:		Inge Liekens	VITO	inge.liekens@vito.be
Co-host:		Francis Turkelboom	INBO	francis.turkelboom@inbo.be

Abstract:

Ecosystems or landscapes provide multiple ecosystems services. Sometimes the simultaneous delivery of several desired/demanded ES is not possible, strongly inhibit each other, or initiate conflict: we talk about “ES trade-offs”. On the other hand, some ecosystem services enhance the benefits of other ecosystem services: we talk about “synergies”. A trade-off can potentially result in a conflict between users depending on who bears the burden and who benefits from the ES supply (TEEB, 2010; Turkelboom et al., 2017). For decision-making and management purposes, it is therefore important to focus on all relevant ES, as well as to consider the relationships between them (e.g., Kandziora et al., 2013). In this way decisions can support win-win situations or can help to avoid or mitigate conflicts between different stakeholders.

Often trade-offs and synergies are quantified with ecological models or different quantitative statistical methods. These models or tools calculate only one part of the picture. But not all trade-offs are caused by easy-quantifiable factors; social, economic and institutional factors are often at least as important to trade-offs. This type of trade-offs will usually be undetected by models and will only surface via social research. To map these trade-offs and factors participative approaches are necessary.



Both methods are therefore very complementary to each other. This workshop illustrates the necessity and complementarity of both ecological models/trade off tools and social methods through case studies.

We welcome abstracts that either combine models and participatory trade-off research, or abstracts that focus on one approach (e.g. models) and reflect upon shortcomings that can be addressed by another method (e.g. social research) or vice versa.

During an interactive part of the session we want to capture tips and tricks to identify proper combination of approaches, and to communicate results to stakeholders and policy makers.

Goals and objectives of the session:

The overarching goal of the session is to explore how social and exact sciences can be complementary in finding trade-offs and synergies and are also needed to avoid unforeseen conflicts when realising spatial planning projects.

The objective of this session(s) is:

1. Showcase research which used both modelling, trade-off tools and participative methods to assist in spatial planning, or research that focus on one approach (e.g. models) and reflect upon shortcomings that can be addressed by another method (e.g. social research) or vice versa.
2. Discuss how we can integrate methods/results/data from different sources and communicate this in planning processes.

Planned output / Deliverables:

Results of the discussions will be reported at the Thematic working group 10 ES in Trade-off analysis & Project evaluation.

A short list of Tips on combining methods and communicating trade-offs for scientists and policy will also be provided in T10

Related to ESP Working Group/National Network:

[Thematic Working Group: TWG 10 – ES in Trade-off analysis & Project](#)



II. SESSION PROGRAM

Date of session: Friday, 25 October 2019

Time of session: 08:30 - 10:00

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
08:30-08:45	Inge Francis	Liekens Turkelboom	VITO INBO	Trading off ecosystem services models and social valuation methods: Two sides of the same coin?
08:45-08:55	Nahleen	Lemke	Leibniz Centre for Agricultural Landscape Research (ZALF)	Setting up principles for an integrative valuation approach to facilitate cost-effective provision of ecosystem services by collaborative peatland management
08:55-09:05	Andrea	Kaim	University of Bayreuth	An agent-based model for alpine and sub-alpine grassland management under climate change
09:05-09:15	Johanna	Ballé-Béganton	Univ Brest, Ifremer, CNRS, UMR 6308, AMURE, IUEM, 29280, Plouzane, France	Engaging stakeholders and scientists in participatory assessment for the development of Blue and Green Infrastructure Networks
09:15-09:20				Q&A
09:20-10:00	Francis Inge	Turkelboom Liekens	INBO VITO	Discussion on tips and tricks to combine multiple methods to assess trade-offs



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 : T10 Does modelling trade-offs gives the full picture, or can stakeholders tell it all? The complementarity of models and participative methods

Engaging stakeholders and scientists in participatory assessment for the development of Blue and Green Infrastructure Networks

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To face the growing loss of biodiversity and of ecosystem services, the European Union promotes the development of Blue and Green Infrastructures Networks (BGIN): strategically planned networks of natural and semi-natural areas designed to ensure a wide range of ecosystem services. According to the European Commission (2012), stakeholder participation will be crucial to the success of BGIN. BGIN development calls for originality in its process and particularly for distinctive participatory assessments of nature based solution on a territory. Planning such networks calls for knowledge on the possible restoration or preservation of ecosystem services. It must also take into account the social and economical implications and possible barriers, necessary trade-offs and potential synergies. Modelling tools complemented by social research are essential to support planning and decision making. However, for the implementation to take place, the process has to embrace transdisciplinarity, be imbedded in local policies and engage stakeholders at each step.

The Atlantic Interreg ALICE project is developing a multi-model platform to account for biodiversity and ecosystem services in aquatic and terrestrial landscape management scenarios. This modelling development is embedded in a stakeholder engagement framework that ensures pro-active interactions between scientists and stakeholders at each step of the project. Innovative landscape management has to find the right alchemy to sustain



engagement while avoiding stakeholder fatigue, stay in adequacy with stakeholders needs, identify science knowledge gaps and better angle research focus, and create a dynamic discussion forum.

We will explore how research has not only to span several disciplines from environmental to social sciences but interact strongly with stakeholders and empower the discipline of transdisciplinarity with creative methodologies and tools. Based on the lessons learned from four case studies –in Ireland, France, Spain and Portugal– ALICE will produce a stakeholder engagement handbook: “Towards collaborative landscape management: Road map to a participatory assessment”.

Keywords: Transdisciplinarity, participatory assessment, stakeholder engagement, Blue and Green Infrastructure Networks

2. Type of submission: **Abstract**

T. Thematic Working Group sessions: T10 Does modelling trade-offs gives the full picture, or can stakeholders tell it all? The complementarity of models and participative methods

An agent-based model for alpine and sub-alpine grassland management under climate change

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Grassland forms a large proportion of the agricultural land in Bavaria, southern Germany and thus shapes a significant part of its cultural landscape. Moreover, it does not only produce economic gains from agricultural production such as fodder production and cattle farming, but also contributes to the protection of important ecosystem services such as soil fertility, clean water, climate regulation and biodiversity. However, the demand for agricultural production and other grassland-related services and functions can be conflicting. In fact, a major threat to the provisioning of ecosystem services (ES) is the damage originating from nutrient pollution caused by the application of fertilizers. Therefore, it is necessary to identify suitable strategies for grassland management, particularly under a changing climate. For this purpose, we developed an agent-based model (ABM) that was coupled with a bio-chemical



model and data from a stakeholder survey. The ABM models the effects of different policies on farmers' decisions for grassland management and what impact these have on grassland-related ES with a particular focus on spatially-explicit fertilizer outputs. We applied the model to the Ammer watershed in Bavaria. First results show that grasslands in sub-alpine regions are mainly intensively used with application of organic and mineral fertilizer whereas alpine grasslands are primarily extensively used and more likely to receive funding from agri-environmental measures. In the next step, we will run the model for different climate scenarios. The results of this socio-economic ABM are useful to assess potential impacts of policies on grassland management and can serve as a supporting tool for the identification of suitable policy measures, but also for farmers' decision making. Furthermore, the ABM can be used for the interaction with farmers, policy makers and experts since it provides quantitative data on Nitrogen output coupled with real-world maps in a graphical user interface.

Keywords: agent-based modelling, grassland management, decision making, fertilization

3. *Type of submission:* **Abstract**

T. Thematic Working Group sessions: T10 Does modelling trade-offs gives the full picture, or can stakeholders tell it all? The complementarity of models and participative methods

Setting up principles for an integrative valuation approach to facilitate cost-effective provision of ecosystem services by collaborative peatland management

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Managed peatlands are important ecosystems, providing synergies between soil, water, climate and biodiversity-related ecosystem services (ES). Providing most of these ES becomes only effective at landscape scale, embedded into a socio-economic system with its own values and demands. Peatland management (PM) causes trade-offs between ES, as mainly supported by single-farm oriented EU agri-environment schemes, lacking capacity to support multiple ES, neglecting the promising role of PM at landscape scale as important land use based GHG mitigation option. As of yet, only few countries in the EU tackle environmental issues at landscape scale as collaborative approaches although wide-ly researched and proven to be a



valuable concept, increasing synergies between multiple ES and its socio-economic environment.

The objective of this study is to provide principles for an integrative valuation approach to facilitate a cost-effective provision of ES by collaborative PM. Considering new ways to support collaborative decision making, we ask the following research questions: i) Which methods are suitable for an integrative ES valuation approach to map spatially-explicit effects of different PM practices to support multiple ES at landscape scale? ii) How can such an approach support the innovation process of developing a regional collaborative peatland payment for ecosystem services scheme (PES)?

Following a knowledge co-production approach, we integrate different stakeholder groups throughout the process of method selection and application for developing the integrative approach, to include regional knowledge and demands towards the outcomes of ES quantification and mapping. To avoid trade-offs between ES, we develop 'climate-friendly' PM scenarios with stakeholder groups in a participatory process. Our approach will be tested in a case study in Brandenburg, Germany to prove its applicability for initiating a process of collaboration between peatland managers and other stakeholders. Following these principles, a cost-effective provision of peatland ES should be facilitated which informs political decision makers.

Keywords: integrative valuation approach, ecosystem service quantification, knowledge co-production, collaboration



4. *Type of submission: Invited speaker abstract*

T. Thematic Working Group sessions: T10 Does modelling trade-offs gives the full picture, or can stakeholders tell it all? The complementarity of models and participative methods

Trading off ecosystem services models and social valuation methods: Two sides of the same coin?

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In order to assess the usefulness of different assessment methods for ecosystem services delivery and trade-off analysis, we applied them on a rural area in Central Belgium (Jessen, close to Sint-Truiden). We used model approaches, economic valuation methods and interview methods. Since we had detailed information on land use and soil aspects, the modelling approach provided quite accurately the delivery of ecosystem services (ES) and the different trade-offs playing between ecosystem services supply (such as the loss in net agricultural production, which are partly offset by increases in pollinator potential from the new nature corridors). Consecutive meetings allowed for the improvement of both the input data and the models, making them more applicable to the local situation. The demand side is harder to model as information on the number of people in the surroundings, the actual use and the impact radius is needed. Via interviews, we could assess the demand (including intangible ES such as sense of place), and trade-offs between ES demand, which could not be derived from the model approach. An example is the conflict between fruit production and recreation: tourists often steal apples and pears of the orchards. Vice versa, some regulating services experienced as less important by the direct users of the ecosystem, were in monetary terms important on a societal scale (for example carbon sequestration). Therefore a mix of methods is needed to make different values (individual as well as shared) and trade-offs explicit. A smart combination of different biophysical, economic and social methods gives the full picture and broadens the discussion.

Keywords: mix of methods, biophysical model, economic methods, social methods, trade-offs