

## SPECIAL SESSION: ECOSYSTEMS SERVICES AS COMMONS?

***Tatiana Kluvankova-Oravska***

*Session chair*

CE SPECTRA at the Slovak University of Technology and Slovak Academy of Sciences and  
CETIP Network [tana@cetip.sk](mailto:tana@cetip.sk)

Approaches to the management of natural resources and the landscape often overlook ecosystem functioning and resilience of complex biophysical systems. Major gaps exist in addressing the importance of ecosystem services and their effects on well-being in rural and regional policies. Understanding the potential benefits from ecosystem services is a pre-condition for the development of effective integrative policies to address well-being of local communities. The quality of these services results largely from individual and group decisions and, further, from how these decisions are regulated by norms and formal governance schemes, i.e., legislation, policies and various forms of economic incentives across decision making levels. The scale at which decisions are made often differs from that, where they benefit different actors. Regulatory and market based instruments are traditional approaches in pursuing goals of environmental conservation and poverty alleviation. However their capacity to operate across the scale and under the imperfect information is limited often resulting into the costly regulations, ineffective or unfair market allocation, not rarely eroding intrinsic motivations for conservation. Thus the vulnerability of ecosystem services is aggravated by the multilevel factor and public or common character of those goods. Ecosystem services as public or common goods are facing traditional social dilemma of individual and collective interests. Examples of ecosystem services being public and/or common goods are soil and vegetation capacity for flood protection, carbon storage, pollination but also urban safety. Distant users operate across governance scales and with diverse interpersonal and social interest, often ignoring sustainability and carrying capacity of local ecosystems. This is largely due to the institutions that to date allow and encourage accessing and using a limited proportion of ecosystem services in ways that reduce other ecosystem services. The actors enjoying and producing ecosystem services rely on different information sources than those producing ecosystem services. We argue that cooperative approaches are required to support decision making, to deal with asymmetric and imperfect information and complexity for sustainable governance of ecosystem services.

The session objective is to determine the institutions of ecosystem service governance under the conditions of multilevel governance and increasing pressure of global market. In particular, we suggest self-organised common pool resource regime as (i) institutions for ecosystem service governance under the asymmetric and imperfect information and (ii) reasoning for behavioural change from sectoral to ecosystem service governance. Our arguments will be demonstrated on regulatory ecosystem services: pollination, carbon storage (climate regulation) and cultural service urban safety. These services at present are being maintained as voluntary collective actions in public or semi-public regimes at local level but are part of global commons.

Session is organised by the Centre of Excellence SPECTRA of the Slovak University of Technology and Institute of Forest Ecology, Slovak Academy of Sciences and CETIP Network as **contribution to the projects EcoFINDERS: Ecological Function and Biodiversity Indicators in European Soils (7<sup>th</sup> FM) and Adaptation strategies for natural and social disturbance (Vega 2/0038/14).**



The session will concern 5 papers. Paper one and two provides introduction and key arguments for the topic, while 3 papers illustrates session rationale on selected examples of ecosystem services as commons. Presentations will be followed by the discussion to address session challenges.

## **PAPERS**

### **Ecosystem services and commons ?**

Tatiana Kluvánková-Oravská *CE SPECTRA at the Slovak University of Technology and Slovak Academy of Sciences* [tana@cetip.sk](mailto:tana@cetip.sk)

The paper will introduce the role of ecosystem service governance for well being and under the conditions of multilevel governance and increasing pressure of global market. Key argument is that cooperative approaches are required to support decision making and to navigate behavioural change of ecosystems' users and managers towards sustainability. In particular how and why self-organisation and common pool resource regime (CPR) can in contrast to market and regulatory approaches contribute to the sustainability and effective integrative policies of EU rural regions. Secondly, what perspective CPR regime can play in the management of global commons. Such as how this governance innovation can foster existed public or semi-public resource regimes to sustainability collective actions over the scale.

### **Potential of financial incentive programmes in protection of ecosystem services.**

Veronika Chobotova, Tatiana Kluvankova-Oravska, Stanislava Brnkalakova  
CE SPECTRA at the Slovak University of Technology and Slovak Academy of Sciences  
[chobotova@savzv.sk](mailto:chobotova@savzv.sk)

In order to support better environmental practices and prevent the depletion of a common pool resource, direct financial incentive programs have been proposed as a possibly cheaper and more effective alternative vis-à-vis the regulatory approach. Examples are price-based incentives developed as part of agricultural policy in the European Community (Agri-environment schemes to improve environmental quality and biodiversity). The basic idea behind Payments for Ecosystem Services (PES) is to facilitate more environmentally friendly actions by paying providers to deliver these, or by compensating the providers for economic losses associated with the provision of those services. Following the results from 7FPM Ecofinders collected via field case studies and field experiments with common pool resource, this papers focuses on understanding the effect of financial incentive for sustainable use of EU mountain regions struggling due to their difficult topography and climate conditions. The first issue relates to the fact that payments are not the only potential motivation structure that affects the use of environmental resources. The second problem concerns how those payments are perceived by the participants. This also relates to the question of what kind of motivation makes PES become attractive for actors to get involved. The last issue addresses the effect of a payment on actual environmentally friendly behaviour and possibility of crowding out positive behaviour.



***Can carbon sequestration support sustainable rural landscapes?***

Stanislava Brnkalakova CE SPECTRA at the Slovak University of Technology and Slovak Academy of Sciences [stanislava.brnka@gmail.com](mailto:stanislava.brnka@gmail.com)

Carbon sequestration is a process of capture and long-term storage of atmospheric carbon dioxide in soil and terrestrial ecosystems (e.g. forests, grasslands) to mitigate or defer global warming and avoid dangerous climate change. Carbon storage as a natural process in ecosystems contributes to climate regulation. The dominant source of carbon in terrestrial ecosystems is soil. World estimated amount of soil carbon is 1.500 to 2.000 Pg C (1 Petagram = 1.015 g). Terrestrial vegetation contains about 500 Pg C, especially in forests, where the carbon presents more than half of the total carbon stock in vegetation. Earth's atmosphere contains about 760 Pg C. The largest amounts of C are found in seas and oceans (39 000 Pg C) but due to the environment carbon cycle is less active. Carbon sequestration is undoubtedly the best way how to bind CO<sub>2</sub> and keep the carbon cycle and it does not have any negative influence on the environment but on the contrary it stabilizes the ecosystems. It also offers a suitable solution, does not limit economic growth but even increases the agriculture productivity. European mountain regions traditionally have landscapes consisting of forests, permanent pastures, as well as arable land. This kind of landscapes is appropriate for supplying carbon sequestration, with high potential of contribution to the CO<sub>2</sub> reduction in the atmosphere and at the same time it provides effective sustainable management that could boost the economy of these regions, being behind the EU average. In our paper we will demonstrate the potential of common pool resource regime to increase the local community capacity of self-organisation and collective actions promoting the sustainability in three mountain regions in Slovakia (following previous studies on 7FPM Ecofinders). Using multiple method approach we will be addressing proper institutions to support effective sustainable alternatives that combine mitigation of poverty in mountain regions with economic production and supply of environmental services, especially carbon sequestration. The overall goal is to propose measures for enhancing the adaptation capacity of rural landscapes in Slovakia to sustainability and under the global market and global governance.

**The Role of Pollination Ecosystem Services in Supporting Sustainable Rural Landscapes**

Eva Streberová CE SPECTRA at the Slovak University of Technology and Slovak Academy of Sciences  
[eva.streberova@gmail.com](mailto:eva.streberova@gmail.com)

Pollinators (insects) are a key component of global biodiversity, providing vital ecosystem services – pollination, to crops and wild plants. The pollinator that is predominantly managed to enhance agricultural production is the honey bee (*Apis mellifera*). Recent studies have proved a rapid decline of honey bee colonies over the last decades (e.g. more than 25%



in Europe and almost 60% loss of colonies in the USA) while there has been an exponential growth in crops dependant on pollinators worldwide. In Slovakia current research in honey decreasing quantity and quality of honey produced by the honey bee is pointing towards presence of several potentially harmful drivers, however there is very little relevant data and evidence on this so far. The aim of our contribution is to present a starting initiative focused on pollination and its role as a ecosystem service in management of rural landscapes in three mountain regions of Slovakia (following previous studies on 7FPM Ecofinders). This will be done by applying a transdisciplinary and multiple method approach based on the theory of common pool resources, consisting of institutional analyses, ecosystem service valuation, imuno-chemical assessment of honey bee samples and assessment of land-use changes supported by findings from aerial photographs. The overall goal is to propose measures for enhancing the adaptation capacity of rural landscapes in Slovakia in the conditions of complex socio-ecological processes, global market and decision-making arena.

### **Urban safety as ecosystem services in semi-public space management**

Michal Maco *CE SPECTRA Institute of Management at the Slovak University of Technology*; [miso.maco@gmail.com](mailto:miso.maco@gmail.com)

Urban safety represents an important cultural ecosystem service and parameter for spatial planning and quality of life. It can be defined as safety of housing, public open spaces such as playgrounds and other services. Key feature is public or semi-public character of infrastructure used by individual and collective private users. They face similar problems of resource degradation, overuse, free-riders or conflicts between actors. Thus, social dilemma over the individual and society interest exists. Empirical evidence has outlined that application of common pool resource regime proportionally depends on the degree of community involvement. The degree of self-management is generally higher, and the need for rule-establishment more emergent. Current management systems require multi-level solutions, involving all relevant stakeholders into the creation, management and maintenance of the shared space. The theory of CPRs – exploring all that we share - offers several ideas and a comprehensive framework of design principles for robust governance, developed by E. Ostrom since 1990, which describe groups that are able to organize and govern their behaviour successfully. Collective action within these spaces is fundamental. In this paper, we assume that applications of CPR principles may increase the effectiveness and robustness of urban safety management systems in semi-public spaces.

