



BOOK OF ABSTRACT

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I. SESSION DESCRIPTION

ID: T14a

Ways of embedding the concept of ecosystem services into decision making processes for better agricultural land management

Hosts:

	Title	Name	Organisation
Host:	Mr.	Miguel Villoslada Pecina	Estonian University of Life Sciences
Host:	Prof.	Kalev Sepp	Estonian University of Life Sciences
Co-host:	Dr.	Kristina Veidemane	Baltic Environmental Forum
Co-host:	Prof.	Olgerts Nukodemus	University of Latvia

Abstract:

Agricultural land accounts for almost half of the European territory, thus the policies, planning strategies and management practices of this sector influence significantly the structure and functions of cropland and grassland, and the potential of ES supply by these ecosystems. 61% of the utilised agricultural area was used for arable crops, 34% for permanent grassland and meadow, and 6% for permanent crops in 2013 in EU. According to the European Agency's report of 2016 on the conditions of the ecosystems, the observed impact on habitat changes in grassland and crop land is assessed as high to very high. Common Agricultural Policy in Europe is one of the main drivers causing impacts on agricultural ecosystems and biodiversity. On the other hand, large numbers of jobs depend on farming, either within the sector itself or within the wider food sector. The EU's rural areas are also important resource for recreation and tourism.

Ecosystem services (ES) are already acknowledged as an important concept for policy development because of its holistic view on interactions between nature and humans. Academics and researchers have developed and adopted frameworks; elaborated and tested methods for mapping and assessing ES at different scales. Several guidelines have been



established to support the up-take of ES concept into policy development in different regional and socio-economic contexts.

In November 2017, ideas for the future of agricultural policy beyond 2020 were presented by the European Commission. The debate is launched and stakeholders including scientists and practitioners can contribute with their knowledge and experiences for better policies that can successfully tackle future challenges such as the impacts of climate change or the decline in the number of farmers and the demographic change in rural communities. With this session, we would like to share and present different examples on how the concept of ES can be embedded into decision-making process for better, more sustainable agricultural land management in Europe. We would like to stimulate an active discussion on lessons learned so far, state of the art and innovative ways and success factors for enforcing the ES approach in planning and decision making processes.

The project “Integrated planning tool to ensure viability of grasslands – LIFE Viva Grass” aims to support maintenance of biodiversity and ecosystem services provided by grasslands, through encouraging ecosystem-based planning and economically viable grassland management. The major task of the project is development of an integrated planning tool, which should operationalize the concept of ecosystem services into decision making and support land managers and planners in finding optimal management/planning solutions for enhancing grassland related ecosystem service supply.

Goals and objectives of the session:

The aim is to share experience from various initiatives across Europe on ways of embedding the concept of ecosystem services into decision making process for better agricultural land management. We would like to show the achievement of the LIFE Viva Grass project on development of grassland related planning solutions in the Baltic region and to invite other initiatives from similar thematic (grassland) and sectorial (agricultural) cases over Europe to demonstrate their practices. Further on, the aim is to discuss challenges and opportunities emerging from operationalising the concept of ES into existing land use planning and management systems.

Planned output / Deliverables:

Recommendations on strengthening application of the ES concept in agricultural land management policies at various spatial scales.

These recommendations will be up-taken and disseminated by the LIFE Viva Grass project’s publication and its final products and conferences.

Related to ESP Working Group/National Network:

[Thematic Working Groups: T14 – Application of ES in Planning & Management](#)

ESP EUROPE

2018 REGIONAL CONFERENCE

Ecosystem services in a changing world:
moving from theory to practice

SAN SEBASTIÁN, SPAIN

15-19 OCTOBER 2018

II. SESSION PROGRAM

Date of session: Wednesday, 17 October 2018

Time of session: 10:45 – 13:00

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
10:45–11:00	Miguel	Villoslada Pecina	Estonian University of Life Sciences	Introduction to the session
	Kristina	Veidemane	Baltic Environmental Forum	
11:00–11:15	Anda	Ruskule	Baltic Environmental Forums	Applying ecosystem service approach and stakeholder engagement in landscape planning: LIFE Viva Grass example
11:15–11:30	Miguel	Villoslada Pecina	Estonian University of Life Sciences	The LIFE Viva Grass experience: Prioritization of areas for bioenergy and green infrastructure development in Estonia
11:30–11:45	Paulo	Pereira.	Mykolas Romeris University	Soil management in agricultural areas and ecosystems services
11:45–12:00	Roger	Martin-Clouaire	INRA	Dealing with ecosystem services in the management of agroecological systems
12:00–12:15	Roland	Olschewski	WSL Swiss Federal Research Institute	Mapping and understanding intermediaries for the design and implementation of agro-environmental schemes in Spain, Switzerland and Germany.



Time	First name	Surname	Organization	Title of presentation
12:15–12:30	Kristina	Veidemane	Baltic Environmental Forum	Experience in stakeholder engagement in development of solutions for grassland maintenance in Madliena parish, Latvia
12:30–12:45	Moderated discussion on challenges and opportunities emerging from operationalising the concept of ES into existing agricultural land use			
12:45–13:00	planning and management systems			

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: T14a Ways of embedding the concept of ecosystem services into decision making processes for better agricultural land management

Dealing with ecosystem services in the management of agroecological systems

First author: Roger Martin–Clouaire

Other author(s): Patrick Taillandier, Olivier Therond

Affiliation, country: INRA, France

Agroecology is based on the use of biodiversity and ecosystem processes to increase biomass production by enhancing regulation ecosystem services while improving resource–use efficiency and system resilience. The key decision process issue concerns how farmers take into account ecosystem services in management strategies and actions. Indeed appropriate management practices are critical to realizing the benefits of these services and reducing disservices. Adopting, discovering or implementing agroecological practices requires fundamentally different ways of designing, monitoring and managing agroecosystems to take into account: the existence of a wide range of partially known and interacting ecological processes to be considered at field to landscape scales and short to medium–long terms, and the diverse decision–making logic and attitude of farmers managing resources, both individually and collectively (e.g. landscape matrix). Therefore, the concept of farm management strategy needs to be revisited to meet specificities of agroecology and fit the local environmental, social, economic and cultural contexts. Designing strategies and making decisions about how to efficiently generate and combine



ecosystem services is difficult for several reasons. First the monitoring of biophysical state is more demanding in terms of number of variables and frequency of observation (data intensiveness issue). Second the consequences of different actions may be hard to quantify, both economically and environmentally (uncertainty issue). Third the temporal and spatial patterns of highly desirable ecosystem services require strong goal-oriented anticipation (planning issue). In this communication we resume our current hypothesis about how farmers use their partial knowledge about agroecology and ecosystem services to make situation-dependent management decisions and change practices. The focus is put on the essential cognitive structures involved such as goals, plans, beliefs about biophysical causality, desirability of situations, and event-base reactive behaviors.

Keywords: agroecology, management decision process, goals, plans

2. *Type of submission:* **Abstract**

[T. Thematic Working Group sessions:T14a Ways of embedding the concept of ecosystem services into decision making processes for better agricultural land management](#)

Mapping and understanding intermediaries for the design and implementation of agro-environmental schemes in Spain, Switzerland and Germany

First author: Sergio Villamayor-Tomas

Other author(s): Roland Olschewski

Affiliation, country: Autonomous University of Barcelona, Switzerland

The role of intermediaries is key in the formation of farmer's knowledge about and attitudes towards European agro-environmental schemes (AES) and similar payment for ecosystem services (PES). Despite this, there is very rudimentary knowledge about the roles they fulfill and how these roles are shaped by institutions. This study aims to start filling that gap via a comparative study of AES intermediary roles and effectiveness in Aragon (Spain), Zurich (Switzerland) and Brandenburg (Germany). Data from the three countries was collected via secondary document analysis and semi-structured interviews and organized to first map who does what in the design and delivery of AES, then explain such division of labor and finally make some propositions about the mechanisms underlying the influence of the intermediaries on said design and implementation. According to preliminary results, intermediaries play multiple roles, which can be explained by looking at rules governing the organization of advisory services and AES, as well as the intermediaries' capacities. Explanations of the influence of intermediaries can in turn be related to transaction cost minimization, framing, and power redistribution theories.



Keywords: Agro–environmental schemes, transaction costs, power redistribution theory

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

T. Thematic Working Group sessions: T14a Ways of embedding the concept of ecosystem services into decision making processes for better agricultural land management

Soil management in agricultural areas and ecosystems services

First author: Paulo Pereira

Other author(s): Igor Bogunovic, Miriam Muñoz–Rojas, Eric C. Brevik

Affiliation, country: Environmental Management Center, Mykolas Romeris University, Lithuania

Soils are the base of life yet are often overlooked in ecosystem services assessment. Soils provide and regulate an important number of services that sustain humanity and are related directly or indirectly to clean air and water, food production, and are fundamental for poverty reduction. Agricultural soils are subjected to intense degradation as a consequence of the type of management such as conventional tillage, short rotations, and livestock exploitation. These practices, which are focused on high economic returns, can result in long–term tradeoffs such as soil erosion, compaction, pollution, salinization, increase of greenhouse emissions, loss of habitat and biodiversity and water and nutrient losses. As a consequence of this unsustainable management, the capacity of soils to provide long–term services is seriously reduced. The use and abuse of herbicides and pesticides are responsible for soil biodiversity decrease, especially of ecosystem engineers such as earthworms and ants, crucial to soil functions. Unhealthy soils cannot provide enough ecosystem services in quantity and quality to increase food security. The damage that conventional agriculture is imposing on soils is unprecedented. In Europe, 12 million hectares of agricultural land are affected by severe erosion. This costs approximately 300 million Euros to the agricultural sector and implies a GDP loss of 155 million Euros (Panagos et al. 2018). A new approach is needed to manage soil resources and the quantity and quality of the services provided for future generations. Sustainable practices are crucial to reduce soil degradation caused by agriculture and to maintain soil biodiversity and functions. In this presentation we will discuss the major threats that lead to soil degradation and ecosystem services depletion and the best practices to maintain and increase soil functions and the provision of services, both in quality and quantity.

Keywords: Soils, Ecosystem Services, Agriculture, Sustainability



4. *Type of submission: Abstract*

T. Thematic Working Group sessions: T14a Ways of embedding the concept of ecosystem services into decision making processes for better agricultural land management

Applying ecosystem service approach and stakeholder engagement in landscape planning: LIFE Viva Grass example

First author: Anda Ruskule

Other author(s): Ivo Vinogradovs, Kristina Veidemane, Dana Prižavoite, Oļģerts Nikodemus, Miguel Villoslada, Inta Ādmasone

Affiliation, country: Baltic Environmental Forum – Latvia

The project “Integrated planning tool to ensure viability of grasslands – LIFE Viva Grass” aims to support the maintenance of biodiversity and ecosystem services provided by grasslands, through encouraging ecosystem-based planning and economically viable grassland management. The Viva Grass tool is developed within online GIS working environment, providing spatially explicit decision support for management of agro-ecosystems as well as landscape and spatial planning. It is operationalizing the ecosystem service concept by allowing users to assess the provision and trade-offs of ES in user-defined areas and using this information to prioritise the areas for different decision-making contexts and/or selecting the most appropriate land-use scenarios. The tool was tested on nine case study areas (two farms, four municipalities, two protected areas and one county) across the three Baltic States (Estonia, Latvia, and Lithuania). One of the testing areas was Cesis municipality in Latvia, where the tool was applied to support the landscape management planning at the municipality level. The prioritisation model based on multi-criteria decision analysis (MCDA) was applied to select sites for landscape maintenance or restoration measures. The criteria for prioritisation included the value of the four cultural services (recreational, educational, cultural heritage and aesthetic) as well as ecological value (based on the habitats bundle – herbs for medicine, maintaining habitats, global climate regulation, pollination and seed dispersal). An iterative process of stakeholder engagement was organised, by forming a group of ca. 15 people (spatial planners and tourism experts from the municipality, farmers and local entrepreneurs), who were involved in the weighting of the selected five criteria, discussion of prioritisation results and defining of management measures for the obtained priority areas. The results of the case study will be used to develop recommendations for the Cesis municipality Development Programme and the related action plan.

Keywords: landscape planning, decision support, cultural ecosystem services, MCDA, prioritisation



5. *Type of submission: Abstract*

T. Thematic Working Group sessions: T14a Ways of embedding the concept of ecosystem services into decision making processes for better agricultural land management

Experience in stakeholder engagement in development of solutions for grassland maintenance in Madliena parish, Latvia

First author: Kristina Veidemane

Other author(s): Anda Ruskule, Dana Prižavoite

Affiliation, country: Baltic Environmental Forum – Latvia

Whereas the main focus of the LIFE Viva Grass project is on development of integrated planning tool for grassland management by bio-physical and GIS-based methods, solutions for grassland management are also identified by applying social or participatory methods. Both approaches are target to operationalization of ecosystem service approach in planning process at municipal or local level. Madliena parish, a part of Ogre municipality, has been selected as a case study area to test the application of participatory GIS for better development and spatial planning. The expected outcome of the work – recommendations on grassland maintenance to be considered in the planning documents of Ogre municipality. The flow of work has the following steps: identification, mapping and assessing ecosystem services and their importance of well-being for local community; development of land-use scenarios (including driving forces, vision), pathways (measure) for achieving the set vision, recommendations for planners. The work is based on strong engagement of the local stakeholders from Madliena via a series of meetings and interactive discussions, study visits, outdoor experiences and exercises organised by LIFE Viva grass project team. A stakeholder group of about 15 persons representing local inhabitants, farmers, land owners and municipal representatives have been participating in the planning process from 2015–2018. The engagement process not only provides the input to the planning of the grassland management but also raise awareness of the stakeholders on the importance and values of the grasslands and the need for maintenance.

Keywords: grassland ecosystem services, participatory approach, spatial planning



6. *Type of submission: Abstract*

T. Thematic Working Group sessions: T14a Ways of embedding the concept of ecosystem services into decision making processes for better agricultural land management

The LIFE Viva Grass experience: Prioritization of areas for bioenergy and green infrastructure development in Estonia

First author: Miguel Villoslada

Other author(s): Kristina Veidemane, Anda Ruskule, Kalev Sepp

Affiliation, country: Institute of Agriculture and Environmental Sciences, Estonian University of Life Sciences, Estonia

In order to halt the loss of biodiversity and ecosystem services provided by grassland in the Baltic States, the LIFE+ program funded project LIFE Viva Grass aims at developing an integrated planning tool that will support ecosystem-based planning and sustainable grassland management. LIFE Viva Grass Integrated Planning Tool is a spatially explicit online-based tool that allows users to assess the provision and trade-offs of grassland ecosystem services within eight project case study areas in Estonia, Latvia and Lithuania. The multi-scale nature of the case studies, as well as the differences in data availability across the three Baltic States require a consistent but flexible approach. In order to ensure methodological adaptability, the structure of the LIFE Viva Grass integrated planning tool follows the framework of the tiered approach. Each tier corresponds to a functionality embedded in the Integrated Planning Tool. Within the Viva Grass Integrated Planning Tool, two Decision Management Systems (DMS) have been specifically designed to address the Estonian case study areas. Firstly, a prioritization DMS has been used in Estonia to guide local and regional planners in the implementation of the Green Network. The Green Network of Estonia complements the network of protected areas, combining them with natural and semi-natural areas into a coherent network at various geographical levels and acts as a guidance for the development of general and comprehensive plans, in order to ensure ecological coherence and connectivity throughout the country. In addition, a bioenergy DMS has been used to inform planners on the calorific potential of available grassland biomass, in order to develop bio-energy based regional strategies. Both DMSs are based on a Multi Criteria Decision Analysis framework that combines geo-spatial datasets with ES values and scientific literature.

Keywords: ecosystem services, multi-criteria decision analysis, grasslands