

Guidelines for Landscape Management in the Areas of Rural-Urban Interface : Continuity and Innovation

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Abstract – The focus of the present research is rapidly emerging rurban landscapes. In this research we apply the concepts of resilience of socio-ecosystems, landscape sustainability, alternative landscapes etc. in order to formulate general guidelines for rurban landscape management. The formulated guidelines for rurban landscape management consist of the basis for management providing guiding and integrating aspects and the management goals in six interconnected areas – environment, economics, equity, aesthetics, experience, and ethics.

Keywords – Rural-urban interface, rurban landscape, landscape management, sustainability, resilience, socio-ecosystem.

The European Landscape Convention encouraged landscape researchers and practitioners to look more carefully at very different types of landscapes; according to L. Musacchio [1], the attention is increasingly directed towards human-dominated environments and their complex problems including the effects and impacts of urbanization such as rapidly emerging and changing landscapes in the areas of rural-urban interface. D. Low Choy and M. Buxton [2] underline that these *rurban landscapes* and the related complex social and environmental issues call for rethinking of traditional landscape planning and management approaches. Considering this, our research was aimed at *formulating general guidelines for landscape management in the areas of rural-urban interface*.

I. METHODS

In this research, using the experience of the Resilience Alliance (an interdisciplinary network of scientists and practitioners) [3], D. Low Choy and M. Buxton [2] and L. Musacchio [1], we view rurban landscapes as systems, where the environment (natural, cultivated) and society interact closely – as *socio-ecological systems* [2-3] or *coupled human and natural systems* [1]. Based on this view, we employ general landscape sustainability model by L. Musacchio [1] “six Es of landscape sustainability” and in its framework provide the guidelines for rurban landscape management.

II. RESULTS

The general guidelines for rurban landscape management consist of two parts: *the basis for management* providing guiding and integrating aspects and *the management goals* in six interconnected areas distinguished by L. Musacchio [1] – environment, economics, equity, aesthetics, experience, and ethics.

A. The Basis for Management of Rurban Landscapes

Understanding of rurban landscapes is one of the basic premises for their appropriate management. We see rurban landscapes as having particular features as a landscape type

influenced or determined both by global and local aspects. The rurban landscapes can be characterized as *remnant* (presence of rural dimension), *transient* (rapid changes, transition from rural to urban), *contested* (conflicts between urban and rural uses, lifestyles, aesthetics etc.), *complex* (have both urban and rural features and new qualities, characteristic solely to these landscapes), *interdependent* (links to and dependence on the urban area) [4]. We also argue that rurban landscapes can be analyzed from three points of view: *global* (what these landscapes have in common around the world), *local peculiarities* (peculiar aspects of specific rurban areas determined by local history, social, economic, cultural, and other factors), and *identity* (unique and valuable features of the rurban space of the country that should be maintained). Consequently, the management solutions for rurban landscapes must be based on their particular features and global (international, supra-national regional), local (national, urban settlement level), and identity (national, urban settlement level) aspects of these landscapes (Fig. 1).

Holistic approach. The understanding of the features and dimensions of rurban landscape implies the holistic approach; one of the ways to address landscape as a whole is contemporary notion of landscape sustainability. According to L. Musacchio [1], in landscape research and practice, scientists have reinterpreted the definition of sustainable development to include the holistic basis of landscapes; in this context she presents landscape sustainability model “six Es of landscape sustainability” integrating environment, economics, equity, aesthetics, experience, and ethics and argues that one of the great challenges will be how to operationalize the environmental, economic, equity, aesthetic, experiential, and ethical performance of designed landscapes as sustainable landscapes in an urbanizing world. Fig. 2 shows six dimensions of rurban landscape [1], in which sustainability should be achieved, and corresponding contemporary features of these landscapes, which should be mitigated, transformed or creatively employed developing sustainable rurban landscapes as a new

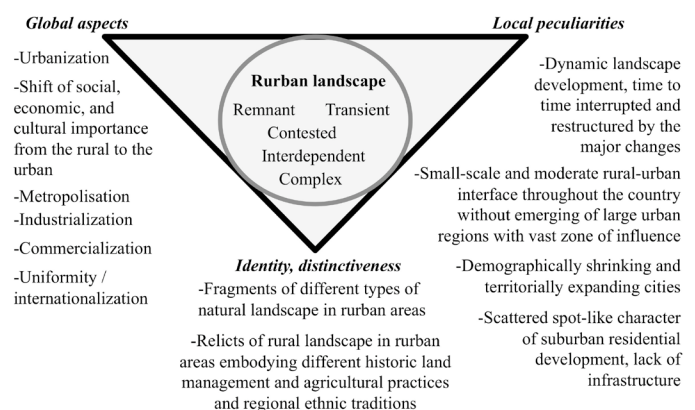


Fig. 1. Features of rurban landscapes (case of Lithuania).

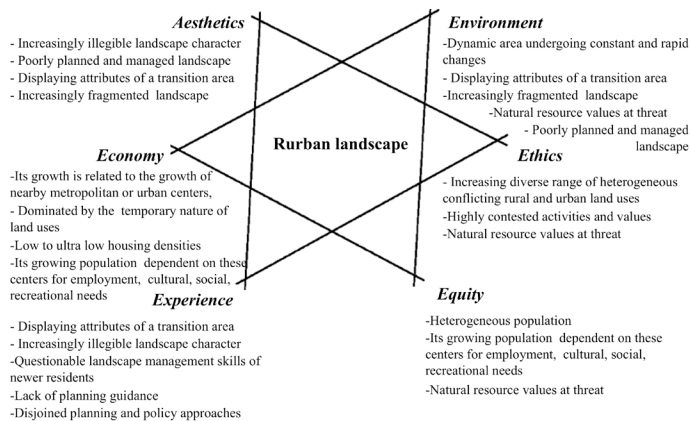


Fig. 2. Six dimensions of rurban landscape sustainability [1] and related features of contemporary rurban landscapes [2].

landscape type. Looking at rurban landscapes as a new landscape type and at the prospects of their sustainable development another holistic concept - resilience of socio-ecological systems [2-3] or coupled human and natural systems [1] – should be integrated in this research. Resilience of socio-ecological systems is a basis for their sustainability and is defined as the capacity of such system to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes [3]. From the resilience point of view, the landscapes that can be defined as rurban have lost the above-described capacity to resist changes and are undergoing qualitative transformations from rural into urbanized areas. Consequently, the sustainable development of rurban landscapes requires:

- 1) regulated qualitative transformations into sustainable rurban landscapes as a distinctive landscape type;
- 2) maintenance of resilience once this transformation is achieved.

B. The Management Goals of Rurban Landscapes

The above-presented basis for management of rurban landscapes – understanding and holistic approach – require establishing rurban landscape management goals in order to develop new category of sustainable landscapes and increase their resilience in all six sustainability dimensions.

Environment. In this research, the environment is seen as encompassing both human and natural components and their interactions at different scales. Considering this, the goals of sustainable development of rurban environment are:

- Multiscale planning of development or systematic approach considering different territorial levels, which is a more adequate approach to face and manage complex systems [6], such as rurban landscapes.
- Integrated planning and management at different scales in order to avoid institutional fragmentation and conflicts.
- View the question of rural-urban interface in the context of development of the entire country or a broader region. The strategic documents of regional development and land use should guide the decision concerning the development of rurban areas.
- Balanced regional development of rural-urban interface. It is clear that in the future urban expansion and development of rural-urban interface will be most relevant for large urban centers due to rapid territorial expansion

and importance of these cities in contemporary strategies and plans; however, in order to avoid the situation when large cities grow and expand at the expense of declining regions, the goal of more even regional development, placing the emphasis on small and medium size cities and towns, should be paid special attention.

- Development of the areas of rural-urban interface should be considered at the city/urban settlement level, i.e. integrated into the development strategy of a particular urban area.
 - Reserved attitude towards further territorial urban expansion developing rurban areas corresponding to general sociodemographic trends of the country and the city and beneficial from the ecological (energy savings, preservation of natural areas and habitats etc.) and other points of view.
 - Application of the concept of sustainable socio-ecosystem at the local level – the idea that people and other living organisms can coexist in mutually supportive habitats [1], in a sustainable world of designed ecosystems [1, 6].
 - Development of diverse and multifunctional socio-ecological systems and contemporary cultural landscapes in rurban areas, as the key to resilience in socio-ecological systems is diversity [3]. According to E. Berte *et al.* [5], cultural landscapes – integrated landscapes, where natural and social processes are compatible – are characterized by the multifunctionality, which is determined by a variety of uses. They note that contemporary cultural landscapes originate from integrated goals, when physic, ecosystem, and social elements are planned together.
 - Valuable natural areas, the relicts of rural landscape, re-naturalized areas in the rurban zones should be preserved and simultaneously serve for protection of biodiversity and eco-compensation and for recreation and education. These green rurban areas should make an integral part of the natural framework of the city.
 - Preservation of landscape heritage in rurban socio-ecosystems including the relicts of historic rural landscape types.
 - Quality and sustainability of human living environment in the rural-urban interface zones including the beneficial ecological situation, polycentric structure of emerging rurban areas based on the ideas of neighborhood unit [7], self-sufficient rurban settlements, the relicts of historic rural landscape – buildings, ensembles – serving as centers or important nodes of emerging neighborhoods.
 - Ecological land use, sustainable agriculture.
- Economics.** Economic dimension in this research concerns the production, distribution and consumption of goods and services in an exchange economy and the behavior of individuals, groups, and organizations, when they manage or use scarce resources, to achieve the desired ends. In this context, the goals of sustainable economic development of rurban areas are:
- Self-sufficiency of communities in the rurban areas. Self-sufficiency would depend on the distance from the urban center – the larger the distance from the urban area, the more self-sufficient communities should emerge. Self-sufficiency of rurban communities should include

the diversification of economic activities, creating and broadening of the employment base, provision of services and lessening the need of commuting [2]. This would help to stabilize the changes and increase economic resilience in the rural areas.

- Self-sufficiency of communities in the rural areas is closely linked with the above-mentioned multifunctionality. The multiplicity of complementary functions – residential, cultural, recreational, commercial, productive, agricultural, etc. – would contribute both to the quality of life, self-sufficiency, and the links with the city of the rural areas.
- Innovations are important both for the competitiveness and well-being of the community and for the continuous evolution of the landscape. Such innovations may include ecological peri-urban and suburban agriculture, non-traditional agriculture (lifestyle horticulture, mushroom growing, snails, earthworm's farms, harvesting of solar energy on the rooftops, etc.). The relicts of historic rural landscape that had lost their original functions can be adapted to new needs without losing their identity; historic rural buildings, such as manor houses or homesteads, can be used for tourism or adapted to the needs of communities. A joint form of peri-urban farming and agricultural tourism can be developed.
- Mutually beneficial links between the city and the surrounding rural areas through production-consumption, exchange of services, locally oriented agriculture, and recreation: the rural areas may accommodate self-sufficient communities with infrastructure and workplaces and also provide recreational areas and agricultural production for the city.
- Rational use of resources including the use of existing infrastructure and buildings, adaptation and re-use of abandoned buildings, preservation of agricultural land.

Equity. Equity is viewed here as the social dimension of rural landscape sustainability, as social justice. The social goals of rural landscape development are:

- Perceived quality of life, consisting of numerous above-mentioned factors including self-sufficient communities, economic well-being, recreation possibilities, beneficial ecological situation, valuable natural and cultural landscapes for the present and future generations.
- Maintenance of social diversity and diversity of lifestyles in rural areas avoiding or mitigating segregation or conflicts between new and local residents.
- Development of communities, formation of local institutions, organizations, and social links that help rural areas and local communities to creatively adapt and to improve resilience and persistence [1].
- Involvement of rural communities in decision making.

Aesthetics. Rural landscape aesthetics here is seen as the landscape quality perceived using all human senses (including sight) [8] also emphasizing the importance of informational content and legibility of landscapes. The main aesthetic goals of development of rural landscape are:

- Aesthetic development must be seen as an integral part of the overall sustainable development of rural landscapes

and must be integrated in every stage of the general sequence of landscape development process from its beginning.

- Development of ecoaesthetic rural landscapes – socio-ecosystems that integrate aesthetic quality and ecological health.
- The local identity (the identity of particular country, region or settlement), legibility (identity of particular landscape type), and distinctive aesthetic image of rural landscapes should become integral parts of rural landscape aesthetics.
- Preservation of landscape heritage, both natural and cultural, should play an important part in rural landscape identity, legibility, and distinctiveness.
- Preservation of rural dimension as one of the sources of identity of rural landscapes.
- Search for corresponding aesthetic images for rural landscapes including landscape architecture, planning, and architectural innovations. This also includes the search for specific architecture and urbanism solutions, reflecting the local identity and specific identity of rural areas.
- Humanization of living and working environment, mitigation of visual pollution characteristic to rural landscapes (abandoned farm buildings, aggressive infrastructure objects, etc.).
- Optimization of visual diversity. The historic relicts of rural landscape, fragments of natural landscape, functioning agricultural areas as recognizable and aesthetic objects should play an important role maintaining the psychologically acceptable visual diversity in the rural areas.

Experience. In this research experience comprises the accumulation of knowledge or skills related to rural landscapes and/or the apprehension of an object, thought, or emotion through the senses or mind [9]. The main experience related goals of rural landscape management are:

- Rural landscapes can be experienced as a new and distinct form of settlement, new type of landscape, not necessarily consumed by the expanding city – neither urban nor rural in a traditional sense. These should be functionally operating but also rich in identity and symbolic meanings landscapes [5]. The concept of alternative landscapes by Musacchio [1] can be used to describe them – such landscapes would introduce new types of nature (for example, renaturalized areas) and reinterpret the cultural meaning of human health, security, multifunctionality, and ecosystem services, they would provide the distinctive places for people in the zones of rural-urban interface that protect different types of biodiversity and cultural diversity, facilitate stress reduction and mental fatigue, and enhance human-nature interactions.
- New experience and skills for multiscale integrated planning and management of rural-urban interface and development and management of such alternative rural landscapes are needed.

Ethics. Ethics in this research refers to the concepts of right and wrong conduct. The ethical goals related to sustainable development of rural landscapes are:

- The need to reconcile the ecological ethics, aesthetics, and functionality in rural landscapes.
- The ecological education and ecological literacy [2] of residents and users of rural areas.
- The necessity to coordinate and reconcile different, often contradictory sets of values, lifestyles of rural and new urban residents in rural areas. The urbanity as a driver of change must be acknowledged; however, the need to preserve rural dimension cannot be neglected.
- The need for ethical innovations, where previous values (both natural and social) are the basis for new coherent solutions [5].
- The need to develop place awareness, topophilia for rural landscapes.

CONCLUSIONS

Management of landscapes emerging in the areas of rural-urban interface raises environmental, social challenges and challenges related to identity, locality, and sense of place. The need to respond to these challenges encourages formulating general guidelines for landscape management in the areas of rural-urban interface integrating ecological, social and identity, global and local aspects.

After the analysis of literature and using the experience of the Resilience Alliance, D. Low Choy and M. Buxton, and L. Musacchio, the general guidelines for rural landscape management were formulated. The first part presents the basis for management – guiding and integrating aspects: understanding of global and local aspects and features of rural landscape and holistic approach to it based on the concepts of sustainability and the resilience of socio-ecosystems. The second part presents the management goals of rural landscapes in six interconnected areas – environment, economics, equity, aesthetics, experience, and ethics and demonstrates the importance of both continuity and innovations for these dynamic landscapes. Table I shows rural landscape management goals according to the dimensions of sustainability and their relevance to different aspects of these landscapes and the biophysical and social features that can decrease resilience these goals are targeted at.

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TABLE I
SUMMARY OF RURBAN LANDSCAPE MANAGEMENT GUIDELINES.

Sustainability dimensions [1]	Biophysical and social features that can decrease resilience [2,3]	Rurban landscape management guidelines	Relevant rurban landscape features [4]	Relevant level, scale
<i>Environment</i>	Unsustainable resource use Climate change	Multiscale integrated planning	Interdependent; Complex; Transient; Contested	International, Regional; National; Local
		Balanced regional development	Interdependent	International, Regional; National
		Reserved attitude towards urban expansion	Interdependent; Transient	Local
	Loss of biodiversity Pollution	Application of the concept of sustainable socio-ecosystem	Complex; Remnant; Contested	Local
		Diversity, multifunctionality of socio-ecosystems	Complex; Remnant; Contested	Local
		Protection of biodiversity and eco-compensation	Complex; Remnant; Contested; Transient	Local
	Changing disturbance regimes	Preservation of landscape heritage	Complex; Remnant; Contested; Transient	National; Local
		Quality and sustainability of human living environment	Complex; Remnant; Contested; Transient; Interdependent	Local
		Ecological land use, sustainable agriculture	Complex; Remnant; Interdependent	Local
	<i>Economics</i>	Unsustainable resource use Increased inefficiency Narrow world views	Rational use of resources	Complex; Contested; Interdependent
Innovations			Complex; Remnant; Contested; Interdependent	International, Regional; National; Local
Multifunctionality			Complex; Remnant; Contested; Interdependent	Local
Lack of public participation and involvement Inflexible, closed institutions Lack of social capital		Self-sufficiency of communities	Complex; Remnant; Contested;	Local
		Mutually beneficial links with the city	Complex; Remnant; Transient; Interdependent	Local
		Innovations	Complex; Remnant; Contested; Transient; Interdependent	National; Local
<i>Equity</i>	Unsustainable resource use	Perceived quality of life	Complex; Remnant; Contested; Transient; Interdependent	National; Local
	Lack of public participation and involvement Lack of social memory Lack of social capital	Involvement of rurban communities into decision making	Complex; Contested	National; Local
		Maintenance of social diversity and diversity of lifestyles	Complex; Remnant; Contested; Interdependent	Local
		Development of communities, formation of local institutions, organizations, and social links	Complex; Remnant; Contested; Interdependent	Local

<i>Aesthetics</i>	Unsustainable resource use Narrow world views	Aesthetic development as an integral part of the overall development	Complex; Remnant; Contested; Transient; Interdependent	Local
		Ecoaesthetics	Complex; Remnant; Contested;	Local
		Search for corresponding aesthetic images for rural landscapes	Complex; Remnant; Contested; Transient; Interdependent	Local
		Optimization of visual diversity	Complex; Remnant; Contested;	Local
	Lack of social memory	Local identity, legibility, and distinctive aesthetic image	Complex; Remnant; Contested; Transient; Interdependent	Local
		Preservation of landscape heritage	Complex; Remnant; Contested;	National; Local
		Preservation of rural dimension	Complex; Remnant; Contested;	National; Local
Lack of public participation and involvement	Humanization of living and working environment	Complex; Remnant; Contested;	Local	
<i>Experience</i>	Narrow world views Lack of social memory	Alternative landscapes, new and distinct form of settlement, new type of landscape	Complex; Remnant; Contested; Transient; Interdependent	National; Local
	Inflexible, closed institutions Lack of social capital Lack of public participation and involvement	New experience and skills for development and management of such alternative rural landscapes	Complex; Remnant; Contested; Transient; Interdependent	International, Regional; National; Local
<i>Ethics</i>	Unsustainable resource use	Need to reconcile the ecological ethics, aesthetics, and functionality	Complex; Remnant; Contested; Transient; Interdependent	National; Local
	Lack of social memory Lack of public participation and involvement	Ecological education and ecological literacy	Complex; Remnant; Contested	Local
		Need to develop place awareness, topophilia	Complex; Remnant; Contested;	Local
		Necessity to coordinate and reconcile different, often contradictory sets of values, lifestyles of rural and new urban residents	Complex; Remnant; Contested; Interdependent	Local
	Narrow world views	Need for ethical innovations, where previous values are the basis for new coherent solutions	Complex; Remnant; Contested; Interdependent	National; Local