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Address:
UM STU - SPECTRA Centre of Excellence EU
Vazovova 5, 812 43 Bratislava
maros.finka@stuba.sk

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FOREWORD

The broad range of challenges and problems in the spatial development in the European Union brings new tasks and new frameworks for spatial planning as well. Current phase of the knowledge based society development is connected with the implementation of new approaches, new methods and new instruments in the spatial development management as well as new understanding of the role of planning. Those challenges address spatial science and research linked to central European area across different collaboration platforms for spatial planning and spatial research including SPECTRA Centre of Excellence of the European Union, the SPA-CE.net – Network of Central and Eastern European Spatial Planning and Research Institutions and others, the outputs of who which is presented in this issue of TERRA SPECTRA Planning Studies.

The effort of the research work has been to contribute towards sustainable spatial development, climate change mitigation, the processes of economic, social and cultural integration in Europe, as well as towards territorial cohesion with the interdisciplinary research emphasizing the integration of economic, ecological, social and technological aspects. Presented research and its outputs, focused on optimising of spatial structures, contribute to facing current challenges in European spatial development, balancing regional disparities and at the same time to preserving cultural and ecological diversity, harmonising the development of human activities and ecosystems, improving the quality of life and to strengthening of territorial cohesion in Europe.

Spatial research is by nature interdisciplinary and presented research has been focused on creative research work on the issues of complex planning of sustainable spatial development with the focus on optimising the functional use of territory, including economic and other activities, mobility, relations and functioning of urban and rural structures, creation of sound environment for living, preservation of cultural heritage and ecological balance, based on cooperation with the population and other stakeholders of spatial development.

I believe that the papers will address academic society in the field of spatial planning in the whole Europe to see the topics and projects of young researchers in the CEE countries and at the same time bring impulses for their own research.

Maroš Finka

Tatiana Kluvánková
Veronika Gežík
Martin Špaček
Stanislava Brnkaľáková
Mária Kozová

TRANSDICIPLINARY UNDERSTANDING OF SOCIAL INNOVATION IN MARGINALISED RURAL AREAS

Abstract:

Social innovation (SI) seen as "the reconfiguring of social practices, in response to societal challenges, which seeks to enhance outcomes on societal well-being and necessarily includes the engagement of civil society actors" can rapidly expand the debates and agenda of the research and policy communities over the last decade. There are considerable expectations of the potential of SI for addressing urgent societal challenges. Considering the diversity and complexity of societal challenges the potential role of social innovations to provide solutions has to be determined in a wider and transdisciplinary context. This paper presents a preliminary explanation of the SIMRA (Horizon2020 project Social Innovation in Marginalised Rural Areas (SIMRA) (http://www.simra-h2020.eu). Within SIMRA research SIs are understood as outputs, underpinned by novel ideas which are transformed into products and services that meet social demand, and potentially enhance social well-being. The principal concern is to determine the types of SIs which are likely to occur in marginalized rural areas (MRAs), and what can be done to enhance the innovation potential across different types of MRAs. A transdisciplinary approach has been used, with direct involvement of experts and empirical knowledge exchange to shape development trajectories, and to inform those involved in policy design and implementation. In particular we i) develop understanding of the SI definition with respect to the MRA typology and transdisciplinarity ii) present transdisciplinary framework for understanding SI in MRAs, determining the conceptual and emergence of social innovation factors.

Key words: social innovation, marginalised rural areas, SIMRA transdisciplinary framework, SI variables

Introduction

Social innovation (SI) has rapidly expanded in the debates and agenda of the research and policy communities over the last decade (Adams and Hess, 2010; Baker and Mehmood, 2015; Neumeier 2016, Haxeltine et al., 2017). There are considerable expectations of the potential of SI for addressing urgent societal challenges. Considering the diversity and complexity of societal challenges the potential role of social innovations to provide solutions has to be determined in a wider and transdisciplinary context.

In Horizon2020 project Social Innovation in Marginalised Rural Areas (SIMRA) (http://www.simra-h2020.eu) team from SPECTRA lead WP2: Theoretical and operational frameworks to understand social innovations in rural areas. It defines social innovations as "the reconfiguring of social practices, in response to societal challenges, which seeks to enhance outcomes on societal well-being and necessarily includes the engagement of civil society actors"(Polman et al., (2017; D2.1, p. 12).

The complexity of MRAs, in particular the mix of physical, economic, demographic and social factors that impact on marginalisation and effect the economic, cultural, social and environmental potential of territorial capital, benefits from a systems approach to address those complexities and uncertainties (Price et al., 2017; D3.1). As rural areas are complex systems, Price et al., (2017; D3.1) concluded that marginalisation in rural areas results from the interaction of multiple problems that could be codified in various factors.

In this paper we address transdisciplinary understanding of SI in marginalised rural areas (MRAs). A key question is why communities in some MRAs respond to societal problems whereas others collapse? An important challenge is the identification and analysis of relationships, variables and trajectories of diverging paths in complex rural systems at different spatial and temporal scales. The principal concern is to determine the types of SIs which are likely to occur in MRAs, and what can be done to enhance the innovation potential across different types of MRAs. A transdisciplinary approach has been used, with direct involvement of experts and empirical knowledge

exchange to shape development trajectories, and to inform those involved in policy design and implementation. In particular we i) introduce transdisciplinary approach in relation to of SI in MRA, ii) present SIMRA transdisciplinary framework to understand SI in MRA, determining the conceptual and emergence factors of SI, and identify four stages of SI dynamic in MRAs, iii) introduce transdisciplinary designed SI variables as integrated part of the framework, iv) and demonstrate applicability of the SIMRA transdisciplinary framework on a particular SI example.

The framework developed enables consideration of complex system dynamics of reconfiguration of social practice as essential elements of collective and collaborative action of actors, supported or constrained by institutional, socio-cultural and biophysical relations.

The trans-disciplinary approach of SIMRA addresses effective knowledge exchange for shaping development trajectories and to inform those involved in policy design and implementation involving the close involvement of members of the SIMRA Social Innovation Think Tank (SITT) experts representing the core actors in rural development, agriculture and forestry at international, regional and national levels. This resulted in co-production of theoretical-empirical – expert understanding of SI in MRAs addressing societally relevant problems. Paper represents work in progress, and does not imply that SI cannot occur in different directions. The findings will be tested in empirical contexts in case study areas, and further developed.

This paper is derived from report D2.2 Transdisciplinary understanding of SI in MRAs (Kluvankova et al., 2017) produced under the terms and conditions of project SIMRA.

Transdisciplinary Understanding of Social Innovation in Marginalised Rural Areas

Transdisciplinarity is a reflexive, integrative, approach aimed at the transition of societal problems, and concurrently of related scientific problems by differentiating and integrating knowledge from various scientific and societal bodies of knowledge (Lang et al., 2011). To be transdisciplinary, research requires to comply with the following: (i) focusing on societal relevant problems; (ii) enabling mutual learning processes among researchers from different disciplines (from within academia and from other research institutions), as well as actors from outside academia; and (iii) aiming at creating knowledge that is solution-oriented, socially robust and transferable to both the academic and societal practice (Lang et al., 2011).

Transdisciplinarity should be a critical and self-reflexive research approach that relates societal with scientific problems. It should produce new knowledge by integrating different scientific and extra-scientific insights. Its aim is to contribute to both societal and scientific progress; integration is the cognitive operation of establishing a novel, hitherto non-existent connection between the distinct epistemic, social–organizational, and communicative entities that make up the given problem context (Jahn et al., 2012).

The transdisciplinary research process is influenced by: (i) disciplinary issues; (ii) adaptation of project applications to fill the transdisciplinary research agenda; (iii) effective stakeholder participation; and (iv) functional team building and development based on self-reflection and experienced leadership (Angelstam et al., 2013).

Arguably, SI research should be well-suited to transdisciplinarity. Consistent with transdisciplinary cooperation is social learning from each other, and building cooperation or networks for common aims. There is also a strong relationship between transdisciplinarity and sustainability. Amongst crucial factors of transdisciplinary research is a participatory process as a tool to ensure the sustainability of the achieved objectives.

SIMRA has been using a transdisciplinary approach, drawing on the expertise and knowledge of members of the SITT. The SITT represents a multilevel, transdisciplinary structure of the Scientific Advisory Board (SAB) and the Stakeholders Involvement Board (SIB) consisting of EU and non-EU actors and experts in forestry, agriculture and rural development. The SITT members were involved in the preparation of the research in three steps:

i) In July 2016 they contributed to the identification and formulation of key societal challenges which formed part of the SI explanatory variables. A total 32 SITT members were involved through the online survey.

ii) The first workshop of the SITT, held in Bratislava October 2016, created a platform for mutual learning regarding the role of variables in understanding SI in MRAs. A total of 21 SITT members participated at the Bratislava workshop.

iii) An online survey of SITT members (July 2017) helped to build understanding of the factors essential for SI success in MRAs. A total 18 SITT members were involved through the online survey.

Social Innovation Dynamics in Marginalised Rural Areas

We argue that the reconfiguration of social practice represents, in essence, the results of collective and/or collaborative action, which is then supported or constrained by the local environment and the societal

challenges that affect the dynamics of changes within complex systems. Collective action, in connection with existing local, regional, and/or national networks, has the potential for effective transfer of available experience across the boundaries of innovation emergence. The eventual outcome is greater efficiency and quality of the entire implementation (Baker and Mehmood, 2015; Kozova et al., 2016; Poteete et al., 2010; Ostrom, 2005).

The dynamics of SI have been rarely described in theoretical literature. Following Murray et al., (2010) social innovation processes can be considered in several sequential steps (figure 1).

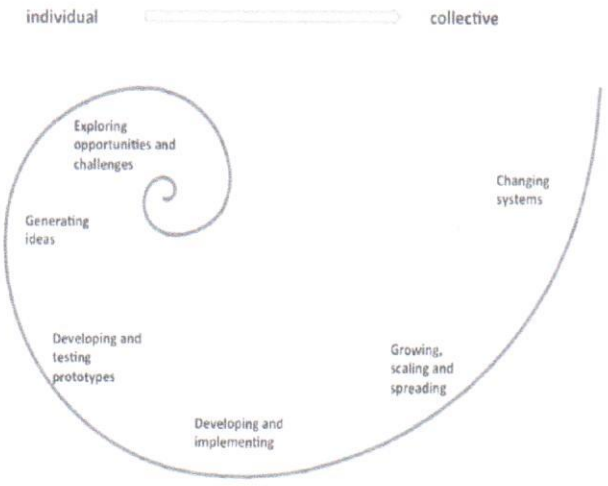

Figure 1: **SI Dynamics - Social Innovation spiral**
Source: Murray et al., 2010

Opportunities and challenges, and external institutional and broader material contexts, can lead actors to initiate innovation processes to generate and develop new ideas, and ways of working. New ideas emerge from groups or individuals, and, if developed up to collective actions, they can move on to a second stage where ideas are tested in practice. This second stage can be done through simply testing things, or through more formal pilots, prototypes or even (in theory at least) randomised controlled trials. The process of refining and testing ideas is particularly important because it is through iteration, trial and error, that cooperation and partnerships can be created and conflicts can be resolved. It is also through these processes that measures of success come to be agreed upon (Murray et al., 2010).

When the idea expands to collective action, prototypes such as new institutions can consolidate to ensure more robust and stable practices, which potentially can then scale-up and create systemic change either at local level or in a large institutional setting. Systemic change, such as replacement of institutions by newly established or reconfigured institution is the ultimate goal of SI. Different paths leading to SI usually involve the interaction of many elements: social movements, institutional change business models, laws and regulations, data and infrastructures, and entirely new ways of thinking and doing, usually over long periods of time (Murray et al., 2010). Such process refers to as SI dynamics. The intensity and character of collective action thus determines SI dynamics, and the probability of system change.

Conceptualisation of SIMRA Transdisciplinary Framework

Understanding the mechanism of change in complex systems requires consideration of the dynamics of change and the identification of factors and spatial and temporal dimensions that systematically affect those processes. In this section we move from exploring the implications of SI related theories (for details see Kluvánková et al., 2017 D.2.2) to the development of transdisciplinary framework for understanding SIs in MRAs. We are incorporating empirical evidence from the SIMRA database of SI examples, which contains over 300 submissions and 166 validated examples of SI from the expert knowledge of SITT members and project partners (Bryce et al., 2017; D3.2).

SI in MRAs cannot be addressed in isolation or using mono-disciplinary approaches. Understanding SI in MRAs can best be addressed using a clear conceptual framework that defines the key variables of SI emergence, and visualizes its development and dynamics, interconnections, relationships, changes and feedback. Such thinking transcends disciplinary boundaries by focusing on the dynamic interrelationships of different elements shaping complex sustainability issues (Abson et al., 2017). Abson argues that, in general, a framework provides the basic vocabulary of concepts and terms and gives the logical connection and interaction between concepts and terms that may be used to construct the kinds of causal explanations expected of a theory.

Following our previous arguments, and to address the transdisciplinary processes associated with the dynamics of SI in complex systems, the framework requires: (i) a system of parameters-variables to analyse the mechanisms of change in spatial and temporal dimensions; (ii) flexibility to cope with diversity of complex systems; (iii) the effective integration of scientific and societal knowledge; (iv) methods for evaluation of SI in MRAs. It may also provide policymakers with a solution-based approach to promote or determine the expected transformation and change required to enhance societal outcomes.

SIMRA transdisciplinary framework has been developed for use in SIMRA project to accommodate the diversity of examples of SI and provide a means for exploring their motivations, development and dynamics. It enables researchers from diverse disciplinary backgrounds, working on different resource sectors, geographic areas, biophysical conditions, and temporal

domains to share a common vocabulary for the construction and testing of alternative theories, models and hypotheses. A first step in developing and interpreting SI dynamics in MRAs (Figure 3) is based upon the theoretical conceptualisations provided in particular by Murray et al. (2010), McGinnis and Ostrom (2014), Neumeier (2016) and Haxeltine et al. (2017).

The central part of SI processes occurs in the **Action arena** where particular manifestations of biophysical, and institutional conditions interact with actors and jointly affect outcomes (Ostrom, 1990, 2011; McGinnis and Ostrom, 2014). The idea of the action arena, as originally designed by Ostrom (Figure 2) demonstrates actor dynamics in action situations as the most essential conceptual factors.

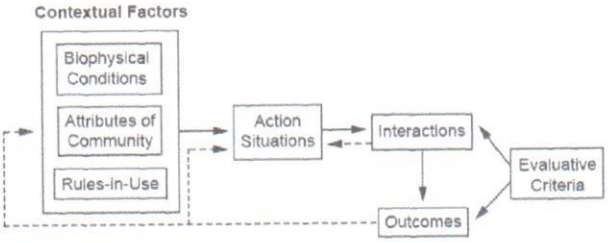

Figure 2: **Action Arena**

Source: Adapted from IAD framework to analyse SES (Ostrom, 1990, 2011; McGinnis and Ostrom, 2014).

In the SIMRA framework, the contextual factors that determine SI process in MRAs are preconditions for the emergence and development of SIs at the focal level of analysis. This determines the types of interactions and outcomes related to a particular resource system, and the governance systems that influence the behavior of these actors.

Resource systems are understood to be resources, resource management practices and attributes of the community in particular geographical units. In this context, we characterise SIMRA resource systems by MRAs following the characteristics developed in SIMRA (Price et al., 2017; D3.1). Three types of resource systems, representing particular types of rural areas, defined as having population densities under the threshold defined by OECD (2011) were characterized as MRAs: mountains, islands, and arid areas. It should be noted, first, that these often overlap and, second, that all also contain urban elements, but these are not the focus of SIMRA. In the SIMRA typology of MRAs resources comprise natural, technological, economic, cultural or social resources. Each of the three types of MRA has a particular set of natural resources (e.g. land used for agriculture, forests, and protected areas, water resources, and the biological components of these).

All present particular opportunities for particular types of activities, such as the generation of renewable energy, e.g. hydroelectricity and wind (mountains), solar (arid areas), wind and offshore currents and waves (islands). These various resources may also be defined in terms of ecosystem services, including cultural ecosystem services; for example, the value of these environments for tourism and recreation, the aesthetic value of landscapes, and the cultural identity of inhabitants. These may all be relevant for particular types of SI.

With regard to technological resources, two types of infrastructure were used to characterize MRAs: roads and internet access. Their relative availability may either foster or hinder different types of SI. They are further linked to a range of economic and social resources which may either foster or hinder SI. In the description of MRAs in SIMRA (Price et al., 2017; D3.1), a number of these were explored, although it was only possible to do this at coarse spatial resolutions that are usually of little relevance to specific examples of SI. The availability and effectiveness of economic resources can be expressed in terms of GDP per capita, as well as people at risk of poverty or social exclusion. A further key resource is the availability of education and training; this was explored in terms of early school leavers. Finally, MRAs are often also areas with severe demographic handicaps, which link economic resources and the availability of health care; one indicator on which is infant mortality.

Governance systems include social and institutional arrangements such as rules in use, understood as rules that are practices in real situations, norms, governance structures closely interlined with actors. **Actors** include active participants in SIs, e.g. direct users, extractors, sellers of goods and services, regulators, intermediaries, consumers who affect the management of the resource systems. The ways in which actors engage may be many and varied, from the formation of interest groups and charitable bodies to collaborative engagement in informal institutions to active participation in formal institutions. It helps to understand social dynamics and processes that occur at local to global scales, how multiple forms of governance systems influence actors at different scales, or how they affect the environment and resources that have diverse characteristics. In general, scale considers administrative and institutional boundaries of territories (Cash et al., 2006; Gibson et al., 2000). We use the EUROSTAT (2015) subdivision, the "Nomenclature of Territorial Units for Statistics" (NUTS), that divides the European Union into 5 levels. Data used to characterise MRAs was typically analysed at NUTS3.

Complex system dynamics of SI in MRAs assume cyclical mechanisms of change resulting in fast and slow moving actions in the system having consequences for interactions and SI dynamics. Building on an idea of social innovation spiral developed by Murray et al., 2010,

collective action in SIMRA transdisciplinary framework occurs in the action arena to create innovation processes at four possible stages:

i) Generating and developing ideas - First stage implies the emergence of social innovations from the ideas of groups or individuals, which can be developed and implemented into collective action. Three major types of action can be considered: growing, testing and consolidating of SI; implementing, scaling and spreading of SI; changing systems. The rejection of novel ideas occurs when conditions of SI growth are not created. If actors in MRAs are not sufficiently active or powerful then a novel idea may result in inaction. If SI dynamics is present then collective action very likely enhance the development of SI.

ii) Growing, testing and consolidating of SI - Following the emergence of novel ideas, SI can grow into prototypes, develop and stabilise. Some SI will evolve quickly, such as political economic and social disturbances , whilst others will develop slowly such as cultural norms, responses to natural disturbances, indigenous knowledge for participatory engagement (see Bromley, 2006, Leach et al., 2013, Folke et al., 2002; Gatzweiler and Hagedorn, 2002; Holling, 2004; Kluvankova-Oravska et al., 2013; Roland, 2008; Vatn, 2005), beliefs and values (Moore et al., 2012).

iii) Implementing, scaling and spreading of SI - The feedback paths incorporated suggest that the consequences of action situations may spread to any of the other top levels of the system. This interaction generates products (such as relationships, collaborations, networks, institutions and other new governance arrangements), and outcomes (negative or positive) that can potentially change many, or perhaps all, of these input factors.

iv) Changing system - Changing system is characterised by system reconfiguration of social practices such as the rebuilding of institutions, managerial rules, and new governance arrangements as outcomes of collective action with potential effects or impacts on the well-being of the community. The intensity and quality of collective action in the action arena is influenced by biophysical and institutional factors and rapidly effect SI paths and probability of system change. This type of action is considered in this report as the most likely instigator of SI in MRAs. This does not mean that different actions or contexts could not also lead to successful implementation of SI.

The dynamics of SI processes also depend on a variety of **SI variables** essential for the success of the innovations. SI as defined by the SIMRA project, concerns the reconfiguration of social practices in response to societal challenges based on novel ideas and values. SI involves the creation of new institutional arrangements and partnerships recognising the likelihood of trade-offs amongst competing interests and outcomes and engaging civil society actors.

The SIMRA transdisciplinary framework for understanding SIs in MRAs enables robust analyses of diverse marginalised rural areas and the different processes that lead to SI. Its strength lies in its holistic approach to the analysis of the action arena and integrating transdisciplinary knowledge.

Ongoing global societal challenges of poverty, resource depletion, urban deterioration, unemployment and climate change are requiring more societal participation in research design for eliciting knowledge and integrating of science and society (Lang et al., 2012). Transition literature (Geels, 2011; Ostrom, 2009; Piatonni, 2010) assumes systematic processes of change based on general and specific variables, and is applicable for complex systems (such as a business, a city, an economy, ecosystem, or eco-region) within or under a multilevel operation. Bekkers et al. (2013) distinguish: i) SI environment; ii) innovation as a learning process; and iii) innovation adoption mechanism. Baker and Mehmood (2015) argue that the emergence of SI reinforces three societal functions: i) basic individual and collective needs; ii) relations with SI environment; iii) capabilities to influence SI adoption.

Neumeier (2016) distinguishes: i) determining factors for the SI actor network; ii) factors influencing the participation process; and ii) factors influencing the success of the SI. Innovation adoption is defined as a process of re-innovation where the innovation is adjusted to the specific context in which a SI is implemented (Bekkers et al., 2013) and is comparable to the participation process as referred to by Neumeier (2016).

SI variables for understanding SI in MRAs are system parameters to identify factor that influence mechanism of change /or are describing certain characteristics of social practice reconfiguration in spatial and temporal dimension. In particular they are

i) flexible, to cope with the complexity of systems and their factors of change;

ii) where appropriate, solution based approaches to enhance societal outcomes. It is also apparent that growth, consolidation and sustainability of SIs as the collective action are contextualised by their surroundings and societal challenges, and affect the dynamics of changes in complex systems.

Based upon the theoretical grounding presented, variables have been defined and in the following 4 categories:

i) Individual and collective needs are exploratory variables reflecting the emergence of SI that mainly originates from external factors and drivers such as system changes, shift, or shocks from socio–economic crises, socio-economic disparities, value systems and beliefs. Natural disturbances could include climate change impacts of flooding and temperature extremes, and earthquake. Other relevant factors include demographic change.

ii) SI context variables are exploratory variables that reflect internal drivers of system change for the growth and emergence of innovative ideas in MRA systems. It is represented as regulation or bottom-up processes, such as re-structuralisation confronted by long-standing and widely-recognised, sometimes "wicked" problems: market failure policy failure, failure of the state, regime failure etc.

iii) Variables of learning, scaling and spreading that enhance consolidation and scaling of SI. Derived from internal deliberative, participatory movement of the system to expand and provide room for the manoeuvre of actors based upon building trust, participation, knowledge exchange, and self-organising activities that mature into social capital.

iv) Variables of sustainability and impact of SI are conceptual variables of impact and outcome which concern processes and responses that address system change of SI and its transfer outside the area of emergence. There it is accommodated in specific spatial and temporal contexts (e.g. MRAs) such as novel forms of partnerships and networks, entrepreneurship, coordination (reconfigured), resilience self-organised regime, etc.

SI variables for MRAs form a final part of the SIMRA transdisciplinary framework (Figure 3). Derived from processes in the action arena, and addressing the interests of actors, SI variables relating to the dynamics of MRAs, in particular emergence, development and consolidation learning, scaling and impact through to the long term existence.

Towards SI Variables in MRAs

The formation of SI variables follows an abductive approach (Poteete et al., 2010) and is a joint product of SIMRA Work Packages 2 and 3. The SI variables are likely to have influence the future divergence and convergence of SI paths in MRAs. In particular variables can be used to test hypotheses. Initially, the variables for SI emergence and divergence have been identified based upon the theoretical foundations followed by consultations and advice of the SIMRA SITT, provided via online survey in June 2016 and consultation in the transdisciplinary workshop (Bratislava, October 2016). Twenty one SITT members discussed variables that affect emergence of SI in forestry, agricultural and rural development, and associated them with particular types of MRAs (e.g. mountains, arid areas, islands and sparsely populated areas). The set of SI variables identified as being of greatest relevance, drawn from the consultations were presented and discussed in a closing plenary session.

Inductive analyses of variables of SIs in MRAs have used meta-analyses of the full dataset of examples of SI, developed in Task 3.3 and the associated database (Bryce et al., 2017; D3.2). The database contains over of 166 SI examples, validated in Tasks 3.2 and 3.3. Informed by these examples, a preliminary list of explanatory, conceptual and impact variables was determined.

Four groups of variables were identified as constituting an essential part of SI dynamics in MRAs, presented in previous section. Members of the SITT (in second online consultation –July 2017) ranked variables in four categories listed in the text above and table 3 according to their importance. The mean score of that ranking is shown in brackets and refers to the aggregated SITT ranking of variables importance scored in each category:

i. Exploratory variables for the emergence of SI: Individual and collective needs were identified and evaluated by SITT members as follows (see their mean scoring in brackets - 7 as the highest and 1 as the lowest score):
   - Motivation:, well-being, income philanthropy (6,24)
   - Demographic change: population change (5,56)
   - Need to adapt : survival after natural disturbance (4,47)
   - Need to adapt: survival after social disturbance (4,18)
   - Problem coordination: global coordination problems (4,06)
   - Environmental quality: change in the quality of the environment (4,18)
   - Consumer preferences: market, self-interest, other regarding preferences (3,76)
   - Food security: quantity and quality of the food (score not provided)
   - Health: human health (score not provided)
   - Culture/identity: of the nation, MRA etc. (score not provided)

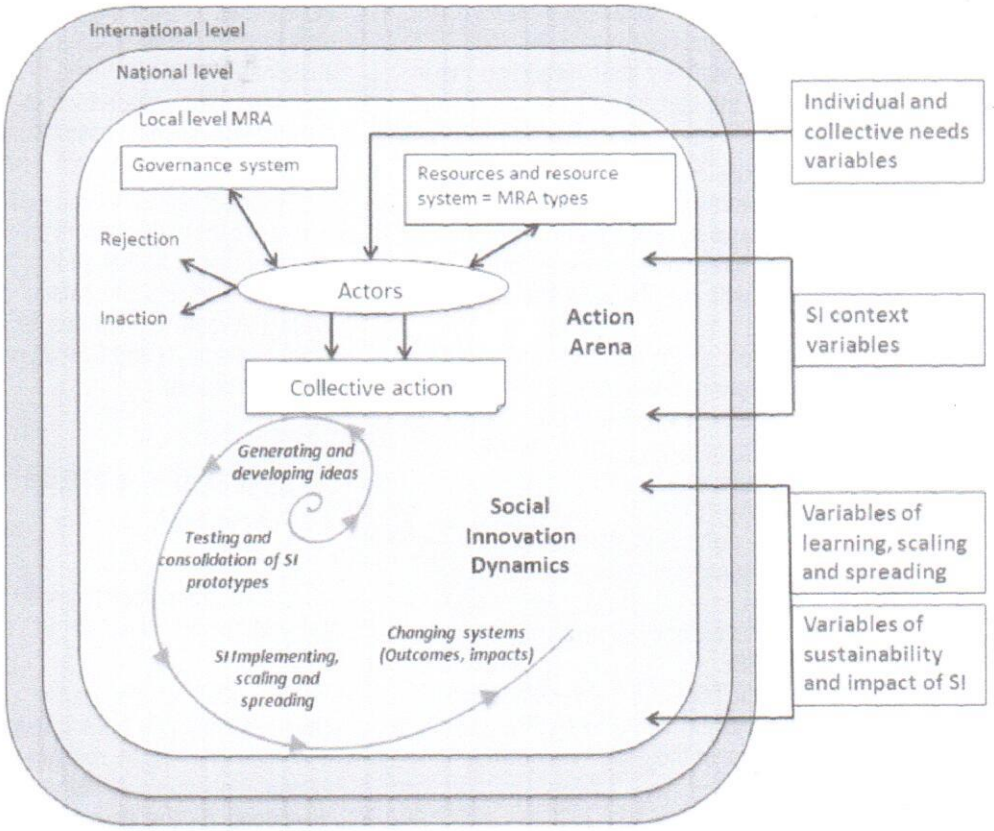

Figure 3:
SIMRA transdisciplinary framework to understand SI in MRAs

Source: Kluvankova et, al, (2017), based on Murray et al. 2010; McGinnis and Ostrom, 2014; Neumeier, 2016; Haxeltine et al., 2017; Secco, 2017.

ii. Exploratory variables for the emergence and development of SI were identified and evaluated by SITT members as follows (see their mean scoring in brackets - 8 as the highest and 1 as the lowest score):

- Resources: financial, environmental, technological, human (6,29)
- Governmental support: EU, national, regional, local (4,94)
- Vulnerability of MRA system (4,88)
- Institutional diversity: flexibility of rules (4,44)
- Traditions: norms, customs, habits, (3,76)
- Cultural diversity: of the community, MRA (3,47)

iii. Conceptual variables of learning scaling and spreading were identified and evaluated by SITT members as follows (see their mean scoring in brackets - 9 as the highest and 1 as the lowest score):

- Knowledge exchange/social learning: self-organised activity of indigenous or community actors (6,18)
- Leadership: ability of an individual or collective to "lead and guide (6,12)
- Participation: collective action of individuals and the community (5,94)
- Self-organizing activities: emergence of self-organisation via leadership, interpersonal trust etc. (5,53)
- Capacity building: existing skills and process of rising skills (can be centrally –externally introduced) (5,51)
- Trust: interpersonal/ collective (5,47)
- Reciprocity: a reciprocal arrangement or relationship (4,47)
- Coping capacity: capacity of MRA systems to address, manage and overcome adverse conditions in the short to medium term (using available skills, values, beliefs, resources and opportunities) immediately react to changes (4,06)

iv. Conceptual variables of sustainability and impact of SI were identified and evaluated by SITT members as follows (see their mean scoring in brackets - 10 as the highest and 1 as the lowest score):

- Community cohesion: compatibility and well-being of the community (7,62)
- Cooperation: capacity of the community to cooperate and develop collective action, synergy effect with parallel collective action (6,58)
- Self-organization: as the product of matured, e.g. long lasting institution (6,1)
- Education / skills of the MRA (6,00)
- Social inclusion: capacity of SI to include vulnerable groups (e.g. social entrepreneurship)(6,0)
- Novel property rights and regimes: new property and management arrangements (5,67)
- Coordination: as capacity/product of matured institution (5,38)
- Resilience of the MRA (as Socio-ecological-technological systems - SETS) (4,38)
- Competitiveness: at the global and local markets (3,58)

This represents full list of variables developed, upon the theoretical foundation, SITT knowledge, and qualitative scoring. It confirms the validity and importance of variables for the dynamics of reconfiguration of social practice of SI. Following the classifications of Bekkers et al. (2013), Baker and Mehmood (2015), and Neumeier (2016) variables are grouped into four categories as integral attributes of the reconfiguration process of SI. The variables within each category are listed in order of importance identified by members of the SITT. This correlates with results of inductive analyses of SI examples. The SI examples represent empirical knowledge that complements the theoretical understanding of SI.

It is evident that motivation, in terms of improving well-being of the community, forms a key variable for emergence of SI, and of SI in general. Resources are seen as the most essential internal system variable to support the development of SI. Participation, knowledge and self-organizing processes as components of community learning form pre-conditions for SI growth and stabilization, whilst social inclusion cooperation and self-organization are key for adaptation and system change.

Improving societal well-being is of the highest importance as a motivation for the emergence of SI in both inductive analysis and stakeholder judgment. Resources (financial, technological, environmental, human) were identified as most important factor for SI development and consolidation once the SI idea was born. Leadership, knowledge exchange, participation and self-organised activities were key for enhancing and guaranteeing implementation of SI in an existing institutional background and scaling-up of SI. Social inclusion and self-organisation where identified as major factors for sustainability and impact of SI. Additionally, the SITT attributed high importance to community cohesion, and cooperation, seen as essential to maintain SI dynamics in MRAs for achieving the well-being of the community.

The next steps in the use of these variables is to determine the major factors (variables) for each stage in the development of SI that affects the hypotheses of diverging paths, and inform the selection of CS for use in SIMRA Work Package 5, methods for evaluation of SI (SIMRA Work Package 4) and to analyse policy processes (SIMRA Work Package 6).

Application of SIMRA Transdisciplinary Framework

SIMRA transdisciplinary framework is illustrated by its application on selected SI example from SIMRA SI database.

The "Call of the Earth" represents an example of environmental and human health inequality related to the dysfunctional waste management system in Arabsalim village (Lebanon). A community recycling scheme was developed on the personal initiative and leadership of a former teacher of Arabic (Zeinab Mokalled) at a local high school. She believed that only by sorting and recycling could there be effective disposal of waste in Lebanon. The problem was neglected by authorities, so she took the initiative and called on the women of the village to help her to collect waste, door-to-door. At the beginning, the all-woman rubbish collection team, set up in the mid-1990s, used Mokalled's back garden as a storage area for recyclable waste and a lorry bought by one of the volunteers. Collective action evolved via reciprocity, increasing reputation and trust into self-organised volunteers´ payment mechanism (each of 46 members contributes c.US$40 each year). They began recycling glass, paper and plastic. They then started collecting electronic waste, and have employed a researcher to find the best way of making compost from the materials being collected. After three years, this SI prototype proved to be contributing to improved community well-being, and local authorities started to participate and support the initiative with a land for garbage storage which enabled the building of new capacity. The initiative was able to rent another lorry and after 10 years they received financial support from the Italian Embassy to build a warehouse. They received support from Germany and the UN. The initiative contributed to improving social inclusion and community cohesion by empowering women. Now nearby villages are adopting similar schemes. For example, recently, the women of Kaffaremen have set up their own initiative, which is similar, except that it is funded by the villagers rather than the volunteers. The nearby town of Jaarjoua has decided to follow suit. This is mapped onto the framework in the Figure 4.

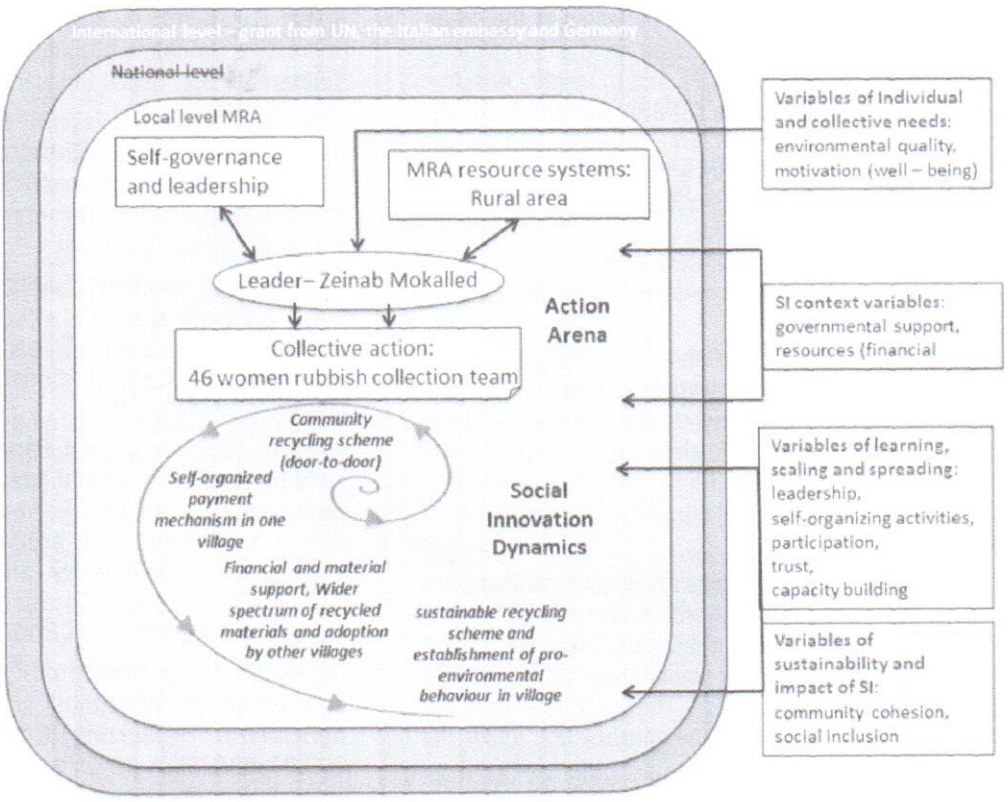

Figure 4: **Application of SIMRA Transdisciplinary Framework**

Source: Adapted from SI example "Call of the Earth (community recycling scheme)" provided by Rosaline Bryce as the entry No 298 to SIMRA database of SI examples (based on data available on September 6, 2017)

Conclusions

This paper has presented a preliminary explanation of the SIMRA transdisciplinary framework for understanding SI in Marginalised Rural Areas. The approach is informed by innovation theory in which SIs are understood to be outputs, underpinned by novel ideas which are transformed into products and services that meet social demand, and potentially enhance social well-being. Transdisciplinarity, in the context of SIMRA, refers to an approach to engaging expert and empirical knowledge exchange.

The aim of the transdisciplinary approach in SIMRA has been to develop and maintain systematic knowledge exchange with a diversity of experts who represent the core actors in rural development, agriculture and forestry at international, regional and national levels (SIMRA SITT members). Engagement with the SITT has been from an early stage of the project, and development of the work in the research activities (e.g. SIMRA work Packages 2, 3, 4), creating a transparent and open-ended approach to problem framing and the integration of views on the design and implementation of SIMRA objectives based on their level of influence, possibilities of the convergence of interest groups, and ranking of alternatives. The involvement of SITT members in the development of the content of this report was in three consecutive steps (survey June 2016, workshop October 2016, and July 2017). This resulted in the co-production of (theoretical-empirical-expert) understanding of SI in MRAs, addressing societally relevant problems of MRAs; establishing the SIMRA transdisciplinary framework as a mechanism for mutual learning amongst diverse research disciplines, and actors from outside academia. With their involvement, SIMRA has also built a shared learning process over the duration of the project to date, and looks to develop that further through the remainder of the project and beyond. Further to the development of transdisciplinary assessment, the framework offers the prospect of creating solution-oriented knowledge.

There are key attributes and properties of SI innovation cycle in MRAs dependent on number of interactions with diverse actors in the action arena affected by physical and institutional factors. The dynamics evolve in four stages: i) generating and developing ideas for SI; ii) growing, testing and consolidation of SI; iii) SI implementing, scaling; and iv) changing system. The findings presented are preliminary, based upon the empirical evidence mapped onto the most relevant theoretical concepts. However, this does not exclude the possibility that some different action may lead to successful SI. The SIMRA conceptual framework provides a basis to develop methods and approaches for the evaluation of process and products (in

SIMRA Work Package 4) that will be tested in the cases studies and demonstrated through innovation actions (SIMRA Work Packages 5 and 7), and to identify possible outcomes for various policies (SIMRA Work Package 6). The conclusions derived are interim and await conformation from the in-depth empirical analysis of SI in the case studies (SIMRA Work Package 5).

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Vladimír Ondrejička
Maroš Finka
Mária Kozová
Ľubomír Jamečný

INTEGRATED SPATIAL PLANNING, LAND USE AND SOIL MANAGEMENT INSPIRATION AND EUROPEANS' STRATEGIC RESEARCH AGENDA (SRA)

The article focuses on summarization of key output of INSPIRATION project supported by European commision under H2020 programme. SPECTRA Centre of Excellence as a project partner and the national contact point of Slovakia actively participated in the process of Strategic Research Agenda establishment through the formulation of national specific research questions and challenges. The aim of the INSPIRATION project was s to establish and promote the adoption of a strategic research agenda for land use, land-use changes and soil management in the light of current and future societal challenges. Main objectives were: to formulate, consult on and revise an end-user oriented strategic research agenda (SRA), to scope out models for implementing the SRA and to prepare a network of public and private funding institutions willing to commonly fund the SRA. The article is a conclusion of project outputs „National report on the synthesis of collated information following the template and national workshops Slovakia" and „The Europeans' Strategic Research Agenda for Integrated Spatial Planning, Land Use and Soil Management - June 2017 Green Paper".

Key words: sustainable development, strategic research agenda, INSPIRATION, land use, soil.

Introduction

Land and soil play a vital role in meeting societal needs for food, drinking water, energy, shelter, infrastructure and overcoming societal challenges of climate change, non-renewable natural resources and environmental (in)justice. Land and soil, including water and sediment, are finite resources facing growing pressures and conflicts over their use that contribute to over-consumption of natural capital. "Business as usual" is not an option and a degree of urgency involving the wise land use and soil management is needed to balance the supply of natural capital and ecosystem services with society's demands.

INSPIRATION recognised the interaction between the supply of, and societal demands on, natural capital that is in part created by land-use management practices whose net impact is insufficiently understood. This helped identify specific research needs on the supply of and demand for natural capital, land-use management and net impact evaluation. The INSPIRATION Strategic Research Agenda (SRA) is based on research and innovation needs identified by more than 500 European stakeholders working as funders, scientists, policy makers, public administrators, consultants. The SRA considers soil and land use management challenges, including the links between the soil-sediment-water (SSW) system and topics such as health, energy, climate change, resilient water supply. It recognizes the need for new knowledge and new applications of knowledge to plan, manage and use land and the SSW system.

The SRA is designed to help public and private research funders identify research they should invest in to innovate and contribute to a greener, more socially cohesive, smarter and more competitive Europe. The stakeholder-driven research demands presented in this SRA map on to the SDGs and will enable the Commission and individual countries achieve these goals. Transnational co-funding is key to creating synergies for organisations wishing to invest in research activities. National Contact Persons will be available for providing support and for making cross-country contacts regarding specific research demands for co-funding. The complete agenda, background on its development and information about the National Contact Persons is available at www.inspiration-agenda.eu.

Land and soil societal challenges

Land and soil are vital if society is to meet its needs for food, drinking water, energy, shelter and infrastructure. Many of society's biggest environmental challenges, such as climate change, depletion of natural resources and loss of biodiversity, are related to the use of land and soil. Land and soil are finite resources facing growing pressures and conflicts over their use that contribute to over-consumption of natural capital. Wise management of land and soil has a great potential for balancing society's demands on and supply of natural capital in the form of resources and ecosystem services. The full range of societal costs and benefits of alternative land management practices should be understood in order to make decisions that lead to balanced and sustainable land use.

Sustainable land management requires the creation of new knowledge and the innovative application of new and existing knowledge in the way we plan, manage and use land and soil. Strategic Research Agenda identifies what is needed according to over 500 Europeans funders,

Figure 1: **Sustainable Development Goals** [1]

scientists, policy makers, public administrators and consultants. In 2015, the United Nations adopted 17 Sustainable Development Goals as means of addressing and overcoming major societal challenges around the world.

Over the next two decades, 260 indicators will be used to evaluate progress towards the 169 specific targets that need to be reached to achieve the 17 SDGs2. Soil, sediment, water and indeed the entire system have a role to play in achieving many of the SDGs. The research needs presented in this SRA have a direct, sometimes strong, potential role to play in achieving some of the SDGs (Table 1). The SSW system has a particularly strong contribution to make to SDG 6: Clean Water & Sanitation; SDG 11: Sustainable cities and communities; SDG 13: Climate action; SDG 14: Life under water and SDG 15: Life on land.

Methodological approach

This strategic research agenda is derived from a multi-stakeholder, multi-national, interdisciplinary approach that covers a range of interested parties (public bodies, businesses, academia and civic society) and the variety of relevant institutions funding research.

The proposed methodology is based on a multi-stakeholder and interdisciplinary approach that covers the variety of stakeholders (public bodies, business, scientific community citizens and society) and the variety of relevant funders. The vehicle to engage with relevant stakeholders across the Member States is a National Focal Persons (NFP) in 17 countries. The NFP's interviewed National Key Stakeholders (NKS), performed a desk study and organized workshops with national stakeholders of funders, end-users and researchers across the various soil and land management disciplines. The goal of these exercises was to gather information and support the main objectives and outputs of the project. The research agenda is the outcome of a bottom-up approach involving over 500stakeholders across more than 17 European countries (see Figure 2). This funder and end-user demand-driven approach identified research and innovation needs on land use, land-use changes and soil management in the light of current and anticipated societal challenges. The INSPIRATION conceptual model (Figure 3) recognises the tension between the supply of natural capital and societal demands on such capital that is in part created by land-use management practices whose net impact is insufficiently understood.

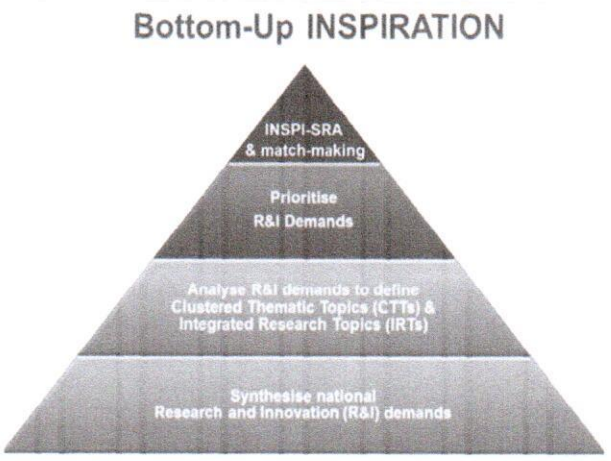

Figure 2: **Bottom-Up methodological INSPIRATION approach** [2]

In sustainability terms, land management should balance the demand for and supply of resources and ecosystem services. This needs understanding of the supply of natural capital (resources and services), the present and potential demands on that capital, the consequences on supply and demand of different approaches to land management as well as ways to avoid other (unexpected) negative effects within the SSW and finally the ability to evaluate the impacts of those approaches to help maintain a balance and avoid net depletion of natural capital. This thinking has guided the approach to identifying the series of 17 integrating research needs and four sets of research needs focusing on natural capital supply (7 needs), demand (7 needs), land management (4 needs) and net impact (4 needs).

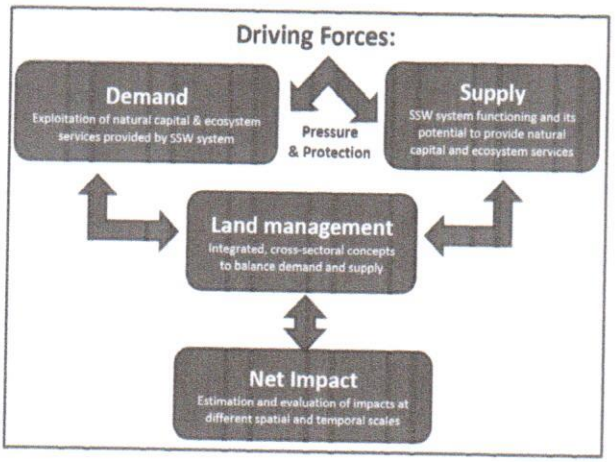

Figure 3: **INSPIRATION conceptual approach** [2]

the INSPIRATION Strategic Research Agenda

This strategic research agenda is designed to both attract research funding by public and private parties and ensure that knowledge is widely applied by public sector bodies, SMEs and large enterprises wishing to innovate and contribute to a greener, more socially cohesive, smarter and more competitive Europe.

The SRA is particularly intended to be used by research funders to identify needs they would like to collaborate in funding. Collaboration becomes necessary and can create synergies when an organisation does not have the resources to fund a research activity in its entirety yet still sees the need for that activity. It then chooses to collaborate with other funders to ensure the research activity takes place rather than not collaborate and not see the activity happen. Other stakeholders – specifically end-users, researchers and citizens - are also specifically address in parts of the SRA.

Research Needs

A set of 17 integrated and 22 thematic research needs have been identified. Thematic needs have been identified for Natural Capital and Ecosystem Services Supply (NC), Demand for Natural Capital and Ecosystem Services (D), Land Use Management (LM) and Net Impact (NI). The integrated needs (IRT) cut across these themes. The integrated and specific thematic needs are defined in following tables.

IRT 1	Integrated Environmental Assessment and Soil Monitoring for Europe
IRT 2	Recognizing the value of ecosystem services in land use decisions
IRT 3	From indicators to implementation: Integrated tools for a holistic assessment of agricultural and forest land use
IRT 4	Bio-Economy – unleashing potential while sustaining soils
IRT 5	Integrated scenarios for the Land-Soil-Water-Food system under societal pressures and challenges
IRT 6	Indicators for assessing the efficiency of the Soil-Sediment-Water-Energy system
IRT 7	Farming systems to maintain soil fertility and yields
IRT 8	Circular land management
IRT 9	Policies to effectively reduce land consumption for settlement development
IRT 10	Stakeholder participation to facilitate the development of liveable cities
IRT 11	Integrated management of urban soils
IRT 12	Environmentally friendly and socially sensitive urban development
IRT 13	Urban Metabolism – Enhance efficient use of soil-sediment-water resources through a closing of urban material loops
IRT 14	Emerging contaminants' in soil and groundwater – ensuring long-term provision of drinking water as well as soil and freshwater ecosystem services
IRT 15	Sustainable management to restore ecological and socio-economic values of degraded land
IRT 16	Innovative technologies and ecoengineering 4.0: Challenges for sustainable use of agricultural, forest and urban landscapes and the SSW system
IRT 17	Improving preparedness and response to climate change and related hazards

Table 1: **Integrated Research Needs (IRT)** [2]

NC 1	Quantity, quality and health of soils, soil carbon, greenhouse gases
NC 2	Biodiversity, organismic and genetic resources
NC 3	Water, water cycle
NC 4	Pollutant degradation, filtering and immobilization capacity
NC 5	Prevention of erosion and mudslides
NC 6	Geological resources
NC 7	Intrinsic values of soils and landscapes

Table 2: **Natural Capital and Ecosystem Services Supply (NC)** [2]

D 1	The 4 F's: Food, feed, fibre, (bio)fuel
D 2	Regulating Ecosystem Services
D 3	Urban / infrastructure land
D 4	Water
D 5	Geological (and fossil) subsurface resources
D 6	Natural hazard prevention and resilience
D 7	Health and quality of life (living environment)

Table 3: **Demand for Natural Capital and Ecosystem Services (D)** [2]

LM 1	Governance, management mechanisms, instruments and policy
LM 2	Climate change challenges for land management
LM 3	Land as a resource in urban areas (Sustainable urban land management)
LM 4	Land as a resource in rural areas

Table 4: **Land use management (LM)** [2]

NI 1	Developing impact assessment methodology
NI 2	Understanding and assessing impacts of drivers and management
NI 3	Trade-off analysis & decision support
NI 4	Science-Policy-Society Interface

Table 5: **Net Impact (NI)** [2]

Research needs and Slovak stakeholder inputs to SRA

National relevant research needs, challenges and other relevant information were collated in accordance with INSPIRATION methodological approach and in accordance with the agreed approach to the organisation of national workshops with the NKSs. In Slovakia, 50 national key stakeholders (NKS) were interviewed and 3 workshops realised in different parts of Slovakia – North-East Slovakia - Ruzomberok, Middle Slovakia – Zvolen and South-West Slovakia – Bratislava. and different thematic focus with the goal to collect relevant representative information from different groups of stakeholders representing different problem regions, different thematic background and of course the whole scale of positions in the land, soil, water and sediments management. The desk study was based on documents based on NFP knowledge as well as suggested by NKS. All information was summarized in the national report, that was reviewed by NKSs. The final version of the national report reflecting the NKSs` opinion, results from the desk research and feedback from chosen representatives of NKSs` groups was incorporated into the final version of INSPIRATION strategic research agenda (SRA). The short summary from Slovak national report (Finka et al., 2015) is followed.

SOCIETAL CHALLENGES AND NEEDS

Which societal challenges do you regard as important? Dominant challenges in regard to the land/soil management topic appointed by the reviewed national key stakeholders (NKSs) from Slovakia were:

- to contribute to the healthy living environment,
- to contribute to the food safety,
- to participate in climate change effects lowering and social adaptation,
- to safeguard the safe delivery of drinking water,
- to decrease the consumption of natural resources,
- to contribute to the efficient use of natural resources.

Only very marginal part of the reviewed NKSs added among key challenges:

- to safeguard safe infrastructure,
- to safeguard energy supply and distribution.

These challenges identified in the interviews were discussed on 3 national workshops as well. The participants underlined interlinks among the challenges and necessity to deal with them in an integrative way.

All above-listed topics are in the harmony with the Research and Innovation Strategy for Intelligent Specialisation of the Slovak Republic (RIS3 SK) containing the research priorities for the Slovak Republic up to 2020. Among them the topics related to the environment protection, use of natural resources, clean energy e.g.:

- Efficiently usable energy resources.
- Environment, agriculture, food safety.

A common problem was appointed by many NKSs – the topic "land-soil-water-sediments" needs systematic research (e.g. monitoring, long-term effects assessment after the implementation of respective intervention) and not only set of short-term projects as it is a reality across the levels incl. EU level. In many cases, the research is more reacting to pressing problems than preparing the background for prevention-oriented measures.

TOPICS/RESEARCH NEEDS TO INCLUDE IN THE SRA

Based on the contributions from the reviewed NKS and workshops outputs following issues seems to be a priority for EU supported research on the part of SRA:

a. Sustainability and sustainable management of natural resources – optimization of soil functions ·

- Approaches, methods and instruments of the productive land protection against its transformation towards build-up areas.
- Research on and development of intensive and ecologic acceptable production approaches in agricultural and forest country including the aspects of cultural landscape quality development
- The effect of ownership transformation in the land management (specific Slovak issue)
- Access to the information about land, soil including up-date of information systems and their content, harmonization of the methods, the structure of the data.

b. Improvement of the reflection of scientific knowledge into institutional instruments of land management incl. economic instruments

Although there is a joint environmental policy in the EU, a lot of agreements, strategies and supportive schemes, but the state of art of the environment is not satisfying. The question is, where is the problem, to which extend are the policies and schemes effective, where are barriers and problems with their implementation, how can be the problems eliminated. This should be the object of the research as well addressing following topics:

- Assessment of long-term policies – analyses of policies and assessment of their effects, contributions to the environmental quality, efficiency, factors of efficiency.
- Assessment of the effects of supportive EU schemes for the environment, the efficiency of the financial investments, methods and indicators for the assessment of their efficiency.
- Transfer of knowledge into environmental practice, assessment, mechanisms, transfer barriers in reaction to the fact, that the scientific knowledge, providing the notions about the dangerous development is not reflected in the policies op to the moment of disasters and not rewardable changes. The question is where are barriers to transfer of know-how into the policies and strategies, and which measures can support barrier less transfer.

c. Sustainability of water resources and of quality of water management services

In relation to the sustainability of water resources and of quality of water management services in agricultural, forest and urban landscape following topic is from the point of view of NKSs crucial:

- Assessment of global (incl. climatic) and regional factors influencing the development of water balance in the territory and predicting of environmental and economic effects due to the proposed/implemented measures.

d. Approaches, methods and instruments of the lowering and elimination of natural hazards and risks (floods, forest calamites, forest fires, geodynamic hazards and erosion)

- Risk assessment on land use/soil use in relation the quality of water.
- Risk assessment on drought and foods as the effects of climate change and anthropic changes in the landscape.
- Development of the mitigation measures to lower abiotic and biotic damages on the forest.
- Integration of interrelations between land-soil-water and sediments in the frame of integrated management.

e. Risk assessment in regard to land use effects on the quality of natural resources

Reflecting the dynamics of changes in the land use, lack of coordination among requests from different human activities, conflicts in the land use itself and with protection and sustainable use of natural resources following topic are of special importance:

- Research on changes in the landscape, spatial optimization of the land use.
- Ecologic optimal functional landscape organization.
- Development of the model of integrated landscape management based on a system approach to the landscape as an integration of natural resources in respective space. · Strategic assessment of the quality and efficient use of landscape, environmental loads, potentials, and limits – development of assessment methods, incl. risks and degradation processes assessment.

f. Mapping and assessment of natural capital, mapping, assessment and revitalization of degradated landscape ecosystems and the landscape ability to provide ecosystem services

In relation to the efficient use of landscape following topics are of special importance:

- Mapping and assessment of landscape and biotopes` fragmentation with a special focus on urban landscape and biodiversity in urban landscape and methods of its protection and revitalization.
- Approaches, methods and instruments for the revitalisation of degradated landscape ecosystems incl. brownfields.
- Approaches, methods and instruments for efficient implementation of the ecosystem services concept into the practice of landscape integrative management incl. spatial planning with the stress on their benefits (as an economic category as well).
- Approaches, methods and instruments of multifunctional assessment and use of ecosystem services incl. the monitoring and assessment of threats between particular ecosystem services (e.g. production versus protection).

g. Lowering of negative effects of urbanization, urban sprawl regulation, consequent monitoring of industrial production effects.

- Approaches, methods and instruments of assessment of urban sprawl and its limitation and mitigation of negative effects.
- Approaches, methods and instruments for green infrastructure revitalisation, development and maintenance.

- Approaches, methods and instruments for identification of complex caring capacity of the urban landscape and for monitoring and provision of the data on environmental quality incl. the risks accessible for all stakeholders in real time.
- Approaches, methods and instruments for lowering and prevention of the negative impacts on human health.

h. Modeling of the global megatrends effects

In the context of global economic, social and environmental interlinks, global competition, global effects like biodiversity degradation, not efficient use of natural resources, climate changes special attention should be paid to the 11 megatrends listed by EEA in 5 clusters decision making for long-term perspective in European environment. Special focus should be oriented to the following questions and topics:

- How to lover growing pressure on ecosystems, degradating biodiversity, destruction of natural ecosystems?
- How predict and lower the effects of global urbanization on landscape, its structure, character, visual parameters with the goal to protect the value of cultural landscape?
- Development of new identification methods for environmental loads, for the assessment of synergies (sediments-water-soil-air) and transport of chemicals between respective mediums.
- What are the effects and development trajectories of different consumption models in regard to their environmental foot prints?
- Integrated modelling of global climate change effects.
- Integrated research on the effects of the transformation from industrial to post-industrial knowledge-based society and economy on land, soil, water and landscape transformation/use and management.
- Integrated research on the effect of long-distance migration on land, soil, water and landscape demands and management.

FUNDING SCHEMES AND POSSIBILITIES FOR RESEARCH FUNDING

There are different sources national and international used as the sources for financing the research in Slovakia. Most important financial resources are represented by: · Resources from local and regional authorities.

- National resources KEGA, VEGA, APVV, sectoral ministries.
- European, H2020, Interreg, Norway fund, Swiss fund, Life, URBACT, V4 fund.
- International Future Earth, MAB UNESCO, IPBES.

As the international sources are very competitive and connect with huge administrative load of work, big pressure is at the national level of grant schemes, but the amount of finances in national schemes is very low and the grants do not allow serious research in (time and sources requiring projects) the field of living environment, especially in the VEGA scheme. Successful realisations of the EU projects hamper administrative barriers, bureaucratic procurement processes not fitting to the scientific services or infrastructure procurement, not proper models of financing (based on hours spent and not on effects), need of co-financing e.g. in INTERREG projects as well as late reimbursement of the expenditures, discrimination of some research units in the calls (structural funds) e.g. not eligibility for researchers from Bratislava although they have the same precondition if not worser than others in SK. Due the international lobismus underdeveloped from Slovak representatives in Brussels Slovak researchers do not have the same access to the H2020 and other European schemes.

Added value and synergies among different sources can be improved by the measures listed by the NKSs as follows:

- to invest more public resources in strategic research,
- to finance basic research form the state budget across the sectoral division of research unites,
- to co-finance applied research via sectoral ministries and their institutions,
- to increase the proportion of private resources via proper supportive measures,
- to eliminate not correct lobbing from European as well as national level,
- to guarantee fear professional assessment of the projects, to eliminate complicated administration,
- to define proper assessment criteria for the project outputs, to focus on outputs and not on formal aspects like number of hours spent etc.,
- to eliminate un-equal payment for equal performance at the European level,
- to coordinate thematic research, to avoid duplicity, to support collaboration and coordination,
- to support transfer from the research to the practice in the not business oriented fields.

GAPS IN FINANCIAL RESOURCES FOR RESOURCE

NKSs reflected the situation with following advices:

- to improve research coordination especially intersectoral coordination,
- priority on the research with clear linked to the identified or expected problems in society,
- to prioritise research focused on environmental effects,
- to avoid financing of the research by the firms, individuals, NGO with out proper own human capital, laboratories and technologies,

- to stop negative development in financing the research,
- to improve awareness about the role of science and research in society,
- to support integrative instead of particular research (60% of NKSs identified a problem that even integrative projects proposals end with sectoral research projects in reality),
- to create proper legal/institutional framework for integrative financing of the research,(to create an agency for integrated research support),
- to create proper fair environment for European competition based on equal payment for equal performance.

SUMMARY FROM SLOVAK NATIONAL REPORT

The existence of the R&D fields not properly covered by existing mechanism of financing has been broadly discussed during the workshops. The position of the authors of respective policies speaks about adequate sources for all relevant societal topics. In opposite, the researchers, users and NGOs representatives insists, that the interdisciplinary research in the field of living/natural environment is not sufficiently covered. The progress in this field has been achieved mostly from the point of view of particular problems and fields. Their integration is the challenge for next period.

As not sufficiently covered are especially appointed integrate landscape management, integrated catchment area management, ecologic bearing capacity, eco-system services and first of all their economic expression. The level of the implementation of integrative approach is different across Europe; in Slovakia the field of regulations and institutional arrangements is covered. Under the pressure there are some attempts to lover the standards. The sectoral approach is dominant, and this problem is difficult to solve as this is linked to economic interests.

The same problem is in the research. This is on one hand because of much more easy understanding of analytical and integrative aspects, on the other hand because of much more easy possibility to present and to assess the outputs / e.g. access to respective more scientific field than interdisciplinary oriented scientific journals. This leads to low ability to subordinate particular analytical research to integrative overlapping scheme.

"Societal" demands accept integrative approach only in the conceptual level. In real use of landscape are sectoral, group of individual interest dominant. The research has not to follow this approach, not to build on it. In this context, the financing musses not follow these schemes. In the policies as well institutional arrangements in the field of research and executive land management, the integrative approaches have to be implemented. This should be mirrored in the financing schemes as well.

This is an opinion shared by the majority of 60% of respondents and workshops participants underlining that even supported integrative projects earlier or later end in the sectoral approaches. As examples can be listed the Integrative regional operational programs prepared on integrative principles, but ending with the support of particular sectoral projects as sewage systems building, regeneration of yards in the neighbourhoods, elements of green infrastructure etc. Both groups of NKSs – users and policy makers share an opinion, that the Slovak Republic finances a lot of programs without priorities and with not proper financial amounts. The Very week is support of environmental projects by private sector. Not satisfying is the situation of the involvement of the FP and HORIZON2020. This is partially due the handicaps of Slovak teams (language, administration, capacities to prepare the applications), but the main reason is strong lobbing, preferences on "big players", presence of the representatives of them among evaluators and in Brussels of more or less the same organisations. In many environmentally oriented projects are not represented the partners from all affected countries, which is the precondition for successful efficient solutions as the problems do not know administrative territorial borders (e.g. Danube Strategy). Insufficient is complemental research at the regional and local level which needs support from the state level.

Acknowledgement

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Maroš Finka
Dagmar Petríková

POLICY FRAMEWORK RELATED TO FUNCTIONAL URBAN AREAS (FUAS) IN TRANSNATIONAL CONTEXT

Abstract
The Interreg Central Europe project "Implementation of Sustainable Land Use in Integrated Environmental Management of Functional Urban Areas (FUAs)" is focused on creating common methodology for elaborating plans and instruments dedicated to sustainable development and environmental resilience by land management in FUAs. The project started on May 1, 2016 and its first task was to review the status-quo on FUAs in national spatial policies in the partner country states (PL, DE, SK, CZ, SI, IT). The paper brings the summary of "Transnational report on policy framework related to FUAs" to clarify the problems and shortages of the FUA definition and implementation approach in each of the partner countries.

Key words: functional urban areas, environmental management, urban/peri-urban territorial systems

Introduction

Interreg Central Europe project "Implementation of Sustainable Land Use in Integrated Environmental Management of Functional Urban Areas (FUAs)" acronym LUMAT which runs in the period of May 1, 2016 to May 31, 2019 is the project focused on development of instruments to integrate environmental management in functional urban areas (FUAs).

The objective of the first activity of the LUMAT project was reviewing of status-quo on functional urban areas placed in national spatial policies, the output of which is this Deliverable D.T1.1.1. Transnational report on policy framework related to FUAs. The aim has been to provide comparative analyses of the status-quo, policies and instruments related to the management of the development in functional urban areas as the basis for the know -how transfer and elaboration of joint strategy for the management of FUAs development with the focus on environmental and especially land-use management.

The deliverable was prepared based on common template for the presentation of the framework of the national spatial policies regarding the place and role of FUAs in the planning systems with special focus on integrated environmental management with the component of land and soil in the urban/peri-urban territorial systems (FUAs).

There is a harmonised definition of urban areas developed by the OECD in collaboration with the EU (Eurostat and EC-DG Regio) as "functional economic units" choosing as building blocks for the functional urban areas smallest administrative units for which national commuting data are available (LAU2 in Eurostat terminology). The methodology for the identification of the FUAs based on this definition was approved by the OECD Working Party on Territorial Indicators in 2011 and consequently applied to 29 OECD countries.

The definition of functional urban areas uses population density to identify urban cores and travel-to-work flows to identify the hinterlands whose labour market is highly integrated with the cores. The methodology consists of three main steps: identification of core municipalities through gridded population data, connecting non-contiguous cores belonging to the same functional urban area and identification of the urban hinterlands. The methodology makes possible to compare functional urban areas of similar size across countries. A classification of functional urban areas into four types according to population size is proposed

- Small urban areas, with population between 50,000 and 200,000
- Medium-sized urban areas, with population between 200,000 and 500,000
- Metropolitan areas, with population between 500,000 and 1.5 million
- Large metropolitan areas, with population above 1.5 million

Each functional urban area is an economic unit characterised by densely inhabited "city core" and "commuting zone" whose labour market is highly integrated with the cores. The geographic building blocks to define urban areas are the municipalities (e.g. LAU2 in European countries). The city cores are defined using the population grid from the global dataset Landscan, referred to circa year 2000. Polycentric cores and the hinterlands of the functional areas are identified on the basis of commuting data (travel from home-to-work) referred to circa year 2000 (Census year).

OECD Metropolitan Areas Database

The list of functional urban areas takes into account the results of the consultation with the European National Statistical Institutes launched by Eurostat in June 2011 on the definition of cities and by the OECD with Delegates from the Working Party on Territorial Indicators. This list of functional urban areas may be reviewed on the basis of additional comments provided by Countries.

The OECD Metropolitan Areas Database which provides a set of economic, environmental, social and demographic estimated indicators on the 281 OECD metropolitan areas (functional urban areas with 500 000 or more inhabitants). Additionally, interactive maps, histograms and summary profiles of each metropolitan area are available on the MetroeXplorer tool.

Functional Urban Areas (FUAs), as labour market basins, are perceived as the key drivers of European, national, regional and local economic performance and important territorial structures in delivering on the Europe 2020 targets. But their definition and identification based on this definition in many countries does not reflect reality of the organisation of polycentric settlement structure as they are based only on limited criteria not mirroring real centrifugal interrelationships between core city and its functional area.

Europe is characterised by a polycentric network in which the FUAs as defined by the OECD and EC are only part of its structure. Reflecting the diversity and density of the European urban system, different size of the core cities and urban areas and broader scale of functions the FUAs in majority of the EU member states have not became the real instrument of the national spatial development strategies, although often used as the framework for the definition of the target areas for the investments form the European Structural and Investment Funds in the programming period 2014/2020. Functional urban areas defined based on proper definition and used as the instrument for spatial development management can be important territorial assets for Europe because they can frame for integrated approaches in the cities and their suburbs representing critical mass for development, strengthening urban-rural linkages and encouraging cooperation between cities belonging to a cross-border area, macro-region or even a global integration zone.

FUA´s (Functional urban areas) are not institutionalised in Czech Republic, Italy, Slovakia and Slovenia, nevertheless evidence on equivalent spatial arrangements based on different criteria can be found in academic work or in other country specific materials.

The only analysed country where FUA has been institutionalised is Poland as a new category in spatial planning system, resulting from the territorial aspect of regional policy presented in the strategic documents like National Spatial Development Concept 2030 and National Strategy of Regional Development 2010-2020.

Regions, cities and rural areas. As the division of the functional urban areas into sub-types shows even Polish institutionalisation of the FUAs did not followed the OECD/EC concept of FUAs. The Polish typology refers to the functions of urban centres in the settlement system of the country. A functional urban area is a spatially continuous settlement system consisting of units separated in administrative terms. It covers a compact urban area with a functionally linked urbanized zone. Poland has well balanced urban structure with several large FUAs (the biggest are Warsaw agglomeration and Upper Silesia conurbation) and many medium-size cities.

The needs in relation to integrated approach at the level of FUAs differ from country to country reflecting the problem situation and availability of the instruments supporting integrative land use and environmental management at this level, supporting proper arrangement of urban structure according to the principles of spatial order and environmental functioning rules.

The common denominator for LUMAT partner countries is the need to link economic benefits derived from commercial development to the other aspects based on integrated point of view and the need to deal efficiently with the threats between different interests – contradictions.

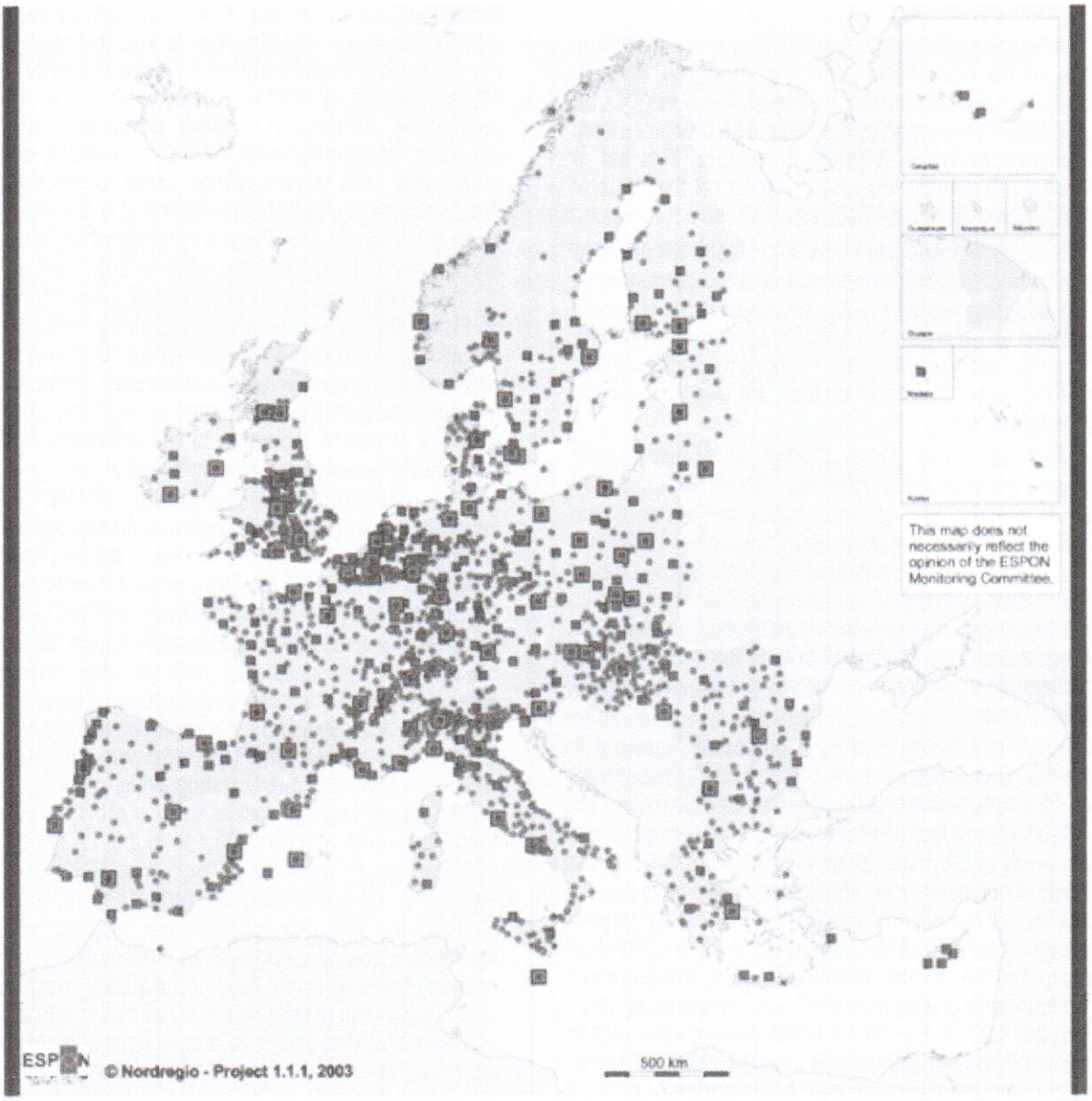
In Germany the FUAs could be benefit from the changes towards an integrated approach in the process for determining what land is used for natural compensation measures. Not only could the appropriate parcels of land be identified for compensation, but this may be determined with view towards other existing types of land demand present in the area, as well as various other aspects. The food production at the regional level and its impacts and contributions to the social, environmental and economic well-being of the region could be further investigated.

In Czech Republic can see the need of integrated approach across the FUAs (even independently form the national borders) in the field of air quality management. Czech legislation is tackling the situation comprehensively and also provides grants to reduce emissions from local sources. The main problem, which is currently the most difficult to deal with is the impact of pollution resources from abroad - Moravian-Silesian Region is recording that at least 1/3 of pollution is originating from abroad.

The second problem of special importance for Czech Republic but for Slovakia as well as is effective transport and coordination in the integrated transport system. The level of FUAs is absolutely essential for effective travelling to the workplace and higher motivation to work. The second positive impact is a reduction in individual traffic when public transportation will be set up so perfectly that it will be more effective than individual transport. The benefit would be a reduction of PM10.

Among the problems requiring integrated approach across FUAs appears several time (Czech Republic, Slovakia) the problem of water management. Water - has essentially two problems: water resources and water supply management and floods risk management and prevention including the water natural cycle restoration.

Typology of Functional Urban Areas (FUAs)



Source: ESPON 1.1.1 - Potentials for polycentric development in Europe, 2006, Luxembourg

With the floods risk management the problem of integrated rescue system is to be mentioned incl. the cooperation between rescue services - firemen, emergency medical services and the police (Czech Republic).

With the land use management in the FUAs is closely connected the problem of social inclusion/exclusion and (un)employment, which cannot be effectively addressed in the city borders excluding suburbs as it does concern employment-related efficient transport, access to the road and rail transport as well as location and efficient use of existing real estates for new industries, production halls, infrastructure.

The second aspect is the common denominator for all the LUMAT partner countries and it is the balance of direct economic and other effects connected with the development in the city and its functional area influenced by e.g. ignorance of the loss of ecosystem services related to land, soil, green, water. In order to achieve the change it is necessary to standardise the indicators for comprehensive ecosystem service monitoring as the most of the

environmental indicators are monitored only on national level (e.g. in Slovenia). Sufficient development and provision of practice-relevant data and information bases seems to be the challenge for land management and environmental management in the FUAs.

In this context the suburban areas are under the pressure of extensive development and in the same time there is the need for the brownfield regeneration.

Another field is the coordination and efficient use of social infrastructure e.g. in Czech Republic as well as Slovakia for educational infrastructure with the strong need for a unified strategy so that pupils and students are not discriminated against disproportionate traveling for educational purposes on one site and existence of underused buildings and other amenities on the other site.

Strategic cooperation in FUAs

Typical field of necessary strategic cooperation in the FUAs is the proper reaction of differentiated demand on specific living conditions. The efficiency of covering this demand and in the same time safeguarding efficiency of investment and operational cost is not possible in the cities themselves, the optimisation of the financial and extra-financial costs has to content first of all the territory of FUAs. This field is covering across all the LUMAT partner states the broad range of particular problems like:

- Hydrogeological instability and problems (floods, landslides...);
- Soil consumption (especially to high agronomic value) and uncontrolled sprawl in rural areas;
- Reuse of brownfield areas and abandoned, underused buildings;
- Green areas management and evaluation;
- Low integration between transport and polluting emissions policies;
- Lack in policies to incentive the redevelopment and reuse of existing buildings;
- Lack of an integrated environmental management for an efficient use of public resources
- Lack of clear and shared guidance on the mitigation and environmental compensation quantification
- not sufficient protection of ecologically important open spaces (non-fragmented natural areas, habitat corridors, biotope networks) and minimization of further habitat fragmentation

No functioning strategic cooperation is possible without development of awareness about the necessity and benefits from this cooperation among stakeholders as a part of the cooperation capacity building. The lack of proper networking structures, gap in legal environment and responsibility division, insufficient institutionalisation of the governance structures, weak promotion of the benefits from the cooperation seems to be the problem hampering inter-municipal and inter-sectorial cooperation (e.g. between tourism, local agriculture, industry, transport, service providers) between core cities and their suburban areas.

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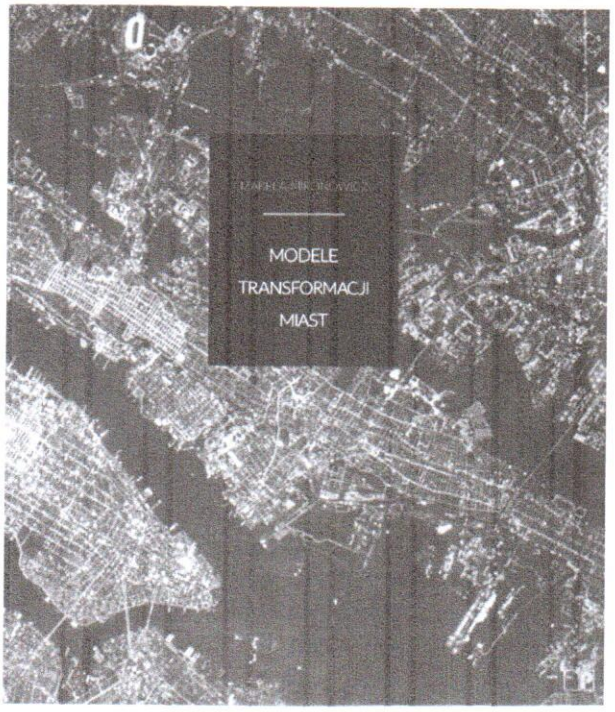
Dagmar Petríková

TRANSFORMATION AND REGENERATION OF CITIES



TRANSFORMATION AND REGENERATION OF CITIES

Oficyna Wydawnicza Politecgniki Wroclawskiej, Wroclaw 2016

ISBN: 978-83-7493-955-3

Transformation and regeneration of cities is with us for centuries. As a product of human civilisation their physical forms evolve both in time and space. Transformation processes are caused by social, cultural and technological dynamic development and are followed by many actions that change the form of urban structures. The author follows the key questions of the science of cities today are those about the very nature of urban change: about the process of urban transformation itself which induce the reorganisation of urban structure, and last but not least about the possible results of this evolution and their perception and interpretation by various groups of citizens. From this point of view the author raises the crucial question whether we can actually influence the future of cities, and if so whether we can develop instruments necessary to influence urban transformation in future.

This book brings deeper inside into transformation processes and instruments of transformation which can offer a better interpretation of the processes taking place in cities, resulting in better spatial interventions and implementations. It refers extensively to models defined as a representation of the city and also at the models described as typical standards patterns of transformation over times and the models which are a set of ideas and numbers that describe the past, present and future state with the focus to define a framework of the paradigm of urban planning of today. The book also brings critical review of several models of transformation. The author considers the models defined as a representation of the city and also the models described as typical standards patterns of transformation over time. She brings critical review of the simulation models which are supposed to reflect particularly well the dynamic features of the city and, in consequence explain and even foresee the transformation of the city. An important aspect that is considered is the aspect of adaptation of the city as a response to a changing environment in order to understand the mechanism of transformation. All these aspects are carefully studied and interpreted from the point of view that a city is perceived more like a process than an object in a particular state. The author analyses how adequate are these models for reflecting and explaining, elements, components, features and interdependencies shaping the city with the focus not only on the integration over time but on the process of shaping new models of city transformation. Without studying possible directions of city evolution and its consequences and creating the model of synergies there will be chaotic development leading to urban dystopia.

This book brings different perspective of understanding the mechanism of urban structure transformation based on responding to a changing environment, which is highly valuable for the theory and practise of urban transformation process nowadays. This the book is not only contribution to the current discourse on the process of urban transformation but to the urban transformation processes in the future.

Dagmar Petríková

BRATISLAVA – TRNAVA PROJECT MEETING 20-22.03.2017

Meeting started with the Project Steering Committee meeting and discussion on the current issues of the project management, communication issues and project reporting. Participants reported the situation with the FLC certification in the partner countries, communication issues have been reported by Matteo Tabasso from PP4 SiTI and the project leader Ms. Anna Starzewska-Sikorska summarized all the main points concerning smooth running of the project.

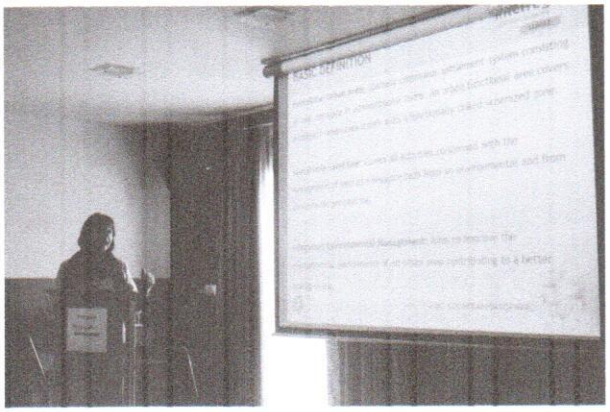


Photo 1:
Justyna Gorgon from Poland presenting issues of FUAs identity.
Photo by Dagmar Petriková

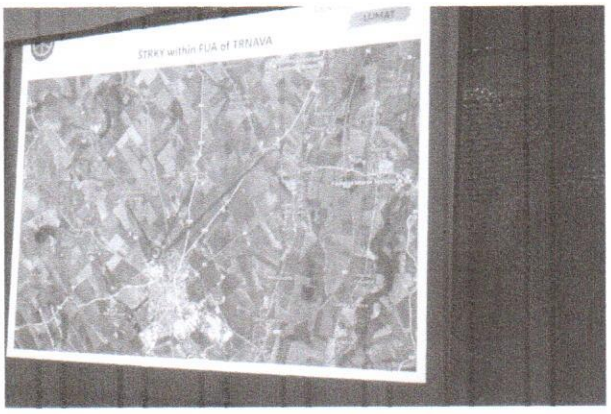


Photo 2: **LUMAT pilot area of Štrky in Trnava.**
Photo by Dagmar Petriková

The meeting has been devoted to WPT1"Methodology, Trainings and Common Understanding of Land Use in Integrated Environmental management" and to WPT2 "Urban/Peri-Urban Action Plans, Strategies and Tools" issues.

In the frame of WPT1 the key issue was training seminars. First training seminar focused on ecosystem services approach to planning and designing urban areas that has been prepared by PP7 (STUBA, SK). Prof. Maroš Finka explained the approach to ecosystem services in the field of land-use planning and management and during the interactive workshops this approach has been trained with the participants under supervision of the Pp7.

The whole session has been summarized in the discussion on the possible approaches basing on partners' experience and visions. Second part of training has been focused on FUAs identity. Prof. Justyna Gorgoń from IETU presented the approach to FUA in the respective LUMAT countries, based on deliverable D.T1.1 "Transnational Report on Policy Framework related to FUAs" and then interactive workshop and training seminar has started, where the main features of FUA have been explained and précised in the interactive workshop. Conclusions on further steps in building FUAs identity have been summarized at the end of the session.

Photo 3: **Discussions in the Slovak team (Maroš Finka, Matej Jaššo, Tomáš Guniš) in WP1.**
Photo by Dagmar Petriková

Photo 4: **LUMAT project team.**
Photo by Matej Jaššo

Part of the meeting was visiting the pilot site in Trnava. Ing. arch. Tomáš Guniš gave presentation on Trnava city development and the need of greenery for the city future development. Therefore the pilot area Trnava-Štrky as Trnava investment project planned within the LUMAT project is focused on green park development for recreation in the FUA area of Trnava city. This approach was also highly appreciated by Mayor of Trnava, Mr. Peter Bročko during our welcome meeting at the Local Council of Trnava.

In the WPT2 session Bernd Siemer as representative of PP3 explained transnational concept of action plans and opened discussion on transnational format of action plans with the focus on enhancing integrated environmental management

In the ending session of the meeting Ms. Anna Starzewska-Sikorska presented the next steps and deadlines of the LUMAT project and agreed the dates of the next LUMAT project meeting in Torino, Italy 25-26 September 2017.

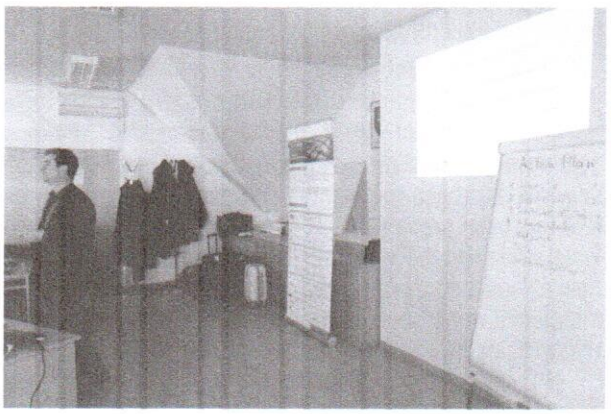


Photo 5:
Uwe Ferber from Germany presenting structure of Action Plan
Photo by Dagmar Petriková

Martin Špaček
Stefan Telle

REGPOL2 NATIONAL WORKSHOP: WORKING TOGETHER OR WORKING IN PARALLEL?

The Innovative Training Network RegPol2 was implemented at the SPECTRA Centre of Excellence, Slovak University of Technology in Bratislava over the last three years and is currently in its final phase. In Bratislava two early stage researches, Martin Špaček and Stefan Telle, conducted research projects focused on cross-border relation. Both projects paid special attention to socio-economic and political responses to regional polarisation in Central and Eastern Europe (CEE).

On 4th May, 2017 the SPECTRA Centre of Excellence hosted the RegPol2 National Workshop: "Working Together or Working in Parallel?". The workshop was an opportunity to present some preliminary results of the two research projects and to receive feedback from altogether 10 expertsfrom the cross-border region Weinviertel - Jižni Morava - Záhorie Region (Austria-Czechia-Slovakia). The participants included representatives of the city of Bratislava, the city of Vienna, and the city of Brno, as well as private consultant companies, local action groups, INTERREG and regional management authorities. The workshop was opened by prof. Maroš Finka, who introduced the RegPol2 project and the need to deal with the ongoing processes of regional polarization. In his opening remarks, prof. Finka stresses the special importance of cross-border cooperation for regional development. In the following workshop section, Martin and Stefan presented an analysis of the decision making processes in cross-border governance, discussing the involvement of non-governmental actors and potential innovative institutional solution to enhance regional development in border regions.

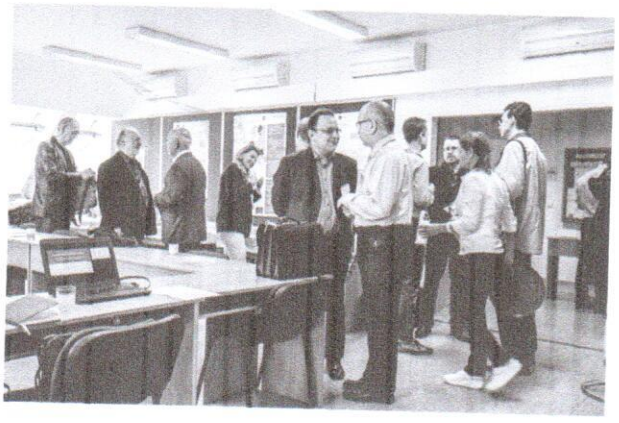


Photo 1:
Welcoming of external participants at SPECTRA Centre of Excellence, Slovak University of Technology in Bratislava
(Photo by Miroslav Beňák)

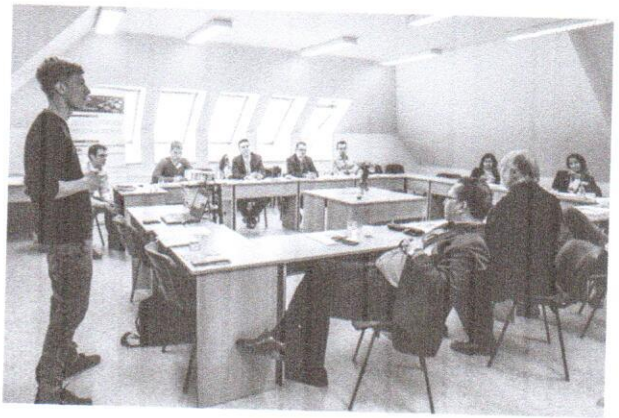


Photo 2:
Stefan Telle is presenting his research „Soft Spaces in EU Cohesion Policy. Opportunities and Challenges in the Coordination of Heterogeneous Interests"
(Photo by Miroslav Beňák)

Photo 3:
Martin Špaček is presenting his research „Multilevel Governance for Balanced Development between Core and Peripheral Spaces"
(Photo by Miroslav Beňák)

The presentations also pointed to concrete factors that enable or inhibit successful political interest-coordination (in terms of consensus-seeking and mutual learning) among a set of heterogeneous actors in a weakly institutionalized environment.

After the presentations, two focus groups discussions followed. In the first focus group, the participants engaged in a lively discussion about their past experiences and future perspectives during the first focus group. The second focus group dealt with main challenges in cross-border coordination and highlighted questions about the suitability of different modes of governance.

During the workshops participants could use an interactive timeline for highlighting the most important cross-border cooperation milestones in the region. The workshop also included an exhibition of historical photographs of the course of cross-border cooperation over the last 25 years, which was lent for the workshop by Jan Hladík.

To sum up, the workshop represented an opportunity to bridge the gap between often different scientific and practical understanding to cross-border issues and to enable mutual learning and knowledge sharing among all participants. Based on the fruitful discussions it is expected to bring more reliable research outputs and better targeted policy recommendations provided by young researchers.

Dagmar Petríková

ERASMUS+ INTERNATIONAL CREDIT MOBILITY (ICM) AT THE STU INSTITUTE OF MANAGEMENT

Erasmus+ International Credit Mobility (ICM) is a new action in the European Erasmus+ cooperation and allows for student exchange from countries outside the European Union to European universities with an Erasmus Charter. Erasmus+ now offers opportunities for students to study and staff to teach or train in higher education institutions (HEIs) beyond Europe. It also makes the same opportunities available for staff and students from countries beyond Europe to come to participating HEIs in Europe. The Slovak University of Technology in Bratislava (STU) has received grant for mobilities with 6 universities in partner countries: Sri Lanka, China, Cuba, Kazakhstan, Russian Federation and Montenegro.

Photo1: **Team of ICBT Colombo with team of IoM STU in Bratislava.** *Photo by Pasindu Gunarathna*

Slovak University of Technology in Bratislava, Institute of Management has developed cooperation with the ICBT Colombo in Sri Lanka and with the ECNU Shanghai, China in the periods of 2016-2018. Cooperation was successful and it will be prolonged also for the period of 2017-2019.

STUBA team of the SPECTRA Centre of Excellence (Prof. Finka, Assoc. Prof.. Petríková, Dr. Ondrejička, Dr. Jamečný, Dr. Ondrejičková) has been active in organizing two projects in the frame of Erasmus+ ICM with the International College of Business and technology (ICBT) in Colombo, Sri Lanka and with East China Normal University (ECNU) Shanghai, China.

In Sri Lanka the team was co-organising series of 8 workshops in the cities Colombo and Kandy in Februar 2017. The events were dedicated to the New Urban Agenda approved in October 2016 during UNO Habitat III summit in Quito. The workshops were focused on the fulfilment of the sustainable development goals and adaptation measures concerning climate change in urban environment, savings potential and utilising of energy based upon the renewable resources and utilising of ecosystem services. Simultaneously, there are negotiations on research and education collaboration of STU and partner school International College of Business and Technology (ICBT).

Photo 2: **Workshop 1 at ICBT Colombo.** *Photo by V. Ondrejička*

One of the lectures by Professor Finka, was held at University of Peradenyia (UP in Kandy), one of the most prestigious research institution in Sri Lanka which led to the new project cooperation under Erasmus+ ICM also with the UP in Kandy in the period 2017 – 2019.

STU in Bratislava will host 5 lecturers and 2 colleagues from Sri Lanka this year and 2 STU PhD. students will visit ICBT in Colombo, all covered by ERASMUS+ network.

In June 2017 the team was co-organising the series of 4 workshops dedicated to the topics of External shocks and climate change as the challenges for management of urban socio-ecosystems and to Multiple Challenges for Mutual Interactions of Landscape Ecology and Management of Urban Development. In October 2017 the ECNU colleagues from China will take part in the STU conference to celebrate the 80th anniversary of the STU in Bratislava.

Photo 3: **Workshop 2 at ICBT Colombo.** *Photo by Ľ. Jamečný*

Photo 4: **Workshop 3 at ICBT Colombo.** *Photo by S. Ondrejičková*

Authors:

Stanislava Brnkaľáková, CE SPECTRA Slovak Academy of Sciences and Slovak University of Technology, Vazovova 5 812 43 Bratislava, Slovakia, CETIP Network
stanislava.brnkalakova@stuba.sk

Maroš Finka, Prof., MSc., PhD.,Institute of Management, Slovak University of Technology, Vazovova 5, 812 43 Bratislava, Slovak Republic
maros.finka@stuba.sk

Veronika Gežík, MSc., Institute of Management, Slovak University of Technology, Vazovova 5, 812 43 Bratislava, Slovak Republic
veronika.gezik@stuba.sk

Ľubomír Jamečný, Msc., PhD., The Slovak University of Technology, Institute of Management, Vazovova 5, 812 43 Bratislava
lubomir.jamecny@stuba.sk

Tatiana Kluvánková, prof., Mgr., PhD.,Slovak Academy of Sciences and Slovak University of Technology, Vazovova 5 812 43 Bratislava, Slovakia, CETIP Network
tatiana.kluvankova@stuba.sk

Mária Kozová, Prof., Dr., PhD., Catholic University in Ruzomberok, Slovak Republic
maria.kozova@gmail.com

Vladimír Ondrejička, Msc., PhD., The Slovak University of Technology, Institute of Management, Vazovova 5, 812 43 Bratislava
vladimir.ondreicka@stuba.sk

Dagmar Petríková, Assoc. prof., PhDr., PhD., Slovak University of Technology in Bratislava, Institute of Management, Vazovova 5, 812 43 Bratislava
dagmar_petrikova@stuba.sk

Martin Špaček, MSc., CETIP Network s.r.o., Nad Primaskou 2468/1a, 100 00 Praha – Vinohrady, Czech Republicm
spacek@e-academia.eu

Stefan Telle, MSc., Institute of Management, Slovak University of Technology, Vazovova 5, 812 43 Bratislava, Slovak Republic
stefan.telle@stuba.sk

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