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Landscape planning as one of the most important spheres determining the lifestyle environment and the framework of the societal organisation, being a complex process dealing with hardly predictable future, numerous variables and interested parties, involves a high degree of uncertainty. Dynamic, mutable and hard to define rurban landscapes emerging in the areas of rural-urban interface also imply a lot of uncertainty. These territories are a specific component and the indicator of the metropolisation as well. This means that planning of such landscapes is a difficult task requiring a distinctive approach. The aim of this research was to develop and present the rurban landscape planning principles. The approach to the rurban landscape planning and related research presented here can be identified as multiscale scientific sustainability-based: we have distinguished four major interrelated scales – global, regional, national, and local - and analyzed aspects of uncertainty that should be evaluated and precautionary measures that can be taken, the research that should be carried out, the most relevant landscape sustainability dimensions, and the documents that must or can be employed at each scale. In order to illustrate the relevance and applicability of the presented approach it was illustrated with the case of Lithuania. We have demonstrated the problems and challenges of landscape planning related to rural-urban interface in Lithuania originating at global, regional, national, and local levels, relevant documents and recommended actions for more sustainable development of rurban areas in the overall context of landscape planning. The analysis has shown that the extensive juridical basis and the volume of other documents at all levels exist for successful planning and management of rurban areas in the country and the main problems causing contemporary failure to regulate the processes rural-urban interface are related with the lack of understanding or rurban problematic and the lack of understanding global, continental, and regional contexts, the lack of strategic integrated thinking, transparency, and competences in the planning process.

KEYWORDS: rural-urban interface, rurban landscape, landscape planning, multiscale approach, Lithuania.

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Introduction

Uncertainty - the state of being unsure of something, unpredictability, doubt - is an essential feature of contemporary life in many of its spheres and, as Antrop (2004) notes, is characteristic to landscape change and planning - i.e. the objects of this research. Landscape planning - a complex process and a complex of activities that aim to steer ongoing processes structuring our environment - deals with a hardly predictable future, lots of variables, is accessible for many parties, both governmental and non-governmental and, consequently, implies a lot of uncertainty (Antrop 2004, Westerink *et al.* 2012). Moreover, planning of rural-urban interface areas in particular means dealing with many sources and aspects of uncertainty simultaneously, as these territories themselves are the clear examples of uncertainty in and complexity of contemporary landscape and can be seen as the complex systems in the state far from equilibrium both with reference to urban or rural territory model or as the composites of contradictions (Antrop 2004, Jerpasen and Swensen 2005, Nilsson *et al*. 2008): delimitation between urban and rural becomes a fluid, relatively indistinct transition from what people would characterize as the city proper and the surrounding countryside (Antrop 2004, Jerpasen and Swensen 2005); land zoning borders in these dynamic landscapes do not remain a stable delineation even for a short time (Antrop 2004); rapid changes in land use extensively affect the character of natural and cultural historic landscapes (Swensen and Jerpasen 2008); landscape diversity, heterogeneity and fragmentation result in more complex forms of multifunctional land use (Antrop 2004); unclear meaning of these areas: whether they are urban or rural, a platform for dynamics or the assets to be preserved, a production or a consumption landscape (Westerink *et al*. 2012) etc. Many factors, both non-local (Musacchio 2009) and local, affect rurban landscapes, their development is determined at different scales from global to local, numerous research approaches and methods are needed in order to understand these landscapes, many documents of international, national or local significance can actually or potentially influence their planning and the lack of experience in planning and managing these emerging types of landscape is evident (Musacchio 2009).

The factor of uncertainty both in the field of landscape planning and the complexity and uncertainty embodied in the rurban landscapes themselves encourage to look for the planning approaches. The aim of this research is to develop and present rurban landscape planning principles and to illustrate their applicability using the case of Lithuania.

Theory and methods

According to Antrop (2004), uncertainty in landscape planning cannot be avoided, but the appropriate methods must be applied to deal with it and the precautionary principle is an adequate measure in this case. The precautionary principle states that an action should be taken when a problem or threat occurs, not after harm has been inflicted; it is an approach to decision-making, which justifies preventive measures or policies despite scientific uncertainty about whether detrimental effects will occur (World... 1998). The key elements of precautionary principle include: the anticipatory action to prevent harm, community's right to know complete and accurate information on potential impacts, examination of the full range of alternatives including no action, full cost accounting when evaluating potential alternatives, transparent, participatory decision making informed by the best available science and other relevant information (Wingspread... 1998, Environmental... 2014). Consequently the precautionary principle in rurban landscape planning under condition of uncertainty requires multiscale scientific sustainability-based approach in planning and related research ranging from global to local level and from abstract to very specific and concrete place-based information.

The multiscale or multi-level principle is being extensively applied in landscape planning and research (Rozenblat 2009, Berte et al. 2013, City... 2014) and is implemented at the political and societal levels (Jeffery 1997, Tasan-Kok and Vranken 2011) The general term means pertaining to, or operating across multiple scales solving physical problems, which have important features at

multiple scales, for example, spatial scales (Geiser 2014). According to Berte et al. (2013), multi-scale processes in landscapes underpin both the natural and the social systems, which are based on multilevel relations. Thus the rurban landscapes as socio-ecological systems (Resilience... 2002, Low Choy and Buxton 2011) or coupled human and natural systems (Musacchio, 2009) are not an exception. With reference to Berte et al. (2013) and Antrop (2000) several important principles of multiscale systemic approach applicable to rurban landscapes can be distinguished:

- Rurban landscapes change continuously under influence of "internal" (those that may be controlled at the local level - urban settlement and its zone of influence) and "external" (influence on the local landscape conditions through upper level strategies and policies, for example, of national and supra-national levels) factors.
- Decisions directly or indirectly influencing rurban landscapes are made on different hierarchical levels of policy-making (for example, from the global or the EU (European Union) level to municipality or local place level) and manifest themselves in terms of actions at different levels (from changes in ideas and paradigm shifts (sustainability, precautionary principle etc.) to arrangements of lots in suburbs and infrastructure planning).
- Multiscale processes work through connections, junctions, and linkages between the dynamics at different levels (for example, rural-urban interface problematics should be recognized at the global, regional, national levels, and so forth).

According to Vanempten (2009), "rurbanity also challenges policy-making concerning these areas, requesting an integrated rather than a sectorial approach and a regional perspective and scale for their redevelopment. The rurban reality therefore challenges contemporary urbanism to go beyond its classical boundaries and methods, to incorporate other disciplines, to play out its integrating role". As the precautionary principle indicates, the actions at each scale (regional, national, local etc.) must be guided by the adequate scientific research, regulatory documents, and other relevant information (Environmental... 2014). Landscape research and its applications in planning use and combine very different scientific methods from natural to social sciences (Antrop 2004); numerous research approaches and methods can be successfully applied at different levels, in different scales, for analyzing spatial, temporal and other aspects of rurban landscapes: landscape monitoring and analysis based on remote sensing, GIS based approaches, for example, historic map overlay and historic landscape characterization, visual landscape characterization, aesthetic and ecological assessment, cultural and economic valuation, analysis of social significance etc. Numerous international, regional, national, local level strategic, political and legal documents, research and management guidelines, reports, reviews, plans, feasibility studies and other material can and should also be used in planning and management of rurban landscapes. Thus it is important to carry out the appropriate researches and to apply the appropriate guiding documents at the appropriate scale.

In order to solve this question, the concepts of sustainability science - research that produces useful knowledge and practical advice for highly complex problems (Clark 2007, Musacchio 2009) - and landscape sustainability were applied. According to Clark (2007), "sustainability science is a field defined by the problems it addresses rather than by the disciplines it employs" and focuses on the "understanding the complex dynamics that arise from interactions between human and environmental systems" and the "advancing understanding of coupled human-environment systems" in the "areas ranging from complex systems theory to cultural and political ecology". Musacchio (2009) noted that researches and practitioners working in the field of landscape research "have reinterpreted the definition of sustainable development to include the holistic basis of landscapes" and distinguished environment, economics, equity, aesthetics, experience, and ethics as the dimensions of landscape sustainability.

Considering the issues discussed above - 1) uncertainty related with landscape planning and rurban

landscape as a particular landscape type, 2) precautionary principle requiring anticipatory action, right to know, alternatives assessment, full cost accounting, and research based participatory decision process (Environmental..., 2014), 3) multiscale approach to landscape research and planning, the ideas of 4) sustainability science and 5) landscape sustainability in the interrelated dimensions of environment, economics, equity, aesthetics, experience, and ethics (Musacchio 2009), the approach towards rurban landscape planning and related research based on four major interrelated scales - global, regional, national, local - was developed. The outline of the approach is presented below and includes the short definition of each scale and the identification of the most important aspects regarding uncertainty, precautionary measures, sustainability science, landscape sustainability, and documents and measures at each of these scales:

1 ***Global scale*** - world scale, the whole of human civilization, experience, trends, ideas, non-local phenomena (Musacchio 2009). **Uncertainty**: outcomes of globalization, economic, social, environmental, urban dynamics at the global scale, emerging ideas and technologies, paradigm shifts. **Precautionary measures**: anticipatory action, alternatives assessment, research based decision process. **Sustainability science**: ideas and paradigms regarding human-nature interactions, globalization, global phenomena of urbanization, metropolisation, urban sprawl, landscape and lifestyle changes, and climate change etc. **Landscape sustainability**: the most relevant dimensions of landscape sustainability at this level are environment, economics, equity, experience, and ethics. **Documents and measures**: international documents - charters, conventions, documents, reflecting relevant experience of different regions and countries, feasibility studies and reports on social, demographic, economic, environmental, rural, urban etc. dynamics at the global scale, landscape and geographic monitoring systems, spatial analysis systems etc.

2 ***Regional scale*** - continental (for example, European scale of planning), supra-national regional level. **Uncertainty**: economic, environmental and related urban dynamics at the regional scale, changes in landscape identity across regions, unclear social, economic and ecological outcomes of strategies and plans etc. **Precautionary measures**: anticipatory action, alternatives assessment, full cost accounting, research based decision process. **Sustainability science**: urbanization dynamics, economic flows, even or uneven development, identity of regions etc. **Landscape sustainability**: the most relevant dimensions of landscape sustainability at this level are environment, economics, equity, experience. **Documents and measures**: sustainability strategies and other strategic and political documents regarding urbanization, economic development, infrastructure, environment etc., directives, feasibility studies, reports of continental or regional level, landscape and geographic monitoring systems, spatial analysis systems etc.

3 ***National scale*** - territory of the country. **Uncertainty**: landscape transformations and urban dynamics at the national scale, changes in landscape identity, unclear social, economic and ecological outcomes of strategies and plans etc. **Precautionary measures**: anticipatory action, alternatives assessment, full cost accounting, research based decision process. **Sustainability science**: nature-human interactions at the national scale, urbanization dynamics at the national scale, even or uneven development of regions at the national scale, historic landscape character, national identity etc. **Landscape sustainability**: the most relevant dimensions of landscape sustainability at this level are environment, economics, equity, experience. **Documents and measures**: national sustainability strategies, various strategic plans of national level, master (general) plans of the territory of the country, feasibility studies, reports concerning national level, landscape and geographic monitoring systems, spatial analysis systems etc.

4 ***Local scale*** - encompasses different levels from the local place to the whole metropolitan area (City... 2014) including urban settlement/city and its influence zone, rurban territory

etc. **Uncertainty**: landscape transformations at the local scale, multiplicity of stakeholders, conflicting interests, unclear aesthetic, social, economic and ecological outcomes of plans etc. **Precautionary measures**: anticipatory action, right to know, alternatives assessment, full cost accounting, research based participatory decision process, particular attention should be paid at the right to know and participation. **Sustainability science**: research on the interactions between urban settlement and surrounding natural and rural areas, between society and environment at the local level, questions of landscape fragmentation (ecological, aesthetic, social), multifunctionality, sustainability of communities, historic landscape character, local identity, environmental conditions, human health etc. **Landscape sustainability**: at this scale all the dimensions of landscape sustainability - environment, economics, equity, aesthetics, experience, and ethics - become relevant, particular attention should be paid at environment, aesthetics and social issues. **Documents and measures**: sustainability strategies, urban development strategies of the city and its zone of influence, feasibility studies, reports concerning local level, master plans, special plans, detailed plans, place concepts (Westerink *et al*. 2012), landscape and geographic monitoring systems, spatial analysis systems etc.

Results

Uncertainty is the particular feature of Lithuanian landscape development and planning including the rapidly emerging rurban areas both because of the shifts from the centralized Soviet urban planning to the present day situation and due to the non-control of the evolution according to the lifestyle changes and the liberalist economic trends. This encourages us to review problems and challenges of landscape planning related to rural-urban interface in Lithuania and to illustrate the relevance and applicability of the above-presented approach with its case.

The appropriate regulation of the process of urbanization and landscape sustainability and perceived quality is the basic premise for the development of healthy, aesthetic and ergonomic living, work, and recreational environment. In different countries these activities are developed in concept, legal, administrational, and territorial planning levels (Kamičaitytė 2000, Kamičaitytė-Virbašienė 2003). Kamičaitytė (2000), Kamičaitytė-Virbašienė (2003) carried out an extensive review how the process of urbanization and landscape visual quality, both very important for development of metropolitan areas, are regulated in different countries including France, Italy, and Spain. Lithuania also has a body of strategic, political, legal, and territorial planning documents directly and indirectly influencing urbanization, landscape quality and the development of rurban landscapes from the National Strategy of Sustainable Development (Government of the Republic of Lithuania 2003, 2011) to master plans of urban settlements and detailed plans. Kamičaitytė (2000) presents general scheme of regulation of urbanization process encompassing six steps: provisions of regulation of urbanization, legal basis, administration and planning, urbanization, monitoring, and evaluation of results (Fig. 1).

The last two stages - systematic monitoring and assessment - are very important in order to demonstrate the reality of territorial planning in Lithuania in the context of rural-urban interface and to develop adequate recommendations. However, no official systematic monitoring of urban dynamics is carried out at the present day in Lithuania (Bardauskienė and Pakalnis 2010). Consequently the review of the present situation was based on the territorial planning documents, existing scientific researches and reviews including Pakalnis (2010), Bardauskienė and Pakalnis (2010, 2012), Pakalnis and Bardauskienė (2012), Čereškevičius (2012), Cirtautas (2012), Gadal (2011, 2012), Ramanauskas and Dringelis (2011, 2013), Vanagas and Neniškis (2000), ongoing changes in landscape and our own observations. The problems and challenges of landscape planning related to rural-urban interface originating at different levels distinguished in the previous section - global, regional, national, local - relevant documents and recommended actions for more sustainable development are presented below.

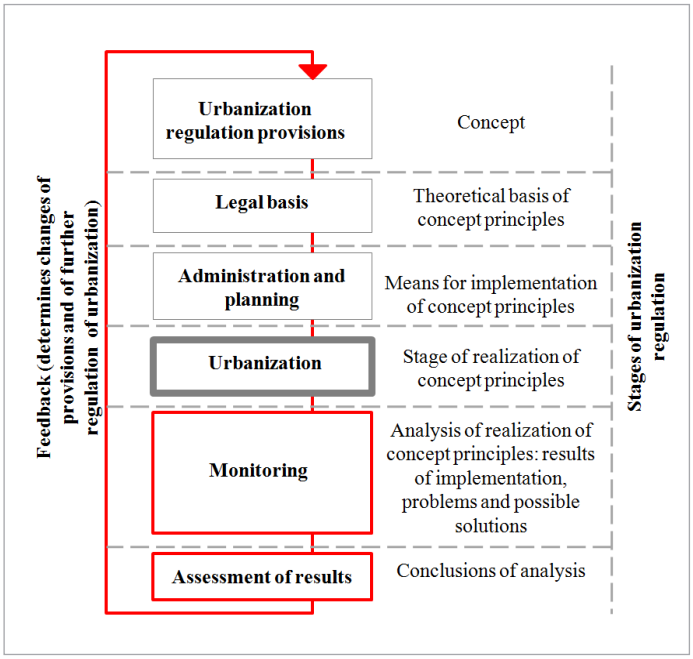

Fig. 1
General scheme of regulation or urbanization process demonstrating the importance of systematic monitoring and assessment of results redrawn and translated from Kamičaitytė (2000)

1 ***Global scale*. Problems:** different trends and ideas affect contemporary landscape planning and management of rural-urban interface and related research around the world including the ideas presented above (socio-ecological systems and resilience of such systems (Resilience... 2002, Low Choy and Buxton 2011), precautionary principle, development of contemporary cultural landscapes (Berte *et al*. 2013), ecoaesthetics, holistic, integrated approach towards landscapes, multiscale approach to planning) as the answers and reactions to contemporary global environmental, aesthetic, economic and other challenges. Many of these ideas have originated as a part of sustainability science and are linked with the general idea of sustainable development. Even if Lithuania has the official National Strategy of Sustainable Development declaring that strategic priorities and principles of the country's sustainable development reflect Lithuanian interests, peculiarities, the priorities of the Renewed EU Sustainable Development Strategy and other programmatic documents and Lithuanian landscapes, including the areas of rural-urban interface, are affected by such global trends as metropolisation, industrialization, commercialization, uniformity, it is possible to state that the principles of sustainability still are not integrated into the territorial planning (Ramanauskas and Dringelis 2013) and are not visible in actual development of the rurban areas. According to Bardauskienė and Pakalnis (2010), it is difficult to evaluate the correspondence of contemporary landscape and urban dynamics of the country to the principles of the National Strategy of Sustainable Development as no systematic monitoring and evaluation of urban development are carried out; however, the contemporary landscape reality demonstrates basic discrepancies, the more detailed analysis of which is presented below at the lower - regional, national, local - levels.

Actions: integration of the global experience, advances and paradigms corresponding country's interests, peculiarities, and identity into the territorial planning and their systematic application to rurban areas.

Documents: Paradigmatic documents: Our Common Future (World Commission on Environment and Development 1987), Wingspread Statement on the Precautionary Principle (1998), Rio-Declaration, Agenda 21 (United Nations Conference on Environment and Development 1992), Johannesburg Declaration on Sustainable Development and Johannesburg Plan of Implementation (World Summit on Sustainable Development 2002) etc. Sectorial documents important to rurban areas: Charter of New Urbanism (The Congress for the New Urbanism 1996) regarding polycentric multifunctional development of rurban areas, Burra Charter (Australia ICOMOS (International Council on Monuments and Sites) 1979, 2003), Charter on the Interpretation and Presentation of Cultural Heritage Sites (ICOMOS 2008) regarding cultural significance and interpretation of rurban landscapes, International Charter for the Conservation and Restoration of Monuments and Sites (2nd International Congress of Architects and Technicians of Historic Monuments 1964.),

Historic Gardens Charter (ICOMOS 1981), Charter on the Built Vernacular Heritage (ICOMOS 1999) regarding rural heritage in rurban areas etc.

2 ***Regional scale*. Problems:** The competition of urban settlements in the continental, regional and even in the global context is the new reality that Lithuanian urban development policy has to face (Cirtautas 2012) together with the integration into the European, Baltic Sea region organizations and that affects rural-urban interface processes. Researchers analyzing the problematics of country's spatial development in the regional scale (Vanagas and Neniškis 2000, Vanagas 2003, Gadal 2011, 2012, Cirtautas 2012) identify the lack of contextualization and insufficient interest in the potential of spatial organization of Lithuanian territory and cities in the international context (Vanagas and Neniškis 2000), the absence of integrated territorial politics linked to the economic development and of real development policy at the national and regional levels (Gadal 2011, 2012). According to Vanagas and Neniškis (2000), the collapse of the planned urbanization system of the Soviet era, the period of geopolitical reorientation resulted in ignoring the international context and international territorial systems and Lithuania being seen solely as a transit country; the policy of even regional development of the Soviet period in this new reality is even seen as a shortcoming and the possibility to increase the potential of Lithuanian cities by creating bipolar structure - tandem of two cities - is discussed (Vanagas and Neniškis 2000, Vanagas 2003). The geopolitical reorientation and the emphasis on large urban structures, the process of metropolisation are changing and will change in the future the problematics of rural-urban interface in the country.

Actions: integration of the continental and regional experience, advances, ideas and provisions of documents corresponding country's interests, peculiarities, and identity into the territorial planning and their systematic application to rurban areas, contextualization of territorial planning taking into account the situation including communication routes and urban dynamics in the continent and in the Baltic Sea Region, development of more active territorial and spatial strategy in the regional context (Vanagas and Neniškis 2000) taking into account contemporary socio-economic and geopolitical realities and Lithuanian experience of even regional development, understanding the role and potential of Lithuanian urban settlements in the continental network of cities, examination of the full range of urban dynamics alternatives and full cost accounting when evaluating potential alternatives in the regional context.

Documents: European level paradigmatic and sectorial documents: Renewed EU Sustainable Development Strategy and related documents, European Landscape Convention (Council of Europe 2000), European Spatial Development Perspective (European Commission 1999), The Cork Declaration (The European Conference on Rural Development 1996), Urban Sprawl in Europe, the Ignored Challenge (European Environment Agency report 2006), Leipzig Charter on Sustainable European Cities (Council of Ministers 2007), Pan-European Biological and Landscape Diversity Strategy (3rd Ministerial Conference "An Environment for Europe" 1995) etc. EU directives: Environmental Impact Assessment Directive, Strategic Environmental Assessment Directive, Environmental Liability Directive, Habitats Directive, Urban Waste Water Directive etc. Regional initiatives: Wismar Declaration on Transnational Spatial Planning and Development Policies for the Baltic Sea Region (Conference of Ministers Responsible for Spatial Planning and Development in the Countries of the Baltic Sea Region 2001) and other initiatives by VASAB (Visions and Strategies around the Baltic Sea) - intergovernmental multilateral co-operation of 11 countries of the Baltic Sea Region in spatial planning and development, guided by the Conference of Ministers responsible for spatial planning and development, steered by the Committee on Spatial Planning and Development of the Baltic Sea Region composed of representatives of respective ministries and regional authorities (Visions... 2014).

3 ***National context*. Problems:** Legal documents regulating urban dynamics, rural and regional development in the country change and are constantly amended. Recently adopted

new Law on Territorial Planning and related documents (2013, 2014) integrate some advances of territorial development, including notion of sustainability, complex (integrated) territorial and spatial development, multifunctionality etc. However, the post-Soviet transition process, legislation changes and the lack of consistent approach condition that currently the actual territorial and spatial development does not follow strategies and plans including the goals of sustainability (Ramanauskas and Dringelis 2013) - there is a dichotomy between the reality of urbanisation and urban development plans implemented by municipalities or the state (Gadal 2011) - and this situation is clearly reflected in the areas of rural-urban interface surrounding largest cities of the country. Contemporary urbanisation is guided by liberalism and the reality of spatial dynamics of metropolisation and urbanisation and de facto existing urban metropolitan regions still are not recognized by the state (Gadal 2011, Cirtautas 2012). The well-known case of Vilnius-Kaunas Dipolis (Vanagas and Neniškis 2000, Vanagas 2003) demonstrates the contradictions between the theoretical ideas and the actual processes, as both cities extend into opposite direction (Gadal 2011). Another example is land restitution and unregulated privatisation of land after the collapse of the Soviet regime regardless of master plans (Ramanauskas and Dringelis 2013), which became one of the reasons of unregulated development of rural-urban interface areas. In fact, the researches (Bardauskiene and Pakalnis 2010, Pakalnis 2010; Čereškevičius 2012, Cirtautas 2012, Ramanauskas and Dringelis 2013) and landscape reality demonstrate the paradoxical situation - the territorial planning often follows development and interests. According to Pakalnis (2010), in public realm the territorial planning is controversially perceived as a chain of procedures aimed at legalizing certain activities, as a means to realize of hinder certain development projects. Trends and scale of development of some urban settlements envisioned in planning documents are not objectively determined by the logics of urban dynamics but adjusted to the needs of the politicians of local municipalities and the influential business interests standing behind (Čereškevičius 2012). This lack of competence and transparency determined the deregulation of urban expansion and the disproportionate influence of market forces and private capital in the contemporary urban development (Cirtautas 2012, Ramanauskas and Dringelis 2013) especially in rurban areas. Another aspect determining unregulated and ineffective urban planning identified by Pakalnis (2010) is the dominance of sectorial influence (environmental protection, creation of favorable conditions for economic activities, heritage preservation etc.) over the general integrated goals of master and detailed plans.

Actions: Improvement of planning and landscape management competences. Development of complex policy of urban, rural, and regional development and overall vision of country's spatial development (Bardauskienė and Pakalnis 2010) integrating anticipatory action, alternatives assessment, full cost accounting, research based decision making process, understanding of rurban problematics and incorporation of related concepts into legal documents. Sectorial interests must be integrated in and coordinated (Pakalnis 2010) by the common vision of rural and urban development. Urban dynamics, rural-urban interface, rural development, development of country's regions must be systematically monitored and evaluated at the national level. National level institutions should be actively involved in the development of master plans (Bardauskienė and Pakalnis 2010).

Documents: Strategic documents: Strategy of Long-term Development of the Country (Seimas of the Republic of Lithuania 2002), Strategy of Lithuanian Regional Policy (Government of the Republic of Lithuania 2005), National Strategy of Sustainable Development, Lithuanian Strategy of Environmental protection (Ministry of Environmental Protection of the Republic of Lithuania 1996), National Strategy of Rural Development (Ministry of Agriculture of the Republic of Lithuania 2007) etc. Political and program documents: Landscape Policy of the Republic of Lithuania (Government of the Republic of Lithuania 2004), Architecture Policy of the Republic of Lithuania (Government of the Republic of Lithuania 2005), Program of Regional Development of the Republic of Lithuania (Government of the Republic of Lithuania 2006) etc. Laws: Law on Land Reform (1991, 2013), Law

on Regional Development (2002), Law on Territorial Planning and related documents (1995, 2013, 2014), Law on Protected Areas (1993, 2001), Law on Immovable Cultural Heritage (1994, 2004), Law on the Land (1994, 2004), Law on Forests (1994, 2001), Law on Construction (1994, 2014), Law on Green areas (2007) etc. Territorial planning documents of national scale, for example, Master Plan of the Territory of the Republic of Lithuania. Research reports, feasibility studies, resolutions; for example, the resolutions of the Urban Forums each year organized by the Ministry of Environment and other institutions. The Urban Forum of 2010 was dedicated to rural-urban interface.

4 ***Local context*. Problems:** The prospects of urban development acquire the juridical basis through the solutions of master plans (Čereškevičius 2012). The local level - territory of municipality, urban settlement, segments of the rurban areas - clearly demonstrates the shortcomings of the territorial planning and of the development of the rurban areas in Lithuania. According to Bardauskienė and Pakalnis (2010), cotemporary master plans of urban settlements fail to balance the socio-demographic trends and the desire of municipalities to create new territories for investment. In the context of rural-urban interface this means the development and expansion of urbanization into rural and natural areas being uncoordinated with the overall development of the city. Official statistics demonstrates that the overall number of inhabitants and the urban population in Lithuania is constantly decreasing. According to Čereškevičius (2012), in almost all country's urban settlements with the population over 10 000 the number of inhabitants has decreased in the period of 1989-2011, the future prognosis is also threatening. Meanwhile, the master plans for the cities prepared during 2005-2010 envision the population increase from 1.5 to 15.4 percent in these urban settlements. This ungrounded theoretical increase in the urban population is reflected in the territorial planning solutions - the average increase of the territories of the cities in these plans is 44.7 percent (Čereškevičius 2012); for example, the master plan of Vilnius city adopted in 2007 envisions the territory of 3000 hectares for new development (Bardauskienė and Pakalnis 2010, Rimkutė 2011); the region of Kaunas is characterized by a strong process of suburbanization and rurban dynamics in the demographic context of population decline (Gadal 2011). Such evident imbalance between the demographics and new territories intended for urbanization in the master plans combined with the above-mentioned dominance of market forces and business interests reflected in the development of built fabric, when detailed plans are prepared solely for the small lots of developers or builders without the wider context, inevitably creates scattered low density urban sprawl chaotically transforming agricultural territories into suburban residential areas without clear and legible urban structure, public spaces and corresponding infrastructure (Bardauskienė and Pakalnis 2010, Pakalnis 2010, Ramanauskas and Dringelis 2011, 2013, Cirtautas 2012) with all the negative consequences on landscape identity, environment, cultural heritage, agriculture, urban composition and aesthetics etc. Moreover, the master plans of the municipality of the city and of the municipality of the surrounding district often are not coordinated as the research of Ramanauskas and Dringelis (2013) well demonstrates with the case of Kaunas city and Kaunas district master plans which envision more new built up areas than currently exist.

Another important issue in territorial planning in general and in development of rurban areas in particular is public participation. According to Jakaitis (2005), Pakalnis (2010), despite the numerous procedures of publicity and public participation in territorial planning guaranteed by the legislation of the country, society, due to its passivity or due to complicated planning procedures, is not aware of the decisions made by the institutions and their influence on the quality of life. Rural-urban interface areas with low population density, characteristic social conflicts and conflicts of interests constitute a particular challenge for participatory decision-making. In fact the scattered urbanized islands in rural or natural landscape in the rurban areas are often planned solely based on the short-term economic efficiency criteria relevant to the developer.

Actions: In the multiscale planning of rurban development the most important is supporting the local context under a multiscale perspective (Berte *et al.* 2013). In this local scale, where the character, identity, functionality, environmental sustainability of rurban areas is revealed, all the precautionary measures - anticipatory action, right to know, alternatives assessment, full cost accounting, research based participatory decision process - should be implemented. Several important actions that can be implemented through the legislation and territorial planning documents should be mentioned: coordination of planning documents (for example, master plans of the municipality of the city and of the municipality of surrounding district) in order to control the territorial urban expansion and unnecessary development of infrastructure - compact, "brown" urbanism (Bardauskienė and Pakalnis 2010, Pakalnis and Bardauskienė 2012), priority of integrated vision, image of the rurban area over the sectorial interests (Pakalnis 2010), integration of rural vernacular settlements and relicts of rural landscape in rurban areas (Costa and Batista 2011), application of functioning mechanisms of consolidation of properties and land acquisition to the public needs for development of multifunctional, polycentric rurban areas with necessary infrastructure, legible urban structure and public areas (Ramanauskas and Dringelis 2011) and optimizing qualitative and quantitative parameters of existing and new structures (Čereškevičius 2012) in rurban areas (researches demonstrate that investments in infrastructure are ineffective if density is lower than 30 residents per hectare (Bardauskienė and Pakalnis 2010)). At this level particular attention should be paid at the development of communities and their participation in decision making. The research by Jakaitis (2005) demonstrates that public participation is more effective using not only compulsory but also informal means including forums, lectures, seminars and should start at the stages of visions and concepts. This is important in the rurban areas, where numerous social conflicts and conflicts of interests emerge. Another of his findings - that the efficiency of public participation is directly depending on the degree of polycentricity of the urban area and inversely dependent on the level of abstractness of territorial planning goals - also demonstrates the need of polycentric rurban development resulting not only in qualitative and efficient urban structure, but also in active communities and the importance of participation in the local level, especially concerning the development of particular residential segments of rurban areas.

Documents: Strategic documents: strategies of development of particular urban settlements or regions. Territorial planning documents: master plans of municipality territory and its parts, detailed plans, special plans of municipality territory and its parts (for example, land management schemes, rural development projects, plans for development of engineering infrastructure, plans of protected areas etc.). Projects: construction projects, projects of green areas etc. Other documents: development programs, feasibility and scientific studies, reports concerning local level.

Conclusions

1 *Planning problematic*. Landscape planning as a future-oriented activity targeted at such a complex entity as landscapes involves a lot of uncertainty. Rurban landscapes themselves being hardly definable and unstable and their development, which is affected by many non-local and local factors and determined at different scales from global to local, can be also characterized with the term "uncertainty". The factor of uncertainty both in the field of landscape planning and the complexity and uncertainty embodied in the rurban landscapes encourage to look for new comprehensive planning approaches for these landscapes.

2 *Theoretical approach*. The research has demonstrated that the uncertainty related with landscape planning and embodied in rurban landscape as a particular landscape type requires the precautionary principle and the application of the advances of sustainability science in the interrelated dimensions of environment, economics, equity, aesthetics, experience, and ethics at the multiple interrelated scales. Thus our approach to the rurban landscape planning

and related research can be identified as multiscale scientific sustainability-based. Here we distinguish four major interrelated scales - global, regional, national, and local - and analyze aspects of uncertainty that should be evaluated and precautionary measures that can be taken, the research that should be carried out, the most relevant landscape sustainability dimensions, and the documents and measures that must or can be employed at each scale.

3 *Lithuanian case*. The theoretical approach developed in this research was applied to Lithuanian case. Despite the absence of the systematic monitoring of rural-urban dynamics in Lithuania, based on literature and observation we have distinguished the problems and challenges of landscape planning related to rural-urban interface originating at the global, regional, national, and local levels, relevant documents and recommended actions for more sustainable development of rurban areas in the overall context of landscape planning. The analysis has shown that the extensive juridical basis and the body of other documents at all levels exist for successful planning and management of rurban areas in Lithuania; however, the main problems causing contemporary failure to regulate urban dynamics and processes rural-urban interface are the lack of understanding or rurban problematics, the lack of continental and regional contextualization, the lack strategic integrated thinking, transparency, and competences in the planning process.

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