



BOOK OF ABSTRACT

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I. SESSION PROGRAM

ID: T18b

Governing the trade-offs of peri-urban ecosystem services

Hosts:

	Title	Name	Organisation	E-mail
Host:	Dr.	Marcin Spyra	Martin-Luther University Halle-Wittenberg, Germany	marcin.spyra@geo.uni-halle.de
Co-host:	Dr. Dr. Dr.	Luis Inostroza, Daniele La Rosa, Ingo Zasada		Luis.Inostroza@ruhr-uni-bochum.de dlarosa@darcs.unict.it ingo.zasada@zalf.de

Abstract:

Beyond urban and rural landscapes, the peri-urban landscapes are increasingly recognised as important type of cultural landscape. The dynamic processes of urban growth with increasing urban populations and expansion of metropolitan and functional urban areas leads to increasing societal demands and eventual trade-offs related to urban ecosystem services (ES), particularly in peri-urban landscapes. Those trade-offs are related generally speaking to conflicting land-uses and interests, provision and accessibility to ES, or more specifically to peri-urban food production, human well-being and human - wildlife conflicts, just to provide a few examples.

We argue that environmental governance approaches are needed to tackle the complexity of those peri-urban land use decision-making, ES trade-offs and conflicts. Compared to more classic land-use planning processes, which seems to be not efficient in these contexts, environmental governance is understood as a highly participatory and communicative process with a broad range of actors involved, which are able to make use of the full range of the carrot-stick-sermon-policy toolbox.



We warmly welcome both theoretical and practical contributions, which address the following research questions:

- How to define the peri-urban ES trade-offs?
- What is the role of temporal, spatial and scale issues in peri-urban ES demand, supply and trade-offs.
- What are the analytical approaches to peri-urban landscapes to detect and tackle ES trade-offs?
- What are the reasons, drivers and interests behind peri-urban ES trade-offs?
- What are the existing environmental governance approaches to tackle peri-urban ES trade-offs?
- What are the research gaps on governance of peri-urban ES trade-offs?
- Which kinds of factors influence the success or failure of the environmental governance process managing of peri-urban ES trade-offs?
- What are suitable policy instruments applicable for peri-urban ES trade-offs?

Goals and objectives of the session:

Our session aims to identify different trade-offs related to ES in peri-urban landscapes and to analyze subsequent environmental governance approaches to address them. With this we aim to deliver general recommendations related to governance of peri-urban landscapes with the particular attention to peri-urban ES trade-offs.

Planned output / Deliverables:

As a specific output we plan to discuss with participants and breathily describe general recommendations concerning to environmental governance of peri-urban ES trade-offs. As a long term output we plan to encourage the session participants to work on a joint opinion paper or, depending on motivation and interests of the participants, a compilation of the special issue of peer-reviewed scientific journal.

Related to ESP Working Group/National Network:

[Thematic working groups: T18 - Governance & Institutional aspects](#)



II. SESSION PROGRAM

Date of session: Thursday, 18 October 2018

Time of session: 11:30 – 18:00

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
11:30–11:45	Marcin	Spyra	Martin Luther University Halle–Wittenberg	Introduction to the session topic
11:45–12:00	Nynke	Schulp	Vrije Universiteit Amsterdam.	Role of external actors in shaping the future of a peri–urban region
12:00–12:15	Werner	Rolf	University of Potsdam, Germany.	A stakeholder approach, door opener for farmland and multifunctionality in Urban Green Infrastructure
12:15–12:30	Beatriz	Rodriguez–Morales	University of Santiago de Compostela	Searching for (dis)similarities between landowners' and visitors' perceptions on ES supply: a case study in the peri–urban communal forest of Xalo (A Coruña, Spain)
12:30–12:45	Martina	van Lierop	Technical University of Munich, Germany	Governing the Trade–Offs of Peri–Urban Ecosystem Services in the Alpine Region
12:45–13:00	Ingo	Zasada	Leibniz Centre for Agricultural Landscape Research (ZALF)	City–region agri–food systems: exploring governance approaches at the interfaces between food systems, peri–urban agriculture and landscapes
14:30–14:45	Marco	Allocco	SEAcop STP	Enhancement of biodiversity, regulation and cultural ecosystem services in the agro–environmental peri–urban district of Fontaneto (Chieri municipality, Piedmont Region, Italy).

ESP EUROPE

2018 REGIONAL CONFERENCE

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

SAN SEBASTIÁN, SPAIN

15-19 OCTOBER 2018

Time	First name	Surname	Organization	Title of presentation
14:45–15:00	Nuket Ipek	Cetin	Gebze Technical University, Turkey	Challenges and opportunities to manage ecosystem services (ES) in peri-urban watersheds of Istanbul
15:00–15:15	Marta	Sylla	Wrocław University of Environmental and Life Sciences, Poland	Peri-urban agricultural related ecosystem services' trade-offs
15:15–15:30	Marcin	Spyra	Martin-Luther University Halle / Wittenberg, Germany	Assessment of ecosystem services accessibility deficits in the extend of peri-urban landscape
15:30–15:45	Ibone	Ametzaga-Arregi	University of the Basque Country (UPV/EHU)	Analysing the synergies and trade-offs between ecosystem services to reorient land use planning in Metropolitan Bilbao (Biscay, Basque Country)
15:45–16:00	Alexis	Gerardy	University of Liège	Peri-urban/rural landscape dynamic: a focus on ecosystem services
16:30–16:45	Luis	Inostroza	Ruhr-university Bochum	Ecosystem services and urbanisation. A spatially explicit assessment in Upper Silesia, central Europe
16:45–17:00	Anton	Shkaruba	Estonian University of Life Sciences	Trade-offs in the governance of ecosystem services in peri-urban transition in Eastern Europe: The role of dachas in rural-urban areas across Belarus, Russia and Ukraine
17:00–17:15	Michael W.	Strohbach	Technische Universität Braunschweig, Germany	Low-density housing development in peri-urban areas – the biggest trade-off of all. An interdisciplinary perspective on a case study in Lower Saxony, Germany.
17:15–17:30		Spyra, M. Inostroza, L., La Rosa D., Zasada I.		Wrap-up of the session, open discussion, planning the next steps
17:30–17:45		Spyra, M. Inostroza, L., La Rosa D., Zasada I.		Wrap-up of the session, open discussion, planning the next steps



Time	First name	Surname	Organization	Title of presentation
17:45–18:00		Spyra, M. Inostroza, L., La Rosa D., Zasada I.		Wrap-up of the session, open discussion, planning the next steps

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: T1 8b Governing the trade-offs of peri-urban ecosystem services

Enhancement of biodiversity, regulation and cultural ecosystem services in the agro-environmental peri-urban district of Fontaneto (Chieri municipality, Piedmont Region, Italy).

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Peri-urban areas are subject to deterioration processes, which in turn cause a reduction in attractiveness for the local population. These phenomena are strongly related to marked differences in land use management, which may result in critical interactions (e.g. intensive farming practices close to urban areas). Where properly managed, these areas can offer opportunities in terms of natural capital (NC) and ecosystem services (ES) enhancement also resulting in further sources of income for local population by means of services trade-off and payment of ecosystem services (PES).

This study represents a pilot action of a EU funded project (Interreg Central Europe LUMAT) with the purpose of defining a reference document (masterplan) aiming at preserving and improving the NC by activating PES schemes in the agro-environmental peri-urban district of Fontaneto, in the municipality of Chieri (Piedmont Region, NW Italy). Different stakeholders



were involved in the masterplan development and in the NC governance process: local public authorities, farmers and other land owners, local factories and cultural/environmental associations.

Starting from a NC base-line evaluation, several PES schemes are suggested with the purpose of enhancing of ES provided by NC. PES schemes can be activated also by voluntary offsetting of impacts resulting from several sustainability protocols evaluations.

The governance of PES schemes represents a crucial aspect for the successful implementation of the project. The Masterplan provides a governance scheme in the frame of the existing Italian laws.

Due to the large number of land owners in the Fontaneto area, the creation of a stakeholder association is considered the most suitable solution for the univocal definition of the provider of ecosystem services. The association oversees the signature of PES schemes contracts with potential beneficiaries. According to the association statute, PES income is distributed among the members to achieve the masterplan goals.

Keywords: governance, offsetting, agro-ecosystem, PES

2. Type of submission: **Abstract**

T. Thematic Working Group sessions: T1 8b Governing the trade-offs of peri-urban ecosystem services

CHALLENGES AND OPPORTUNITIES TO MANAGE ECOSYSTEM SERVICES (ES) IN PERI-URBAN WATERSHEDS OF ISTANBUL

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Trade-offs are almost a routine part of our daily life. The given decisions roughly outline trade-offs among different options while numerous background factors play a crucial role in measuring the gains and losses. This complicated structure of decision-making processes



reveals particularly in urban systems, where the economic and social dynamics of urban areas mostly cause neglect of ecological structure. Herein, peri-urban areas as the critical and vulnerable interaction zones have been exposing to urban sprawl which form new anthropogenic landscapes resulting in serious effects on the provision and maintenance of ecosystem services (ES). This paper, at that point, focuses on the discussion of decision-making processes and land management strategies in two peri-urban watersheds of Istanbul with respect to the impacts of rapid population increase and land use and land cover (LULC) changes in different periods. Omerli and Buyukcekmece Watersheds which are declared as 'Important Bird Area (IBA) and Important Plant Area (IPA)' due to their biodiversity abundance; are ES bundle providers and drinking water suppliers to the inhabitants of Istanbul. Transition of ecosystems into built-up areas may provide living space for increasing population, however this process has caused significant deteriorations on the watershed ES such as decrease in food production, decrease in carbon stock capacity or decrease in water flow regulation service of soil. In this context, two cases will be evaluated and compared in terms of ES trade-offs with respect to the changes of LULC in 2006 to 2012. For this purpose, the study focuses on water flow regulation, carbon storage and water supply services of Omerli and Buyukcekmece Watersheds with quantification of ES trade-offs due to their primary benefits to the inhabitants. Thereafter, the dynamics of urban sprawl will be discussed from the point of watershed management and urban planning by answering the question of 'how we can achieve the sustainable management and governance of peri-urban ecosystem services in Istanbul?'

Keywords: ES trade-offs, LULC change, watershed management, urban planning, Istanbul

3. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

PERI-URBAN/RURAL LANDSCAPE DYNAMIC: A FOCUS ON ECOSYSTEM SERVICES

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The future of humanity depends on how we will face challenges to meet sustainability. These actions will range from landscapes to the planet as a whole (Wu et al., 2013). Our study will focus on peri-urban/rural landscapes to provide long-term ecosystem services (ES). These



services delivered by landscapes are crucial for maintaining and improving human well-being (Fisher et al., 2008).

Using the Walloon platform for ecosystem services (Wal-ES) strategies and tools, we will implement a Land Use Land Cover (LULC) analysis to see how peri-urban/rural landscapes evolve and how this evolution impacts ecosystem services.

Furthermore, the study will assess the results through a multi-criteria analysis to test the reliability of the results and allow different stakeholders to start a discussion (people using and benefiting from this landscape). This study will also develop a toolbox in order to improve management practices.

The thesis structure is based on three axes, Axis I will focus on landscapes dynamics and see how peri-urban/rural land use is evolving through a diachronic analysis. (Between 1990–2015). Axis II will link these land use changes (e.g. transition matrix) to ecosystem services provided by peri-urban/rural landscapes. Axis III will finally suggest tools to facilitates territorial practices and landscape capability to provide long term ecosystem services

Keywords: Landscape dynamic, Peri-urban landscapes, Land Use Land Cover, Ecosystem Services, Diachronic analysis

4. Type of submission: **Abstract**

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

Ecosystem services and urbanisation. A spatially explicit assessment in Upper Silesia, central Europe

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Urbanisation is a complex spatiotemporal process taking place across landscapes even in areas far beyond urban cores; therefore, directly and indirectly affecting the functions, processes and services of ecosystems. Urbanisation is a difficult process to monitor, quantify and plan. Landscape areas located outside of urban cores are heavily affected by urbanisation, yet they provide fundamental ecosystem services (ES). To date, the evidence of



the spatial variability of the relationship between ES and urbanisation is scarce. In this contribution, a spatial analysis was carried out in Upper Silesia, central Europe, to explore the provision of ES and the levels of urbanisation to advance the use of ES in planning. The potential provision of ES was assessed using an approach based on land use land cover. The technomass indicator was used to assess urbanisation as a continuous variable. To ascertain the spatial variability between urbanisation levels and ES provision across the landscape, a geographically weighted regression model was used. The results show a statistically significant variability across the landscape for several ES, showing that this relationship does not remain constant. The spatial variability of urbanisation affects ES in a differentiated manner. The proposed method allows for the direct use of the ES framework in landscape planning to assess the impacts of urbanisation outside of urban areas.

Keywords: peri-urban areas, land use land cover, regression modelling, landscape planning

5. Type of submission: Abstract

T. Thematic Working Group sessions: T1 8b Governing the trade-offs of peri-urban ecosystem services



Ecosystem Services in peri-urban protected areas and spatiotemporal variation in landscape in central Chile

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The natural ecosystems and its preservation are critical for human life. Research about ecosystem services on peri-urban areas, spatiotemporal variation in landscapes and its application on territorial planning has been getting importance for decision-making. The peri-urban area, which is conceived as an emerging space in constant modification, has acquired great complexity and requires special considerations on its territorial planning. Understanding the different forms of shaping the peri-urban space, the spatiotemporal land cover changes and its link with ecosystem services, allows monitoring the trends and future effects of environmentally valuable landscapes, facilitating the improvement of management tools and public policies to keep benefits from these natural peri-urban areas.

The study area, located between valleys and mountains in central Chile, has got unique mixture of urban, peri-urban, agricultural and natural coverages uses. In addition, more than 50% of the total country population is located in this area. Methodology of this research is based on land cover changes, ecosystem services and periurbanization processes in three natural protected areas, including one biosphere reserve, which were analyzed within a 13-year time frame. Landscape structure was studied through land coverages obtained with QuickBird images from Google Earth, landscape metrics and potential supply of seventeen ecosystem services by adapting the Burkhard matrix method. The results indicate changes in less than 10% of the local landscape, where agriculture and peri-urban plots are the key drivers. Fewer variations were observed in ecosystem services supply remaining within the medium-high level range, despite evident proximity of peri-urban uses to protected natural areas, moreover different peri-urbanization patterns were identified. The results support the idea that defines scale ranges for accepted land use changes in natural land coverage and the need to preserve ecosystems with high potential on its supply.

Keywords: Ecosystem Services, peri-urban landscape, protected natural area



6. Type of submission: Abstract

T. Thematic Working Group sessions: T1 8b Governing the trade-offs of peri-urban ecosystem services

Analysing the synergies and trade-offs between ecosystem services to reorient land use planning in Metropolitan Bilbao (Biscay, Basque Country)

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In the last decades, some European cities have undergone important changes in search of a more sustainable development. This is the case of the city of Bilbao (Bizkaia, Basque Country), where a Greenbelt has been maintained surrounding the urban areas allowing the peri-urban areas to deliver ecosystem services (ES) to society. However, the role of the different ecosystems in the provision of ES is not the same, which can lead to synergies or trade-offs among them. The aim of this study was to analyse the synergies and trade-offs among eight ES (food and timber production, habitat maintenance, air purification, carbon storage, water flow regulation, recreation, and aesthetic quality) in the Bilbao Metropolitan Greenbelt (BMG) to design management strategies towards more multifunctional landscapes i.e. the development of sustainable urban peripheries. The results show that provision ES, mainly delivered by semi-natural ecosystems, had trade-offs with regulating and cultural ES, the latter provided mainly by natural ecosystems. This means that provision ES are delivered at the cost of the other ES. These results can be very useful for managers of the BMG because it is specifically determined the most unsuitable and suitable areas for the provision of multiple ES. Thus, the former should be transformed to create multifunctional landscapes, and the latter, because of the multiple ES provided, would be potential components of green infrastructures.

Keywords: Greenbelt; mapping; multifunctional landscapes; peri-urban ecosystems; spatially explicit indicator

7. Type of submission: Abstract

T. Thematic Working Group sessions: T1 8b Governing the trade-offs of peri-urban ecosystem services



Searching for (dis)similarities between landowners' and visitors' perceptions on ES supply: a case study in the peri-urban communal forest of Xalo (A Coruña, Spain)

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Mount Xalo (Culleredo, Galicia, Spain) is a social-ecological unit (SEU) formed by two adjacent Communal Forests (CF) which are located at a short distance from a densely populated urban municipality (A Coruña, 6.334 inhabitants/km²). This peri-urban SEU has always been an important ecosystem services (ES) provider: since ancient times, when the traditional agrosilvopastoral system ensured the subsistence of local neighbours, until nowadays, when it became a regional hotspot for recreational public use.

Galician Communal Forests are collective but private lands which are owned and managed by the Forest Communities, i.e., the inhabitants of the parishes where the CF are located. However, most of the visitors that frequent these areas are not aware of their ownership regime. Our aim was to analyse the current use and perception that society has on the ES provided by these peri-urban CF and the perceived disservices, distinguishing among the perspectives of landowners and various visitor types. To do so, we conducted 175 PPGIS & opinion surveys as the first step of a deliberative process in the study area. Clear trends were found on the global socio-cultural valuation of ES, with the provision of drinking water being acknowledged as the most important ES provided by the SEU. Nuances on the perceptions among respondent profiles were also patent, finding landowners able to recognize a greater number of ES than any other visitor type. The spatial distribution of the identified ES and disservices was analysed with metrics for richness and diversity, and trade-offs were spatially detected. By digging into this process, we expect to deepen into the current meanings of peri-urban CFs, trade-offs on ES demand, and future visions on sustainability that can assist for multifunctional landscape planning and management.



Keywords: Collective governance, socio-cultural values, PPGIS, cultural ecosystem services, local knowledge

8. Type of submission: Abstract

T. Thematic Working Group sessions: T1 8b Governing the trade-offs of peri-urban ecosystem services

A stakeholder approach, door opener for farmland and multifunctionality in Urban Green Infrastructure

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During the last years Urban Green Infrastructure (UGI) has evolved as a research focus across Europe. UGI can be understood as a multifunctional network of different urban green spaces and elements contributing to urban benefits. Urban agriculture has gained increasing research interest in this context. While a strong focus has been made on functions and benefits of small scale activities, the question is still open, whether these findings can be up-scaled and transferred to the farmland scale. Furthermore, multifunctionality of urban and peri-urban agriculture is rarely being considered in the landscape context. This research aims to address these gaps and harnesses the question if agricultural landscapes – which in many European metropolitan regions provide significant spatial potential – can contribute to UGI as multifunctional green spaces. This work considers multifunctionality qualitatively based on stakeholder opinion, using a participatory research approach. It provides new insights in peri-urban farmland potentials for UGI development, resulting into a strategy framework. Furthermore, it reflects on the role of the stakeholder involvement for multifunctionality planning. Results suggest that it helps to define meaningful bundles of intertwined functions that interact on different scales, helping to deal with non-linearity of multiple functions and to better manage them simultaneously.

Keywords: urban green infrastructure, peri-urban agriculture, multifunctionality, stakeholder participation, urban learning lab



9. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

Role of external actors in shaping the future of a peri-urban region

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Peri-urban regions provide space for housing, provide public goods to society including recreation possibilities, healthy landscapes, local food, and biodiversity, and, in many cases, harbor agricultural production landscapes. Considerable expansion of peri-urban areas is expected over the coming decades throughout the European Union. Within peri-urban areas, increasing demands for more, and a more varied, set of ecosystem services can be expected. This puts pressures on the landscape, originating from demands of local citizens and demands outside the region, from e.g. international markets.

Sustainable intensification (SI) is seen as an approach for dealing with multiple claims and trade-offs in agricultural landscapes. By simultaneously sustaining agricultural production and increasing the provision of ecosystem services, SI can contribute to a vital agricultural sector and to fulfilling ecosystem service demands of citizens in peri-urban landscapes. In a case study in the Netherlands, we explored which potential future challenges from both external actors as well as local citizens, put demands on the landscape. This was done through a participatory process. After quantifying the demands on the landscape identified in the participatory process through empirical analysis and modelling, we inventoried tradeoffs between demands from different actors. We next explored to what extent sustainable intensification could contribute to mitigating these tradeoffs. This was done in participation with stakeholders, as well as through modelling.

The analysis showed that sustainable intensification does have a potential to mitigate tradeoffs between competitive demands. Multi-level governance as well as efforts in the value chain are necessary to make this happen. In this, regional governments have a major role in managing the tradeoffs of the array of demands and ensuring a sustainable landscape for local citizens.



Keywords: sustainable intensification, actors, Netherlands

10. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

Trade-offs in the governance of ecosystem services in peri-urban transition in Eastern Europe: The role of dachas in rural-urban areas across Belarus, Russia and Ukraine

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“Dachas” are summerhouses, usually with small fruit and vegetable gardens, commonly occurring in peri-urban landscapes in formerly Soviet states, usually in a form of “dacha settlements” and their conglomerates varying in size from several to thousands hectares. Before the 1940s, their main function was recreation, after the WWII it shifted to food production, first in order to survive post-war hardships, from 1970s on to cope with food deficits in groceries, and in 1990s with falling purchasing power of households. Due to gradually loosening restrictions set by building rules, sizes of land plots and houses also changed through the period. In 2000–10s the function of dachas became a mixture of everything, with the recreational one commonly increasing, and all other characteristics very location-specific. Dachas is a key component (if not a driver) of land-use in peri-urban zones of most post-Soviet cities. In terms of socio-ecological metabolism, they are very resource-consuming, and their environmental footprint reaches far beyond “dacha settlements”, while ecosystem services (ES) delivered by dachas greatly vary, both geographically and in terms of plausible futures. Much of variability is caused by institutions and actor networks representing a highly diverse and dynamic governance landscape. In this paper we explore governance of ES in dacha belts in Belarus, Russia and Ukraine, setting case studies in periurban areas of Mahilioŭ (BY), Pskov (RU) and Kharkiv (UA). We recognised 6 archetypes (based on morphology and the original purpose) of dacha settlements, tracked down their environmental performance from 1988 to 2018 in relation to changing governance dynamics, described the state of ES provision and outlined plausible futures, building on socio-economic and environmental trends. In particular, we explored persistent



institutional legacies, and trade-offs faced by actors involved in governance over dacha areas, as they have implications on ES.

Keywords: Peri-urban "Dacha belts", Eastern Europe, Ecosystem Services, Governance dynamics, Governance trade-offs

11. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

Assessment of ecosystem services accessibility deficits in the extend of peri-urban landscape

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Functional urban area (FUA), which according to the definition provided by Eurostat, consists of a city (-s) and its commuting zone, concentrates complex, multi-dimensional, cross-sectoral environmental problems (e.g. urban sprawl, fragmentation of ecosystems, diminishing of peri-urban open spaces, loss of biodiversity, soil sealing, heat stress). Tackling trade-offs related to those problems should be implemented in the cross-administrative-boundary context, involve many governance actors and be able to provide balancing solutions to diverging interests. Such approach requires immediate and coordinated regional and urban governance solutions.

In our study we examined the peri-urban transect through Ostrava (Czech Republic) FUA. We aim to analyze ecosystem-services (ES) trade-offs related to the accessibility of green spaces along the transect.

To fulfill our research aim we have developed a GIS-based methodology. The peri-urban transect in our study is equivalent to the infrastructure line from Ostrava to the village Čeladná, which is located partly in the nature preservation zone and is regarded as one of the most popular recreational areas in the FUA. The analyzed transect represents the main axis of the peri-urbanization processes in Ostrava FUA. We analyzed the communes located



along this transect. In the extent of each commune, we calculated the accessibility over the road network from each urban fabric patch (ES demand areas) to each green spaces patch (ES provision areas). We estimated that the demand for ES is based on the amount of inhabitants and technomass accumulated in each urban patch. Our methodology helps us to delimitate the ES accessibility deficit areas along the peri-urban transect. This method allows us to provide immediate governance inputs, valuable for diverse governance actors assigned in different administrative units (communes) along the peri-urban transect.

Keywords: Peri-urban landscapes, urban ecosystem services, trade-offs, accessibility, governance

12. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

Low-density housing development in peri-urban areas – the biggest trade-off of all. An interdisciplinary perspective on a case study in Lower Saxony, Germany.

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METAPOLIS is the network of large, medium and small municipalities in a rural matrix, linked by flows of traffic, data, goods and services. Together with stakeholders, an interdisciplinary team of scientists from the Technische Universität Braunschweig and the Leibniz Universität Hannover studies the networks that shape rural-urban relationships in Lower Saxony, Germany. The overall aim of the project is to make these relationships more sustainable.

A major challenge in parts of the study region is the high demand for housing, resulting in low-density sub- and exurban housing development. This is despite the fact that much is



known about the negative impacts of this development form, e.g., loss of ecosystem services, increase in traffic, or inefficient use of land, resources and energy. The loss of agricultural land increases when compensation measures are being carried out on additional agricultural land.

On a large scale, the problem seems to be a function of acceptable commuting distance, low housing costs in rural and high housing costs in urban areas. Within the peri-urban communities, surveys among local councilors indicate that the issue is a salient and polarizing one. While some municipalities have tried to address low-density growth through prioritizing development on vacant land within the settlement, the model of low-density, single-family housing is rarely questioned. Our analyses show that new housing developments often turn out to contain more sealed surface and less vegetation than originally anticipated, making them even worse from an ecosystem service perspective.

Our findings will be included in an information and scenario platform in order to discuss i.) how and which sustainability concepts could be implemented in the municipalities; ii.) which concepts are likely to fail, and iii.) how relevant ecosystem services are for stakeholders.

Keywords: Housing, Land Use, Density, Sealing, Local Agenda, Scenarios

13. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

Peri-urban agricultural related ecosystem services' trade-offs

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Ecosystem services in peri-urban areas remain under intense pressure from different stakeholders, e.g. private housing investors, farmers, local government bodies, nature protection authorities and urban recreational visitors. Agricultural lands at the peri-urban areas provide a broad range of different ecosystem services (ESS) (Foley et al. 2005). However, various increasing demands for food, biomass and housing have resulted in trade-offs related to the provision of ESS provided by agricultural lands, such as water regulation



or nutrient cycling and aesthetic landscapes. These are equally important but in political and practical decision making they are often less recognised and as such are degrading. With the expected increase of the world's population to up to 9.7 billion people by 2050 (UN 2015) and the challenges brought about by climate change, such as increasing extreme heat events and water restriction also in Europe (IPCC 2014), these trade-offs can be expected to increase and become more obvious.

We aim to provide recommendations for improved governance of trade-offs of ecosystem services related to agriculture and specific for the peri-urban areas on the example of Wrocław and its surrounding municipalities in Poland such as food provision and biomass production, water regulation and nutrient cycling, physical recreation and aesthetic features of the agricultural landscapes. The better understanding of ES trade-offs is crucial for ESS planning and sustainable management, especially for conflict resolution and prediction. Maps of potential supply and demand, as well as use of ESS are created. Different methodological approaches are used to show spatial features of ESS, from proxy-based indicator to biophysical models. Based on the maps, governance options for minimizing the trade-offs between ESS are discussed for Wrocław and its surrounding municipalities.

Keywords: ecosystem service, trade-offs, peri-urban area, Wrocław, ES mapping

14. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

Governing the Trade-Offs of Peri-Urban Ecosystem Services in the Alpine Region

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Peri-urban landscapes are important for the provision of ecosystem services in urban regions such as local food production and recreation, cool air for the city and habitat connectivity for plants and animals. However, peri-urban landscapes are under growing land



use pressure and often characterised by a large number of functions. With the multitude of functions, also comes a multitude of interests and a variety of stakeholders from politics and administration as well as companies, associations, citizens' initiatives or individual citizens. Governance and decision-making play, therefore, an important role in shaping these landscapes and the lack thereof often results in a low quality land use development with negative impacts on ecosystem services.

Within the EU Interreg-project LOS_DAMA!, local and regional actors work in close cooperation to maintain and enhance ES provision through development and enhancement of peri-urban green infrastructure within seven pilot projects in the Alpine Space region. The aim within the pilot projects is to overcome implementation barriers in planning and governance, by generating innovative and multiscale strategies, while committing stakeholders and improving cooperation and knowledge transfer on all levels; local and municipal to national and European level.

The pilot projects are assessed concerning ES provision and trade-offs as well as the success factors and barriers of governance processes to maintain and enhance ES provision through green infrastructure solutions. Moreover, the spatial and temporal scales in ES trade-offs and governance processes, and the possible discrepancies between them, are analysed. The study is based on semi-structured interviews with practitioners and an analysis of pilot action plans that have been developed by practitioners for the seven pilot projects. First results show the major barriers, needs and applied approaches in governance processes, such as weak regional coordination, an increased need for awareness-raising and multi-scale approaches.

Keywords: governance approaches, implementation barriers, governance processes issues, peri-urban green infrastructure



15. Type of submission: Abstract

T. Thematic Working Group sessions: T18b Governing the trade-offs of peri-urban ecosystem services

City-region agri-food systems: exploring governance approaches at the interfaces between food systems, peri-urban agriculture and landscapes

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The disconnection of rural agricultural production from urban food consumption systems has been recognized as major obstacle to sustainable development of city-regions. Due to the sectoral and functional separation, fragmentation into urban and rural institutional and governance arenas, especially the peri-urban areas are limited to unfold their potential for multifunctional provision of ecosystem service benefits. This includes local food, climate and water regulation or recreation contributing to increase self-reliance and sovereignty, climate change adaptation and quality of life of an urbanising society. The notion of an integrated “City-region agri-food system” has been advanced to strengthen the interactions and the role of peri-urban areas as the spatial and functional interface between the urban and rural domains. To explore and substantiate this systemic perspective, its dynamics and governance, we have organised an interdisciplinary workshop format with experts in the fields of peri-urban agriculture, food systems and peri-urban landscape planning. With the objective to sketch out a future research and policy agenda, especially those governance approaches have been highlighted, which have a pronounced cross-sectoral, territorial and participatory nature. Aiming at compliance with the specific demands of an urban society, flexible, land use planning, targeted adoption of agricultural policy and other market instruments need to be aligned with strategic regional food system planning, which is based on a strong bottom-up approach and multi-stakeholder participation.

Keywords: urban food systems, peri-urban agriculture, governance, peri-urban landscapes, multifunctionality