

The most successful landscape ecological concepts in the practice

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Abstract: The paper outlines the basic understanding of the concept of landscape in respect to the landscape ecological concepts implemented to the legislation and practice, the characteristic features of the chosen landscape ecological concepts and the role of those concepts in legislation in the environmental legislation in Slovakia.

Key words: *Integrated management, environmental legislation, LANDEP, TSES*

Introduction

The permanent desire of the specialists in geography, ecology and landscape ecology is to legalize the implementation of the complex, whole space covering approach to the landscape management – nowadays called as „integrated“ approach – as a new approach against the mostly technocratic procedures in land–use and spatial planning which have been based on focused on analytic evaluation of single elements of the landscape.

The complex approach has been pronounced in scientific circles since sixties of last century, very much in the area of the German physical-geographical/landscape ecological school – including strong scientific centres in central European states – as well as in the Soviet landscape sciences school (landshaftovedenyje). The disputes dealt many times also with differences between „classic“ complex physical geography and later born landscape ecology. These schools understand the landscape as a geographical complex, a geosystem. Other group of landscape ecologists based their approach on the investigation and consideration of the structure of land cover and its pattern (mostly the West-European and American landscape school, Forman, Godron, 1991). Of course, those schools have never sharp borders and never expressed any animosity. Proof of that was a common effort to establish the International Association for Landscape Ecology, what happened in Piešťany (Slovakia) in 1982. Nowadays we have to recognize also a third considerable group of the „friends of landscapes“ coming from different branches, also loving the landscapes, whose activities are based more on the cultural-heritage approach to the „scape“ of the land, not always insisting on the deep knowledge of landscape as geosystems.

Problems of the acceptance of the concept of “landscape”

The basement problem is the proper acceptance of the concept of landscape in planning and management processes, since even among the scientists exist different understanding. The **geosystem-based** definitions and approaches have in last two decades a counterpart in softly denoted, smooth “cultural-heritage-like” definition of the landscapes, underlining the social aspects and not really tangible “quality objectives” (Miklós, Izakovičová, 1997). The problems did not escaped by neither by the definition in European Landscape Convention where the soft, “non-material” definition of landscape based on perception, character, interactions, factors (Article 1) is in slight contradiction with the obligation of Parties to integrate the landscape policies to stronger „regional and town planning policies ... and economic policies, as well as in any other policies ...” (Article 5), „to introduce instruments aimed at protecting, managing and/or planning the landscape“ (Article 6). However, even the softest and high-flown way of recommendation of “policy“, of measures for “quality objective“, the “protection“ and “management“ actions will be realized by touching, planning of changes of the concrete material elements of the landscape. But, if the landscape itself is not clearly defined, the technically based planning approaches will **accept it in the optional, voluntary** way, far not as defined obligatory regulative.

The present state, as well as each change of the “landscape” is the expression of the **use of each single spot** of the land – as the result of the land-use and land-use changes. The landscape changes are in our countries regulated by legal procedures. Actually, each policy on the management of the landscape starts by a simply materialistic question: do we like the present structure of the landscape or not? If yes, we shall do every measures to protect the single elements of the landscape structure – there quality, extent, position – against changes, to keep them as they are now. If not, we try to promote changes: each change of whatever “holistically“ perceived improvement of the landscape quality is based on the change of the single points, lines and polygons of present landscape elements. If so, the policies and the legislation must define the landscape as a **material entity**, consisting from **tangible material elements** (framed by non-material space, position and relief, and by mutual relations, of course). Thus the policies, the planning, protection, conservation of landscape and its valuables must relate to concrete elements, too. Such approach is actually very closed to existing spatial planning processes. Nothing new, they already run on national levels as spatial/territorial/physical planning, the land-use planning, the ecological network design, having more or less complex and integrated character, but on very **different level** of complexity and integration, not yet regulated on international level: Neither the Landscape Convention does it. On other side, there is another considerable issue: probably a big group of landscapers, architects and others might get not to much delighted to deal with majestic, holistically perceived landscapes with high values along and under strong technical and planning regulations.

Second circle of the possible problems of acceptance of the landscape relates to the antilogy in the understanding, namely: is the landscape only an **element** or a **part** of whatever, or an universal, the **whole Earth space covering entity**? Of course, the scientific understanding promote the second statement. Nevertheless, even the Landscape Convention is ambiguous, saying, that “Convention applies to the entire territory of the Parties ...” but other paragraphs questioned it, e.g. the Preamble, third paragraph says, that landscape is an “important **part** of the quality of life“, eights paragraph underlines that “landscape is a key **element** of individual and social well-being“, “an essential **component** of people’s surroundings“ (Article 5). All that shows that the landscape is not considered as the universal frame for the life and activity of the people. Another scientific discontent concerns the problem, occurring often among non-landscape-ecologists, namely if the landscape is a thing, what is not everywhere, only where we

identify them – mostly where it is nice, has “values” – or the landscape covers the **whole** surface of the Earth? This discontent is again dangerous from the point of view for the acceptance of the landscape in practice, even because the Landscape Convention does not restrict this approach. E.g. the Article 15, Para 1 says that any state may “**specify the territory** or territories to which the Convention shall apply”, in Para 2 “**extend** the application ... to any other territory“, but also they “may,... be **withdrawn** by notification” (Para 3). All that whispers, as the landscapes exist only **where the parties wish to have them**. They can **extend or withdraw** them! At least it means, that in spite of general provision of the Convention, the parties can deal with the landscapes actually as before the convention. Unfortunately, the Article 4 allows such practice: “Each Party shall implement this Convention, ... according to its own division of powers, ...“.

All that may harm the proper acceptance of landscape ecological conceptions in practice.

Successful landscape ecological issues

In spite of above mentioned problems there are several very important and considerable concepts of landscape ecology which influenced the world environmental policy. Objectively, the theory and the practice of landscape ecology constitute several basement pillars of the sustainable development as:

- natural resources management, e.g. see several chapters of AGENDA 21 (as chapter 10. on integrated approach to the management of land resources, 13. on the fragile mountain ecosystems, 14. on sustainable agriculture, 15. on the biodiversity protection, 17. on human settlements and others);
- nature conservation, the NATURA 2000 (Výnos ..., 2004);
- the ecological network concepts, the pan-European ecological network (Ecological Bricks ...1990, The Pan-European ...1995, Jongmann, 1996);
- the landscape planning and landscape management procedures (Izakovičová, Miklós, Drdoš, 1997);
- the watershed management (the Water Framework Directive, 2000);
- the international conventions as the UN Framework convention on Climate Changes, the UN Convention on Biodiversity, UN Convention to Combat Desertification, the European Landscape Convention, the Alpine convention, the Carpathian convention and others.

Unfortunately, the acceptance of those issues are still not on desired level because there is still a gap between scientific basement and applied procedures, on other side because of lack of understanding in decision – and policy-making and in the practice. For the policies and practice are more acceptable direct rules than scientific theories, they prefer much more simplicity and predictability than scientific questions and uncertainties. They are less interested in warnings within the time scale of sustainable development than on solutions warranting success in few years.

Anyway, there are several successful and accepted concepts, few of them described below.

The integrated landscape management and the LANDEP

The development of the landscape ecological planning LANDEP in (Czecho)Slovakia was concentrated mainly to the Institute of Landscape Ecology of Slovak academy of sciences in Bratislava since seventieth (Ružicka, Miklós,1982). LANDEP was characterised as the “ecologisation” of all kind of spatial planning. Mainly, it was realised within concrete territorial (physical) plans and agricultural plans. The LANDEP is a

concise method based on landscape ecological basic research which has completed the ideas the integrated management of optimum organization and utilization of the landscape as a whole (“LANDEP is a systematically structured specific complex of applied landscape-ecological methods, with the main goal to design ecologically optimal landscape organization, landscape use and protection, which results in the design of suitable location of human activities in the landscape and the proposal of subsequent measures to provide for the functioning of these activities”). The basement principle of LANDEP is to divide the **whole territory** to quasi homogenous landscape ecological complexes with exactly defined properties of their elements, and evaluation of their **limits and suitability for all demanded activities**.

In Slovakia the LANDEP was implemented to the spatial planning practices at planning organisations as URBION Bratislava, Stavoprojekt Banská Bystrica, Stavoprojekt Žilina, as well as to the practice of agricultural land arrangement projecting (PPÚ – Agricultural Projecting Institute Bratislava) very early, already since 1980. Since that dozens of ecological plans on different levels – as e.g. the Ecological General Model of the CSFR and the SR, Ecological Plan of the Central-Slovak Region, Ecological Optimization of the East Slovakian Lowland, Ecological Optimization of the Hrušov Dam (on the Danube River), Pleven District Ecological Plan (Bulgaria) up to many ecological plans on local level had been elaborated. The Institute of Landscape Ecology and the LANDEP concept was considered one of the leading concept also within the co-operation of COMECON countries. That institute was internationally recognised, was the initiator of the IALE founding on its traditional symposium in Piešťany in 1982.

The international professional demand for the integrated landscape management has been formulated in AGENDA 21, Chapter 10 (Integrated approach to the management of the land resources) as the integrated physical planning and management **must act as a frame and basement for each sectoral plan**, and that the **limits and regulative** given by nature should be accepted by each sectoral plans! Those provisions actually mirrors also the concept of LANDEP, therefore in this chapter LANDEP is explicitly recommended: “Government on the appropriate level ... should: *Adopt planning and management systems that facilitate the integration of environmental components such as air, water, land and other natural resources, using landscape ecological planning (LANDEP) or other approaches that focus on, for example, ecosystem or a watershed.*”

In the practice the LANDEP is involved to the **legislation** to the Act 50/1976 Zb. on Territorial Planning and Building Code (Building Act)., amendments 262/1992 Zb. and 237/2000 Z.z . The basement for this implementation is the geosystem definition of the landscape and its consequences: the properties of the elements of the landscape act as **obligatory regulative** for planning, concretely for the “ecologically optimal spatial arrangement and functional utilisation of territory”.

The most important definitions of the act:

Article 139a **Terms** of territorial planning

a) The geosystem-based definition of the landscape:

“(5) *Landscape is a **complex system** of space, location, georelief and other mutually, functionally interconnected material natural elements and elements modified and created by a man, in particular geological basement and soil creating substratum, water bodies, soil, flora and fauna, artificial objects and elements of utilisation of territory, as well as their connection determined by socio-economic phenomena in the society. Landscape is the environment of the man and other living organisms.*”

b) The link of the landscape elements and regulative: the values of the elements as bans, limitations and supporting factors of spatial arrangement:

“(1) **Regulative** of spatial arrangement ... and functional utilisation of territory is a binding guideline which guides the **localisation and arrangement** of a certain object or realisation of a certain activity in

territory. It is expressed through **values of properties of elements** of landscape structure by words, figures and graphically, if possible. Regulator has a character of **bans, limitations or supporting factors** in relation to spatial arrangement and functional utilisation of territory. In this way regulator determines banned, limited and acceptable activity or function in territory."

c) The Landscape ecological plan based on geosystem-based definition of landscape structure and its elements

"(4) Ecologically optimal spatial arrangement and functional utilisation of territory (**landscape ecological plan**) is a complex process of mutual harmonization of spatial requirements of economic and other human activities with landscape and ecological conditions, which are determined by **landscape structure**. Ecologically optimal spatial arrangement and functional utilisation of territory at the same time ensures proper ecological stability of spatial structure of landscape, protection and rational use of the nature, biodiversity and natural resources, creation and protection of territorial system of ecological stability and the immediate environment of a man. Structure of landscape and its components are manifested as **limits or supporting factors of required activities** in a given territory."

d) Obligations in territorial planning – spatial arrangement, landscape ecological plan:

Article 13 **Binding part** and guiding part of territorial planning documentation

"(3) The binding part of territorial planning documentation approves the principles and regulators in region of settlement structure, **spatial arrangement and functional utilisation** of the territory of region, territorial system of ecological stability, care of the environment, landscape management, protection and effective utilisation of natural resources, protection of cultural monuments, monument reserves, monument zones and important landscape components, arrangement of public transport and technical equipment, assignment of areas for public constructions and for protected parts of landscape,"

Article 19c Investigations and analysis

"(3) Optimal spatial arrangement and functional utilisation of the territory is being worked out for territorial plan of a region and territorial plan of a municipality in the framework of investigations and analysis with a view on landscape, ecological, cultural, historical and socio-economic conditions (further referred to as "**landscape ecological plan**")."

The territorial System of Ecological Stability

The concept of ecological networks named as the Territorial System of Ecological Stability (TSES) which – hand by hand with the LANDEP – was developed up to a **routine procedure** by landscape ecologists and spatial planners in Brno and Bratislava (Buček, Lacina, Lów, 1984, 1986, Lów, 1984, Miklós, 1986). After the political changes in 1990 the TSES has been involved as important part of the **state environmental policy** to the legislation (Miklós, 1991), as a corner-stone idea to the Act on Nature and Landscape Protection, than consequently as **obligatory regulative** to other acts concerning the spatial planning. Several basic documents have been elaborated, too: the General TSES for the whole territory of Slovakia, the regional TSES for all districts of Slovakia, and, several hundreds TSES on local level, either as specific documents, or as integrated parts of territorial plans or land arrangement projects (Miklós, 1986, Miklós, Hrnčiarová (Eds.), 2002, Miklós, Izakovičová et al., 2006).

The procedure of the TSES is basically oriented to the:

a) delineation of main elements of the TSES: **biocentres, biocorridors** and **interactive elements**. Those elements compose the **frame** of an ecological network. As biocentres should be delineated those

biotopes which serves as the basis for food, shelter and site for reproduction, as the biocorridors and interactive elements should be projected chains of biotopes which brake the isolation and ensure the migration and interaction as well as the spatial ecological stability of the landscape;

b) the definition and proposal of so called **eco-stabilising measures** should fulfil different practical ecological function as soil and water protection, microclimatic, hygienic, aesthetic and other function. Among those the agro-technical, agro-meliorative and forest management measures might be underlined.

By combination of both group of actions the TSES becomes a whole-space covering – “territorial” – system, what differs of “classic” ecological network concepts, which mostly concentrate only to biocentres and biocorridors. The basic output of the TSES project is a set of **maps** with a **projection** of biocentres, biocorridors, interactive elements, eco-stabilising measures, conflict of interests of TSES and threatening phenomenon (Metodické..., 1993, Miklós, 1996, Izakovičová et al., 2000).

The real importance of the TSES is ensured by **legal support** in following acts:

- a) Act 284/1994 and 543/2002 Z.z. on **Nature and Landscape Protection**.: there is the basic definition of TSES and its determination as basic document for different planning;
- b) Act 50/1976 Zb. on **Territorial Planning and Building Code**, amendments 262/1992 Zb. and 237/2000 Z.z.: defines, that the elements of TSES are obligatory regulative on all level of territorial plans.
- c) Act on **Land Arrangement and Land Ownership** 331/1991 Zb. and its amendment 549/2004 Z.z.: defines that the TSES is an obligatory basement and part of each Land Arrangement Project, moreover, the need for improving the TSES function might be accepted as a legal cause for enactment the land arrangement procedure.
- d) Act on **Environmental Impact Assessment** 127/1994 Z.z. and 24/2006 Z.z.: defines that TSES is an obligatory object of impact assessment.
- e) The **Water Act** 364/2004 Z.z. (based on Water Framework Directive 2000/60 of EP and EC): forces the utilisation of the water protecting function of TSES with the coordination of water management tasks.
- f) The new Act 7/2010 Z.z. on **Flood Protection**: enacts that the long-term management plan of watersheds should project also the TSES, important landscape elements and the eco-stabilising measures.

In order to keep the professionalism of the TSES, the TSES projecting became the subject of the authorisation according to the Act on **Authorised Architects** ... 138/1992 Zb. and its later amendments.

Integrated landscape management

The LANDEP and TSES are the most successful landscape ecological conceptions involved to environmental policy after 1989 in Slovakia. At the same time they presents also an already practically proved method for the development of real procedures for broadly promoted ideas of the integrated landscape management for the near future.

What means the concept of integrated landscape management nowadays? Actually, it did not change its meaning given by AGENDA 21 since two decades: it is in fact a **frame spatial plan** on the optimal organisation and utilisation of the territory for **all sectors** and for the **whole territory**, answering the question **what, where and how**, the realisation of this plan and its control. As at the moment being there is no specific legal act on integrated landscape management, it should be substituted by **harmonisation of existing plans** of spatial organisation character, in particular by harmonisation of the territorial (physical) plans, ecological network plans, nature conservation plans, forest management plans, land arrangement plans, plans of watersheds, plans of flood risk management. The most comprehensive and integrative tool

in Slovakia is the new Act 7/2010 Hz's. on **Flood Protection** (in force by February 1st, 2010), which states:

- the Landscape-ecological base of the integrated management of the landscape (including the link to the INSPIRE directive) and accordingly the Proposals of measures for the long-term watershed management will be elaborated and they are part of the Plan of the food risk management;
- these plans shall project also the **TSES**, the important landscape elements and the eco-stabilising measures;
- those proposals within the Plan of the food risk management shall be accepted as **obligatory regulative in territorial plans**;
- The elements of TSES and other important landscape elements projected in the **Proposals of measures for the long-term watershed management** shall be accepted as **corporate facility** in land arrangement projects.

Finally, the act defines explicitly, that: "... the plans of the flood risks management as well as the plans of the watershed management will be coordinated with the other planning instruments of the territory, in particular with the projects of **land arrangement, territorial plans, forest management plans**, they altogether will constitute an instrument of the **integrated landscape management ...**"

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