

## LANDSCAPE PLANNING: A GEOGRAPHICAL APPROACH

### Introduction

The origin of the landscape planning in Slovakia can be put into beginnings of the 70-ies of the 20th century under the influence of the collaboration of the Institute of Landscape Biology of SAS with the University of Hannover (the leading institution in landscape planning in Germany) as biological planning of landscape. By the end of 70-ies of the 20th century it was transformed into landscape ecological planning - LANDEP (Ružička, Miklós, 1982). At the same time landscape planning began to develop at the Institute of Geography of SAS, and it was connected with the preparation activities of the international IGU programme on "Landscape Synthesis - Geocological Foundations of the Complex Landscape Management". LANDEP was included into the law on regional planning in Slovakia by 2000.

### The basic marks of Landscape planning in some European countries

In Europe the most remarkable development of landscape planning occurred in Germany, where landscape plans are being elaborated by the law of nature protection. The landscape is being understood as a material reality, and also as a perceptible phenomenon. Landscape planning is aiming to the multifunctionality of landscape in the frame of the sustainability.

Following information are necessary: on human requirements, landscape potential, existing and intended land-use, on sensitivity of landscape elements to human impacts and on impacts of land-use to landscape elements, and on potentials and functions. The main task is the assessment of landscape functions, which involve existing and potential landscape capabilities to fulfill human requirements on natural environment, and on perceived landscape on the basis of sustainability (von Haaren et al., 2004).

Landscape planning in Switzerland is provided by means of analyses of functional interrelations among ecosystem elements (landscape is being understood as a regional ecosystem), and on the basis of the potential, and sensitivity approach (Gfeller et al., 1984).

Landscape planning in Great Britain is close to environmental impact assessment. Its most important part is the assessment of landscape and visual impacts, and its purpose is searching for the most suitable environmental form of regional development. The landscape plan is based on the results of land-use conflicts analysis, suitability of

land-use, and on mitigation of impacts on landscape properties (Guidelines, 1995).

In Russian Federation landscape planning is considered to be an important tool of regional development. The information system involves data on the state of natural environment, social and economic sphere, structure of land-use, basic conflicts in land-use regarding environmental problems, and on natural components, which are significant for economic and social functions of regional development. Analysis of sensitivity of natural components to human impacts is very important (see Drozdov et al., 2000).

Landscape planning methodology in Czech Republic was presented by Kolejka and Pokorný (2000). Landscape planning "tries to get into harmony natural conditions with social needs with a long-term perspective from the viewpoint of the sustainable development". Landscape planning is based on the analysis of landscape potential, and of conflicts in land-use. Geosystem approach is essential. Landscape plan has form of a summarized proposal of the functional arrangement of landscape.

### Geographical concept of the Landscape planning in Slovakia

The subject of landscape planning - landscape is being understood in sense of A. von Humboldt, i.e. the natural and social environments are studied as equivalent.

Landscape planning methodology at the Institute of Geography of SAS was elaborated by Huba (1982), who has put it on the basis of the analysis and assessment of landscape potential. He has proposed the following procedure of landscape planning:

- Analysis of natural landscape structure.
- Analysis of anthropogenous landscape structure.
- Analysis of human community living in the assessed landscape from the aspect of social relations (community as an object), and from the aspect of an actual and potential landscape user (community as a subject).
- Analysis of the surroundings of geographical systems (the exchange of matter, energy, and information).
- Assessment of land-use relevant landscape properties.
- Assessment of land-use parameters by actual, or potential users.
- Assessment of required social, and economical activities, selection of criteria for their inner differentiation, or grouping.



- Assessment of the singular landscape potentials.
- Assessment of the summarized landscape potential.
- Assessment of the preferred alternative of land-use.
- Assessment of local stimulating, or limiting factors of singular human activities.
- Assessment of the spatial interrelations among areas with suitable landscape potentials.
- Proposal of functional landscape delineation on the basis of its potential and charging capacity.
- The final step of landscape planning is the harmonization of the human requirements with the functional delineation of the landscape.

The outlined procedure of landscape planning was very progressive already in its beginnings, as it was founded on alternative solution, and on a concept, which was very close to the concept of sustainability 10 years before World Summit in 1992 in Rio de Janeiro. The basic principle of this landscape planning methodology was the unity of the dimensions of sustainable development (environmental, social, economical ones). Its basic mark is a positive approach to land-use (landscape potential, charging capacity) on the basis of proposal of landscape functions.

### **Landscape planning in concept of the IGU methodology of landscape synthesis**

The International Geographical Union has on proposal of the Slovak Geography created a working programme entitled "Landscape Synthesis - Geoecological Foundations of the Complex Landscape Management" in 1980 (the "complex management" expresses management of use and at the same time of the protection of landscape, i.e. environmental, or sustainable approach to land-use, and "landscape synthesis" expresses assessment and integration of geoecological information for the aim of landscape management). It is methodology of a planning character. This methodology was not considered to be landscape planning, but to be a contribution of the fundamental research in geography to applied research in landscape and environmental protection. The programme of the research group followed the same aims, as the programme of sustainable development 10 years later. The results of the activities represent a series of monographs (e.g. Drdoš, ed., 1983, Tietze, ed., 1983, Richter, Aurada, eds., 1984, Richter, Schönfelder, eds., 1986, Bolos, Ribas, eds., 1986, Haase et al., 1991, Pietrzak, 1998, Moss, Milne, eds., 1999, and others). On the development of the methodology have taken part mainly Niemann, 1982, Haase, Richter, 1983, Richter, Aurada, eds., 1984, Richter, Schönfelder, eds., 1986, Haase et al., 1991, Drdoš et al., 1979, 1980.

#### **Landscape Synthesis methodology consists of steps:**

- 1. Landscape analysis and synthesis. 1.1. Geoecological analysis of natural environment. 1.2. Human-geographical analysis of land-use. 1.3. Delineation of homogenous Geoecological units of landscape, and of its anthropogenous variants (land-use structure in natural areas - geotops).
- 2. Landscape diagnosis. It is an assessment of landscape, which aims to the purpose of sustainable land-use, and at the same time it is an assumption for assessment of the landscape evolution tendencies, i.e. for landscape prognosis.

The assessment in landscape diagnosis involves: 2.1. Assessment of the social function of landscape at present, and in future (present and planned land-use). Social requirements are being assessed from the point of view of realistic, optimum, and of extreme vision. 2.2. Assessment of landscape properties (on the level of geotops) in relation to social requirements and functions. 2.3. Assessment of interrelations among geoecological conditions (properties of geotops) and land-use, inclusively intended impacts on land-use and landscape.

The proper topic of assessment are conflicts in present and required polyfunctional land-use in landscape areas, assessment of structure of landscape areas, and spatial and temporal dynamics of landscape processes. Information are of essential importance for statement on structural diversity of landscape, its stability, resistance and sensitivity. Of an extraordinary importance is derivation of information for identification of consequences of land-use, i.e. for probability of occurrence of direct, indirect, cumulative, and successive impacts, etc.

The focus of landscape diagnosis is laid on gaining information on proposals of landscape for human requirements on land-use, and on threshold values in order to assure the conditions of landscape stability. Identification of proposals requires: 1. Assessment of charging and carrying capacity. 2. Assessment of landscape disponibility. 3. Assessment of natural potential for land-use.

In the last phase of landscape diagnosis the alternative proposals on land-use are being compared with normative thresholds (admissible thresholds of charging the landscape by land-use). Then the geoecological monitoring is being proposed.

Information of the main part of landscape synthesis - landscape diagnosis and landscape prognosis must fulfill certain criteria: 1. A relative optimum for decision making on land-use in given geoecological conditions with regard to the human requirements must be formulated. 2. Ranking of planned land-use alternatives must be objectivized. 3. The fundamental criterion for relevance and effectiveness of statement in landscape diagnosis and prognosis must be the minimalization of occasional and subjective conclusions by means of relevant methods. 4. Very important outputs of landscape diagnosis are conclusions

on relation of costs and benefits of the given human requirements on land-use in certain landscape space.

- 3. Landscape prognosis. According to Mazúr et al. (1980) landscape prognosis proposes directions of land-use on the basis of assessment of landscape potential, and of human requirements. The prognosis is the aim of the landscape research formulated from the point of view of functional landscape delineation, i.e. of proposal on rational use of landscape potential. The basic criterion is the optimum co-existence of social-economic system and the given landscape space (note: the sustainability principle).

Landscape prognosis represent planning of land-use, which is founded on geoeological diagnosis involving natural scientific, social scientific and economic assessments. The proposed land-use is in this manner relatively optimal not only from point of view of natural structure of landscape, but also of social and economic interests of human society. The proposed land-use is not constant, but it dynamically develops, because it is influenced by new social requirements, new technologies, also new environmental norms, and attitudes of the inhabitants. The landscape prognosis involves not only the evolution of relation of man to his environment, which appears in spatial arrangement of land-use, and its variability, but also the evolution and development of natural environment, mainly the biodiversity and geodiversity, which are connected with land-use. It is stated by geoeological approach (approach of sustainability) to landscape, as space of life of human society. Landscape prognosis offers the information to management of landscape and environment.

## Discussion

Landscape planning is no topic, or task of fundamental research, i.e. the task of theoretical research institutes, which have developed the methodology of landscape planning, not only in Slovakia, but surely everywhere, but for purposes and use in social practice. As landscape planning was aimed in the past (and also sometimes in the present) mainly to natural environment, the public has accepted it without any remarkable interest. Also this was the reason, that the implementation of landscape plans was not complex. This fact did not allow to achieve the aims of landscape planning, i.e. to contribute to slow down, if not to stop the landscape degradation (indicator: the reduction of biodiversity and degradation of geoeological quality of landscape), which is caused by contamination of all components of natural environment, and by the intensification of all forms of land-use (decay of the integrity of ecosystems and geosystems).

Several authors (e.g. Hersperger, 1995, Geisler, 1995, Uppenbrink, Gelbrich, 1996, von Haaren et al., 2004) have

declared a deep anxiety about the results of the implementation of landscape plans during 35 years long practice. The quality of natural environment has not ameliorated, but worsened. Landscape planning may not solve the consequences, but the origins of the environmental crisis on local and regional level.

A new approach to landscape planning has outlined in our country Huba (1982) and the international programme of IGU (1980-1988), involving into analyses, syntheses, diagnosis and prognosis not only natural environment, but also the human society and its needs (environmental, social, economic - at present the dimensions of sustainability). The basic concept of the landscape planning therefore must be the concept of sustainability. In order to achieve this aim, landscape planning must be closely bound with the environmental norms (in SR e.g. on waters, forests, on protection and use of agricultural lands, on integrated prevention and management of environmental pollution, on air, wastes, on environmental impact assessment, on nature and landscape protection, etc., and, which is very important, on regional planning, but in its obligatory part.).

Auhagen et al. (2002) notes, that the reason of landscape planning is laid on its contribution to the amelioration of the landscape quality. Landscape planning can be successful only in case, when it will effectively influence all economic plans. This is possible in case, that landscape planning will be consequently based on the concept of sustainability and carrying capacity, and will require the same from all economic plans.

Landscape planning must be:

- 1. Methodologically able to be implemented.
- 2. Aiming to solution the problems.
- 3. Real and considering.
- 4. Integral (section-crossing).
- 5. Aiming ecologically, socially, and economically.
- 6. Acceptable by public (involving public participation).

The basic concept of landscape planning, as generally accepted, is the concept of sustainability. In spite of that fact, it is sometimes forgotten, that this concept is based on notions of "environmental", "social", and "economical", which form an indivisible unity. If landscape planning should effectively contribute to the permanent maintenance of natural foundations of human life, and of the whole gene pool, it must consider not only environmental, but also social and economical human interests. Landscape planning can really show its sustainability concept in case only, that its aims would contain also social and economical interests of man, and would not damage, but on contrary ameliorate the conditions of human life in unity of all three dimensions of sustainability (Auhagen et al., 2002).

In the field of the environmental dimension of landscape planning, landscape assessment should be consequently founded on paradigms of geography.



They are, e.g.:

- 1. Paradigm of geographical space and time.
- 2. Paradigm of continuity and discontinuity of the Earth-sphere.
- 3. Paradigm of spatial differentiation of landscape phenomena and areas.
- 4. Paradigm of mutual synergic a choric coherence of landscape phenomena and areas.
- 5. Geosystem paradigm.
- 6. Paradigm of structurality of landscape phenomena and areas.
- 7. Paradigm of geographical dimensions.
- 8. Paradigm of man and environment.

Further on it is necessary to apply the geographical thinking, appearing in abilities of geography, e.g.:

1. Ability to recognize the relevance of information gained by analyses of different geoscientific, biological, ecological, environmental, and other disciplines for solution of environmental problems.
2. Ability to synthesize the analytical information into integrity with a higher statement on the nature of the environmental problem, and on its solution.
3. Ability to interpret the gained information regarding the spatial and temporal dimension, and develop in this manner the relevant statements on the geocological, and environmental quality of the living space of man, and on the tendencies of its evolution.
4. Ability to develop the environmental information system according to the criteria:
  - 4.1. geosynergic (mutual relations),
  - 4.2. geochoric (spatial variability and evolution),
  - 4.3. geotemporal (variability and evolution in time),
  - 4.4. geodynamic (dynamics of processes in landscape),
  - 4.5. geocological (natural significance of landscape phenomena and areas, and their geocological functions),
  - 4.6. geosozological (landscape diversity, biodiversity and its conditions, value and scarcity of landscape phenomena and areas),
  - 4.7. geodiagnostic (landscape hemeroby, landscape proposal regarding human needs: natural resources, potentials, real and potential natural and anthropogenous hazards, sensitivity of landscape and its tendency to destruction, anthropogenous charge and charging capacity, and carrying capacity of land-use).
5. Ability to inform about the most suitable ways of land-use, and of its spatial organization (prognoses on land-use, and of its impacts on natural structure of landscape) on the basis of geocological, and human-geographical analyses, syntheses, and of diagnostic assessments.
6. Ability to solve the environmental problems from the viewpoint of sustainability (equivalent assessment regarding its environmental, social, and economical dimension).

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