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Integrated landscape management – basic tool for implementation of sustainable development in practice

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Abstract. The aim of the paper is to present the integrated management as a basic tool for implementation of the regional sustainable development in the real practice. It presents the theoretical and methodical principles of the integrated landscape management and methodology. The basic aim of the study was to elaborate basic strategic objectives of development of the territory. They should ensure the basic positive changes of the region in the line of principles and criteria of sustainable development harmonising development of socio-economic activities with the potential of the region.

Key words: integrated landscape management, sustainable development, landscape as geosystem, landscape potential, land use

Introduction

The need of integrated Landscape management comes from pragmatic needs, as it is required by constantly rising environmental and existence problems. The European countries in the recent period faced many substantial socio-economic changes, which are also reflected in environmental area. In a part of Europe the change from central socialistic planning to a market-driven economy happened.

There has been also a major change of the structure of agriculture in abandoning the agricultural land, drop in intensity of agricultural production, rising pressure on allocation of agricultural land and also other natural resources due to strong promotion of certain investment project, but also growth of demand on natural resources in consequence with implementation of environmental measurements etc.

These structural changes had also negative impact in social and environmental area and are causing new line of modern problems. In social area e.g. releasing of workforce oriented only on a specific industrial production or agricultural production, the rise of unemployment, problems to find new jobs for redundant – mostly low-skilled – workforce, worsening the socio-economic and psychosocial conditions due to these processes. Migration of population – partly migration of country population to urban are for more work opportunities, contrariwise the immigration of urban population into country preferring better life environment. These processes are reflected in change of demographic structure of population in country area, in change of its lifestyle and also in a change of the landscape itself and they change also the view about it.

In environmental area some major newly-shown problems can be registered. As negative impact of leaving the agricultural fields on the landscape biodiversity, a desertion of land, an increase of synantropic species etc. have been identified. The conflicts of development of the new particular socioeconomic activities with soil protection and protection of other natural resources, collisions between agricultural land resources and the development of Natura 2000 etc. The changes in landscape structure and substantial anthropisation of the area are the major cause of climatic change, which beside of the changes in biodiversity are consecutively causing more intensive

demonstration of natural risks and hazards as floods, droughts etc.

The particular problems are often mutually connected – for example the change in land utilization influences in a considerable extent the biodiversity and landscape stability, the pollution of the separate parts of the environment requires investments into disposal of these effects and into implementation of new technologies, closing of industrial operations having negative impact on environment is often connected with increasing of social problems – growth of unemployment, growth of negative psychosocial issues etc.

Based on the above information can be seen that the usage and management of landscape and its resources needs to be dealt comprehensively and the integrated approach needs to be applied.

Theoretical and methodical principles

The model is based on an integrated landscape research in its three basic dimensions, environmental, social and economic, analysing the connections and dependencies between particular dimensions with the target to define such landscape management, which would align social landscape development with its natural, socio-economical, cultural and historical potential. It is based on matching the offer, which is represented by the resources in the region, and demand which is represented by the community needs of growth and development. The dissonance between offer and demand /not respecting the landscape resources/ is the determining factor of formation not only environmental but also socio-economical problem. The model is focused on solving of the problems stated – elimination of current and prevention of formation of new environmental and socio-economic problems and from long-term perspective secures sustainable landscape development.

The aim is to create such landscape management and use which is focused on improving the overall life quality, respecting nature protection, landscape stability and biodiversity, protection and rational usage of natural and culture-historical sources and environment protection.

Integrated landscape management is based on seeing the landscape as integration of natural resources in certain area. As the area is representing the integrating scope, scene in which all resources are occurring as layers (geological sources, water and soil sources, climate, biotic sources, and morphometric parameters) which are mixing together. It is seen as understanding the space as integration of particular natural sources in given area. Every point of earth surface presents specific homogeneous entity of mutual combination of listed sources (landscape building components, which through its attributes are capable to satisfy human needs and as such in relation to human society act as natural resources) and also understanding the relationship between these resources.

The integrated landscape management is elaborated in different publications (Caims, Crawford, Salwasser. 1994, Sclocombe 1998, Szaro, Sexton, Malone 1998, Siebert et. al. 2004, Bezák 2006, Lehotský 2006, Miklós, Izakovičová 1997) Integrated landscape management is based on complex landscape research in 3 basic areas, environmental, social and economical and research of connections and relations between particular areas. The aim is to balance the development of the areas given. It is not possible to prefer the development of one area over the other – ex. to prefer economical profit over environmental or social etc. In our circumstances it is especially sensitive to study the relation between environmental and social area as many businesses has with negative environmental impact has high social effect.

The basic principles of the integrated landscape management are (Izakovičová, Miklós, Drdoš 1997):

- a) preservation of the overall ecological stability of landscape as the most general and complex condition for conserving gene pool, biological diversity, stability and the natural functioning of ecosystems and through that also for conserving the natural production capacity of landscape. The preservation of ecological stability is therefore primarily achieved by the ecological optimisation of the spatial structure of landscape - through the suitable distribution of landscape elements in space, their proper utilization or protection.
- b) protection and rational utilization of natural components (natural resources), in particular of air, water, soil, biotic resources, mineral resources. The state of natural resources is determined by their quantity, quality conditions, Protection and rational utilization of natural resources is realized partly through the optimal collocation of objects and activities in the area,
- c) protection of the close human environment - that means: preserving the quality of air, drinking water and

food chain, reducing negative influences like noise, radiation and waste, etc. The protection of the environment against the unfavourable influences means mainly the optimisation of technological processes of production branches,

d) **ensuring certain quality of living** - primarily means to ensure and satisfy the basic existential (housing, labour, provision with food and water etc.) and personal-development needs (education, culture, recreation, health treatment, religious and political freedom etc.) of the population. The realization of this objective may be achieved by the interaction between economic and legislative measures.

e) **ensuring social and cultural diversity** – by respecting the national, religious and culture-historical peculiarities of individual communities that form region. This objective - like the preceding one - can be ensured through the “ecologization” and humanization of the above structure, especially by the interaction of economic and legislative tools and by the humanization of social consciousness.

So the implementation the integrated landscape management must consist of following steps:

- To secure landscape-optimal utilization of land – landscape-optimal spatial organization and functional landscape utilization. The mentioned amendment defines as complex process of reciprocal synchronization of areal requirements of industrial and other human-related activities with landscape-ecological land conditions, which are resulting from landscape structure.
- The implementation of technological arrangements – to establish effective technologies focused on eliminating production over limit of polluting substances with the goal to minimize the influence on the respective environmental elements with foreign substances and other contaminants, as well as the use of technologies using alternative energy sources and renewable sources. Also necessary to apply appropriate saving technologies in agricultural and sylvan fund usage.
- Application of regulators of environmentally optimal landscape utilization to sector plans – it is unavoidable to set limits of usage of the particular resources by production and non-production subjects in order not to prefer the development of one area over another, and avoiding issues coming from conflicts of interest.
- Implement principles of sustainable development in population awareness – the basis is to create effective system of education in integrated landscape management system and in sustainable development. Only sufficiently educated population is able to promote the principles and criteria of sustainable development in practice.
- Assertion of effective tools – ensuring legislative protection, economical tools etc. --- mainly legislative rules and regulations ensuring rational utilization of natural resources, as well as protection of human being, its health and environment. From this aspect is needed also the realization of effective economical tools as taxes, duties, and fees for environmental pollution and people’s health injury, economical tools eliminating the marginality of regions, social disparities etc.

Methodical procedure

Methodological procedure is based upon the geosystems comprehension of the landscape (Miklós, Izakovičová 1997, Mitchley, Tzanopoulos, Cooper 2005, SENSOR 2004), and consists of the following basic steps:

Analyses

The aim of analyses is the elaboration of basic features (textual and graphic) of landscape-forming components of the area. They represent the choice, creation, assessment and spatial differentiation of the indices of landscape features and single landscape-forming components.

On the basis of the content the elaboration of analyses can be divided into two basic blocks:

- resources analyses – characterizing the basic conditions and possibilities of land development,
- analyses of use and protection of resources – identifying the present state of use of single resources of the area.

1. Resource analyses – are focused on the evaluation of the qualitative and quantitative properties of single resources of the area and their spatial differentiation that create the determining potential and spatial basis of

its development. On the basis of the genesis the analyses elaboration of single resources can be divided into four basic categories:

- 1.1. Analyses of natural resources – characteristics of the resources appearing without human interferences due to the influence of evolutionary natural processes,
 - 1.2. Analysis of cultural-historical resources – analysis of the resources appearing due to the development of social-territorial units, characterizing single developmental stages of land development,
 - 1.3. Analysis of human resources – analyses aimed at the characteristics of the features of human society of the given spatial unit which forms the basic motive power of its development,
 - 1.4. Analyses of socio-economic conditions aimed at the evaluation of the development of single branches (production or service) and macroeconomic indices in the given area.
2. Analyses of the present state of use and protection of resources – aimed at the assessment of the impact (positive or negative) of anthropic activities on single resources. The basis of this part is the preparation of the land use map creating the spatial basis for evaluation of utilization of natural resources. A part of this chapter is also the evaluation of non-material socio-economic phenomena. According to the impact on single resources it can be divided into two basic groups:
- 2.1. Anthropic activities (with positive effect on resources) – socio-economical phenomena aimed at nature protection, stability, biodiversity, protection of natural, cultural-historical resources, protection of the human environment, human potential and improvement of the life quality of local people,
 - 2.2. Anthropic activities (with negative effect on resources) – socio-economical phenomena aimed at the analysis of anthropic activities endangering the qualitative as well as quantitative features of single resources of the area that create barriers to socio-economical development of the given units. They are the factors worsening the life quality of the given territorial units.

Syntheses and evaluation

Goal of this step is to evaluate the problems appearing from the unsuitable use of resources and potentials of the area. They can be divided into three basic problems:

- environmental problems – aimed at endangerment of ecological stability, biodiversity of the area, endangerment of nature and natural resources as well as the quality of the human environment,
- social problems – disturbance of psycho-social climate of the environment, they are the problems of use and development of human potential,
- socio-economical problems – connected with the development of production and non-production entities of the given territorial unit.

Proposals

The aim is a proposal to eliminate the special and prevent the new problems in the given area. The proposals can be divided also to the categories according to the types of special problems.

The output of integrated landscape management is a proposal how to solve the problems and issues following from conflicts of interests in landscape, as well as a proposal how to prevent formation of new conflict and problems following the conflicts.

The conflicts can be divided into four basic groups.

- Intra-sectional – threat on natural resources by its own user e.g. threat on soil resources following from unsuitable usage.
- Inter-sectional – conflicts between individual sectors, e.g. threat on soil resources following from production industrial pollutants (agriculture vs industry)
- extra-sectional – conflicts between individual sectors and environment protection e.g. threat and damage of protected areas, elements of NATURA 2000 following from wood logging etc. (nature protection vs wood industry)
- over-sectional – conflicts between individual sectors and human, its environment, its health protection e.g.

excessive noise burden of environment (transportation vs human and its environment).

Conclusion

Integrated landscape management is a new-age but very much actual problem setting out from the needs of landscape research as integration of natural, cultural-historical and socio-economical resources in the given area. It follows from the necessity to solve not only the environmental problems but existent ional ones of mankind arising due to the prevailing resortism in land use and protection. Its application in practice contributes not only to elimination of environmental problems, but also to the intensification of socio-economical development of the given areas in harmony with capacity abilities of natural resources. Of the area the successful application of integrated landscape management requires many social measures on the level of legislation, economical means as well as education and teaching.

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References

- Bezák P., 2006. Integrated approach to the evaluation landscape on the example of research in National Park Poloniny. (in:) Izakovičová Z. (eds.). Integrated landscape management – basic tool of the implementation of the sustainable development. ILE SAS, Ministry of Environment. Bratislava. 125 – 130.
- Cairns JR. J., Crawford . V., Salwasser H. (eds.), 1994. Implementing Integrated Environmental Management. Virginia Polytechnic Institute and State University, Blacksburg, VA. (In:) Sclocombe D. S., 1998. Lessons from experience with ecosystem-based management. Landscape and Urban Planning 40. 31-39.
- Izakovičová Z., Miklós L., Drdoš J. 1997. Landscape-ecological conditions of the sustainable development. Veda Bratislava. 183.
- Lehotský M., 2006. Water landscape and their sustainable development – new area for application of the integrated approach. (In:) Izakovičová Z. (eds.). Integrated landscape management – basic tool of the implementation of the sustainable development. ILE SAS, Ministry of Environment. Bratislava. 155–159.
- Miklós L., Izakovičová Z., 1997. Landscape as geosystem. Veda Bratislava, 152.
- Mitchley J., Tzanopoulos J., Cooper T., 2005. Reconciling conservation of biodiversity with declining agricultural use in the mountains of Europe. (In:) Taylor L., Ryall A. (eds.). Interdisciplinary research and management in mountain areas. The Banff Centre Canada. 61-65.
- Sclocombe D.S., 1998. Lessons from experience with ecosystem-based management. Landscape and Urban Planning 40. 31-39.
- Siebert R., et al. 2004. Mobilizing the European social research potential in support of biodiversity and ecosystem management. International Report –Sobio. 90.
- Szaro C. R., Sexton W. T., Malone CH. R., 1998. The emergence of ecosystem management as a tool for meeting people's needs and sustaining ecosystems. Landscape and Urban Planning, 40. 1-7.

