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PROTECTED AREAS IN THE CONTEXT OF SELECTED ASPECTS OF SUSTAINABLE DEVELOPMENT IN THE TATRA REGION

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The mission of protected areas is to protect and conserve the most valuable parts of the landscape. The aim of the paper is to identify and analyse the context between the structure of the protected areas system and sustainable development protected areas dimensions (landscape/environmental, social/economic, institutional/managerial) in the area studied via selected criteria and indicators. Both – protected areas system and sustainable development concept have their own parameters, qualities, structure, dimensions and they are mutually overlapping in many different aspects. While protected areas are sets of material units with high natural and environmental value which is more or less strictly defined, sustainable development is a partly virtual system of concepts based on various sometimes ambiguous aims and priorities.

Key words: sustainable development, protected areas, regional development, landscape connectivity, Tatra region

INTRODUCTION

The mission of protected areas is to protect and conserve the most valuable parts of the landscape. Nature protection in Slovakia boasts a comparatively long tradition relying on a reasonable scientific and organizational background.

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However, implementation of laws and regulations concerning nature protection, the social weight of the issue, or the financial aspect are notably less satisfying. Execution of nature protection is sometimes reduced to quantity, which prevails over quality, and declarations replace the everyday work. The area of Protected areas (PAs) designated on the basis of the Act on nature and landscape protection (ANALP) in Slovakia is approx. 10,500 km², (without protecting or buffer zones), that is 21 % of the country's total area. It is substantially more than the European average (12.5 %) and still more than the 10 %, recommended by the World Congress on National parks in Caracas at the beginning of the 1990s. The quoted percentages, of course, are guidelines adaptable to local conditions, which, in fact, are still favourable for nature protection in Slovakia. Another limiting factor is, that the majority of large-scale PAs in Slovakia (Protected Landscape Areas) are protected under the very low degree and regime of protection (2nd degree). Less than 2 % of the territory of Slovakia are protected in the highest two degrees of protection (4th and 5th).

Sustainable development (SD) is understood as a balanced development of the economic, social and environmental sectors.

It is expected that the size, number and quality of PAs are positively related to the sustainability status of the area. Without any doubt PAs play an important role in assessment of the sustainability of the particular regions.

The problem of sustainability in the context of PAs was studied in the Tatra region. The region studied is delimited by the brook Beliansky potok and the Polish frontier in the north, water reservoir Liptovská Mara in the west, the ridge of the Nizke Tatry Mts. and the National park (NP) Slovenský Raj Mts. in the south, and the river Poprad in the east. On an area of 2,690 km² 107 small scale PAs of the State Nature Conservancy (SNC) with a total area 481 km² and 3 large scale PAs (under the categories of National park and the buffer zones of National park) on total area of 2,071 km² were identified. Out of 107 small PAs designated by the ANALP, 90 are situated on the surface and the remaining 17 are caves. The administrative regions of Žilina and Prešov administer their corresponding parts of the area (Fig. 1).

Apart from the small scale PAs of the SNC, there are also additional categories of PAs classified under other systems of protection such as NATURA 2000, Ramsar sites as systems of ecological networks (biocorridors and biocentres included in the National Territorial System of Ecological Stability, NECONET). The boundaries of these PAs are not always compatible, but areas of particular nature protection systems are overlapping.

The population of the region amounts to 290,000 (108 per km²) living in 108 communes.

Moreover, not only the quoted "physical" networks are important; "virtual" networks connecting the individual centres of management, information centres/networks etc. also affect the system.

SETTING OF THE GOALS AND DESCRIPTION OF THE METHODOLOGY

The aim of the paper is to identify and analyse the structure and functions of the PAs system in the SD context in the study area.

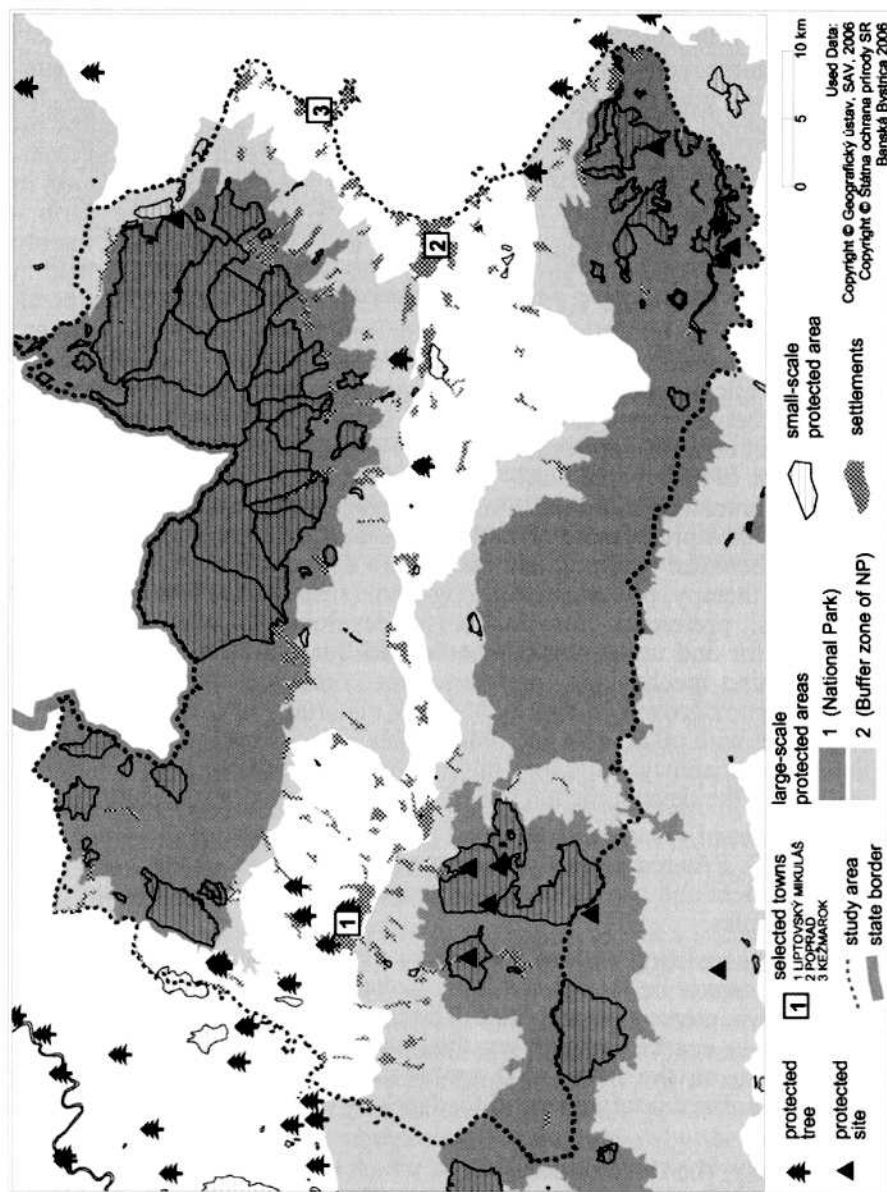


Fig. 1. Protected areas network in the Tatra region

Both – the PAs system and SD concept have their own parameters, qualities, structure and dimensions and they are mutually intersecting in many different aspects. While PAs are a set of units with high natural and environmental value which is more or less strictly defined, SD is partly a virtual system of concepts based on various sometimes ambiguous goals and priorities.

The sustainability concept as recently emerging global development paradigm in connection with different notions like development, living, society, future, etc. became not only topical but also popular among different groups including researchers and scientists, soon after the appearance of the World Commission on Environment and Development Report *Our Common Future* in 1987, the Second World Conservation Strategy called *Caring for the Earth – A Strategy for Sustainable Living* (IUCN, UNEP and WWF 1991), and mainly after the UN Conference on Environment and Development – UNCED held in Rio de Janeiro in 1992 (see e.g. UNCED 1992a, 1992b, Izakovicova et al. 1997). It represents an important challenge for geography, landscape ecology, and other environmentally oriented disciplines, which highlight the holistic, integrated or synthetic approaches to the environment or better said, to the system of relationships between man and nature. As Miklos (1996) stated, the sustainable development concept implies an integrated approach to preserving the conditions and forms of life on the Earth. Huba and Ira (1994) and Huba (1995 and 1988) tried to summarize, that the main characteristics of the sustainable development concept as a programme of building a harmony among the human beings as well as between mankind and nature, are among others: preference for prevention over therapy, preference for long-term (sustainable) approaches over short-term ones, preference for qualitative development over quantitative growth, search for and utilization of natural and quasi-natural auto-regulative and self-supporting mechanisms, preference for comprehensiveness over particularity, efficiency growth in energy and raw materials utilization, leading in general (together with other aims and requirements, like democratization, public participation, transparency, solidarity improvement and others) to the continual transformation of the developmental paradigm towards a more sustainable one.

From this point of view, environmental principles are part of the fundamental criteria for SD. PAs represent a very important component of this SD dimension and an efficient and careful nature protection is fully compatible with sustainability principles.

Methodology consisting of three stages was applied in our investigation. The individual steps cannot be interpreted in an isolated way. They are progressive and in many ways intersecting activities. The important tool and corrective element for outputs is, apart from analyses, the opinion of stakeholders and participating institutions on the PAs – SD problems, which was obtained by the method of standardized interviews and feedback at working sessions, seminars, etc.

In the first step, the three basic systems, which determine the character and functions of the study area and the analysis of effects exerted by individual systems on the existing PAs in the SD context are performed:

- *natural landscape and land cover* – consisting of the subsystem of natural landscape functioning under natural principles and secondary cultural

landscape represented by the character of land cover which is created by man,

- *man and his activities* – the population, its social and economic activities, man-made elements in the landscape are analysed with the emphasis on their impact on protected areas and sustainable/unsustainable development of the region,
- *management* – institutional, legal, organizational-informational aspects of territorial planning and management, where effects determined by humans (subdivided into legislation, management, decision makers – namely state municipalities, business, NGOs, churches, property owners, and other interest groups influencing spatial functioning) are analysed.

The second step is perception analysis. The qualitative assessment of the PAs in the regional sustainability context is the output of the final third step.

ANALYSIS OF BASIC SYSTEMS

The natural landscape and landcover system

“The landscape system” consists of subsystems: natural landscape and cultural landscape. Natural landscape expresses the immanent properties of the landscape system. The character of the cultural landscape is expressed by the present state of land cover. Both these parameters are important for setting the connectivity potential, which is regarded as the decisive property of the natural landscape regarding SD.

Landscape connectivity

The landscape connectivity is of vital importance for a properly functioning system of PAs and as such it contributes to the SD of the region. A well designed and maintained system of PAs reflects the optimal state of the environment in general and the environmental dimension of SD in particular. The study of the concept and definition of the landscape connectivity in contemporary literature reveals the prevalence of the biocentric interpretation of connectivity. It is mostly assessed (defined) according to the accessibility (possibility of movement) or diffusion of animal or plant species.

After Forman and Godron (1993), the connected area is such an area, which is not divided into two parts – it means it is not cut by a border, the ends of which touch the border of such an area. Taylor et al. (1993) define landscape connectivity as the extent to which the landscape facilitates or limits the movement of individuals between source areas. Brooks (2003) asserts that the landscape connectivity consists of two components: structural and biological. The structural component describes the shape, size, and position of landscape elements while the biological component is represented by the response of individuals to landscape elements. The term landscape connectivity is usually interpreted at two conceptual levels: structural and functional. Structural connectivity or landscape connectivity is expressed by the properties of spatial landscape structure independently on attributes of organisms and it is explored by applying Forman’s patch-corridor-matrix model. Functional connectivity relies on the concept of metapopulation ecology assuming behavioural response of organisms to varied landscape elements (patches and boundaries). The authors

of this paper prefer application of the structural connectivity concept with emphasis on the spatial and abiotic properties of corridors. Two types of landscape connectivity are discerned:

Primary landscape connectivity is set by evaluation of the structure and position of the large landform elements.

The landforms structure was evaluated in the relationship to the connection of the two parallel NP systems, those of the NAPANT and NP Slovenský raj in the south and TANAP in the north as the first step. The individual landform components may acquire, regarding this north-south direction, the nature of barrier, connection or divergence, according to the dominant direction of the river-valley systems.

The barrier landforms comprise river-valley systems and mountain ridges which are predominantly west-east oriented. They are the least favourable for connectivity.

The connective landforms promote transport of mass and energy in the north-south direction connecting the two parallel PAs systems (the NAPANT and NP Slovenský raj in the south and TANAP in the north).

The divergent landforms represent an ambiguous arrangement of river-valley and ridge systems.

The parameter of landform position (mountain range, basin, water divide) as the second parameter was evaluated. The procedure resulted in a set of 18 units: 5 barrier units with a total area of 260 km², 5 connecting units with a total area of 1,945 km² and 8 divergent units with a total area of 488 km².

The secondary landscape connectivity is given by the nature of the secondary landscape structure (land cover). The land cover map of Slovakia compiled by the method of the CORINE Land Cover (CLC) of Slovakia for 2000 was used for the analysis of land cover in the studied territory. The CLC legend consists of three hierarchic levels. Land cover classes were classified into five classes by the share of biotic parts and connectivity (transitability) in terms of migration of organisms (in this case instead of assessing the connectivity of the ecological network as a property of landscape structure, the inner properties of individual classes allowing for free movement of organisms were assessed): 1 – urbanized and technicized areas (artificial areas), 2 – agricultural areas, 3 – forest and seminatural areas, 4 – wetlands, and 5 – water.

Landscape connectivity potential

The connectivity potential of the study area was obtained as the sum of the primary and secondary landscape connectivities. In order to obtain appropriate differentiation of the resulting values, four categories of secondary landscape connectivity were weighed by coefficients. The categories 1 (the lowest secondary connectivity) to 4 were assigned coefficients of 0.1; 0.5; 1.0; and 1.5 respectively. These values were classified into five resulting classes of the connectivity potential and presented on a map (Fig. 2). Territories with the lowest connectivity potential cover 108 km² (about 4 % of total area), while low, medium, high and top connectivity potentials were identified for areas of 345 km² (13 %), 105 km² (4 %), 1,050 km² (37 %) and 1,128 km² (42 %) respectively.

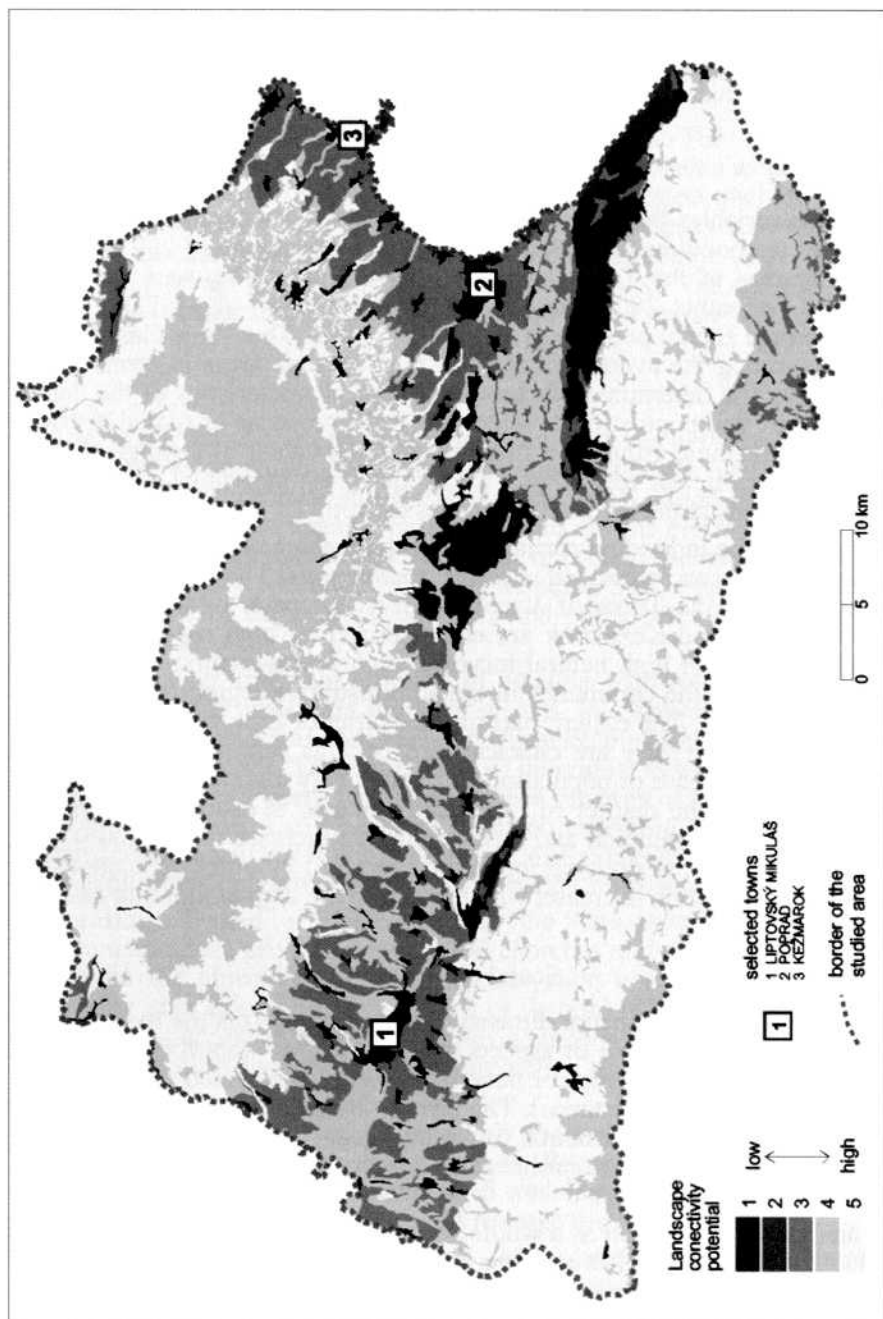


Fig. 2. Landscape connectivity potential

The human system and its manifestation in the landscape

In an effort to obtain a more comprehensive picture of the human impact on nature and the landscape in the Tatra region, this part was divided into four clusters: demographic, social, economic and infrastructural.

Demographic cluster

It includes variables that characterize the structure, development and spatial movement of the population. At the end of 2005, a population of 287 000 lived in 108 communes of the Tatra region. During the period between 1 January 2001 and 31 December 2005, the population increased by about 2,000 which means an average annual population increase of 0.4 %. This value classifies the Tatra region among the average or slightly over-average areas in terms of the whole country. The determining factor for several characteristics of the demographic structure and population development is the presence or spatial distribution of the Roma ethnic group. It is manifested in the values of demographic indicators for the particular region as a whole and in its individual parts, and in the detailed analysis at the level of communes as well.

According to the individual partial demographic characteristics, the territory of the Tatra region can be divided into four spatial units. The district of Poprad (with exception of the Town of Vysoké Tatry) and parts of the districts of Spišská Nová Ves and Kežmarok are characterized by high representation of young population with high natural increase, high representation of the Roma ethnicity (except for the communes in the administrative region of Orava) and low educational level. The eastern part of the district of Liptovský Mikuláš and the Town of Vysoké Tatry are characterized by high representation of older population, total decrease of population and a relatively high level of education. The eastern part of the district of Liptovský Mikuláš is characterized by the prevalence of older population and total population increase (Vaňo 2006). The north-western part of the study region is characterized by older population and relatively high population decrease, which is due to the high emigration rate.

Social cluster

Cognition of the socio-spatial dimension that characterizes the living conditions of the population is one of aspects that can play an important role in the process of removal of disparities or poverty elements in afflicted regions (a targeted and more efficient assistance). The level of living conditions considerably determines the relation to protection of natural assets and obviously, the worse the living conditions the more problematic is the relationship of population to nature conservation values.

The analysed Tatra region as a whole seems to be average in the light of the above quoted evaluations. However, the situation is not the same in all its parts. The best values of the living conditions indicator were found in the communes concentrated in the central part of the district of Liptovský Mikuláš. Similar values characterize the towns and villages in the centre of the district of Poprad (Poprad, Vysoké Tatry, Svit and some other). Relatively rich and medium rich

municipalities are concentrated in these parts of the region. Communes with a high share of the Roma ethnicity and very low values for the living conditions index prevail in the east of the region. These communes (Hranovnica, Krížova Ves, Rakúsy, Stráne pod Tatrami, Vydrník, Jánovce) are the poorest even from the point of view of the whole country (Michálek 2004).

Unemployment is an extra negative phenomenon. The Tatra region as a whole can be classified among the average areas of Slovakia as far as the unemployment rate is concerned. The Liptov part of the region, including the Town of Vysoké Tatry) is characterized by the lowest unemployment rate. The high values of this indicator in the remaining parts of the region (east of the district of Poprad, relevant part of the districts of Spišská Nová Ves and Kežmarok) are reflected in the negative values of this indicator in the region as a whole.

Economic cluster

The textile industry is one of the important branches in the region's economy followed by wood-working plants, processing of poultry, brickyards and railway repair plants, production of washing machines, varied plastic produce including special plastic threads, packaging foils for the electronic industry, production of stockings and socks. The most important industrial centres are the towns of Liptovský Mikuláš, Liptovský Hrádok, Svit, Poprad and Kežmarok. Industry is one of the greatest polluters and participates in the long-distance transfer of pollutants.

The area is an important producer of potatoes with comparatively high hectare yields. It is an important producer of oats. In some area barley and rye are also grown. Husbandry and the reviving sheep keeping are pursued on extensive meadows and pastures. The distribution of individual farm crops in this territory changes even over a year. The ratio between the area of arable land and grasslands remains equal. Large fields of farmland prevail in this territory. They especially stand out in the south-eastern part of the region. Farmland is managed by agricultural cooperatives and partially by private farmers.

Forests are owned by different entities (the State, associations of forest owners, municipalities, private owners, local churches and other). The greatest conflicts with the objectives of nature conservation emerge in relation to wood processing after calamities (wind, snow or vermin) in the area of fire protection or concerning access to growths. The key question of property damage compensation to forest owners due to nature protection remains unsolved (Huba et al. 2005).

Recreation activities has progressively increased since 1998. The greatest load is observed in the high-mountain area. Recreation activities are accompanied by such phenomena as uncontrolled waste liquidation, soil and water contamination, movement of vehicles, and damage to growths.

The originally small holiday centres, which later became a spa, were gradually formed pursuing the example of mountain resorts in Austria and Switzerland in the 19th century. After the Second World War, additional therapeutic compounds sprang up in the Vysoké Tatry mountain range followed by the construction of accommodation and recreation facilities in the 1960s and 1970s. Since then, the question how to harmonize the existence of large recreation and

therapeutic compounds with the landscape of the Tatras and its carrying capacity has been ever more frequently discussed.

The specific feature of the Tatra Region from the point of view of science and research is that a substantial part of these activities is connected with environmental protection. Several institutions in the region provide for science and research including innovation in the region (detached University centres in Poprad and research centres of the Slovak Academy of Sciences in Stará Lesná, at Skalnaté pleso, the peak Lomnický štít and the research station of the TANAP in Tatranská Lomnica).

The negative impact on the territory with the exception of several localities in the Popradská kotlina basin (Svit, Poprad) is relatively low. Some elevated concentrations of air contaminants have been found in the environs of Svit. The long-distance transport of emissions from the region of Ostrava in Czechia, Upper Silesia in Poland and from Ružomberok pose a problem, although the situation has improved recently in this respect. Water quality in streams deteriorates to the 3rd level (of the 5-level scale) to contaminated water in the Biely Váh between Važec and the confluence with the Čierný Váh; likewise, the river Poprad below Poprad city is also contaminated. Waste management (dumping and burning) is concentrated in large settlements and their environs (Poprad, Lip-tovský Mikuláš, incinerator in Svit).

Infrastructural cluster

The transport corridor between Žilina and Košice is part of the European network of multimodal corridors. The main communications in the corridor – road I/18 and the railway track No. 180 are parts of the pan-European transport network. The construction of the motorway D1 Žilina – Prešov – Košice and modernization of the railway track to speeds of 120 to 160 km/h are under preparation. The carriers of electric energy in the whole territory in question are the 110 kV conduits and transformation stations 110/22 kV. The majority of the water-management activities in the territory of the Tatra region are provided by two water-management companies.

Impact of human factors on PAs in the Tatra region

The map (Fig. 3) brings a comprehensive view of the impact exerted by human activities on the sustainable development of protected areas. It was compiled by synthesis of four partial aspects. The first considers the demographic characteristics of settlements in the studied territory with emphasis on the educational level and age structure of population. The second aspect is the social situation comprising above all unemployment, equipment of dwellings and living conditions of the population in the communes of the territory. The third, economic aspect is represented by the level of effect of economic activities on networking of protected areas. The fourth aspect is that of infrastructure reflecting on the barrier effect of important infrastructural elements in the landscape. The first three aspects are in the form of a synthesizing index projected on a five-step scale in build-up areas of individual settlements. The fourth (infrastructural) aspect is represented by the corresponding line elements.

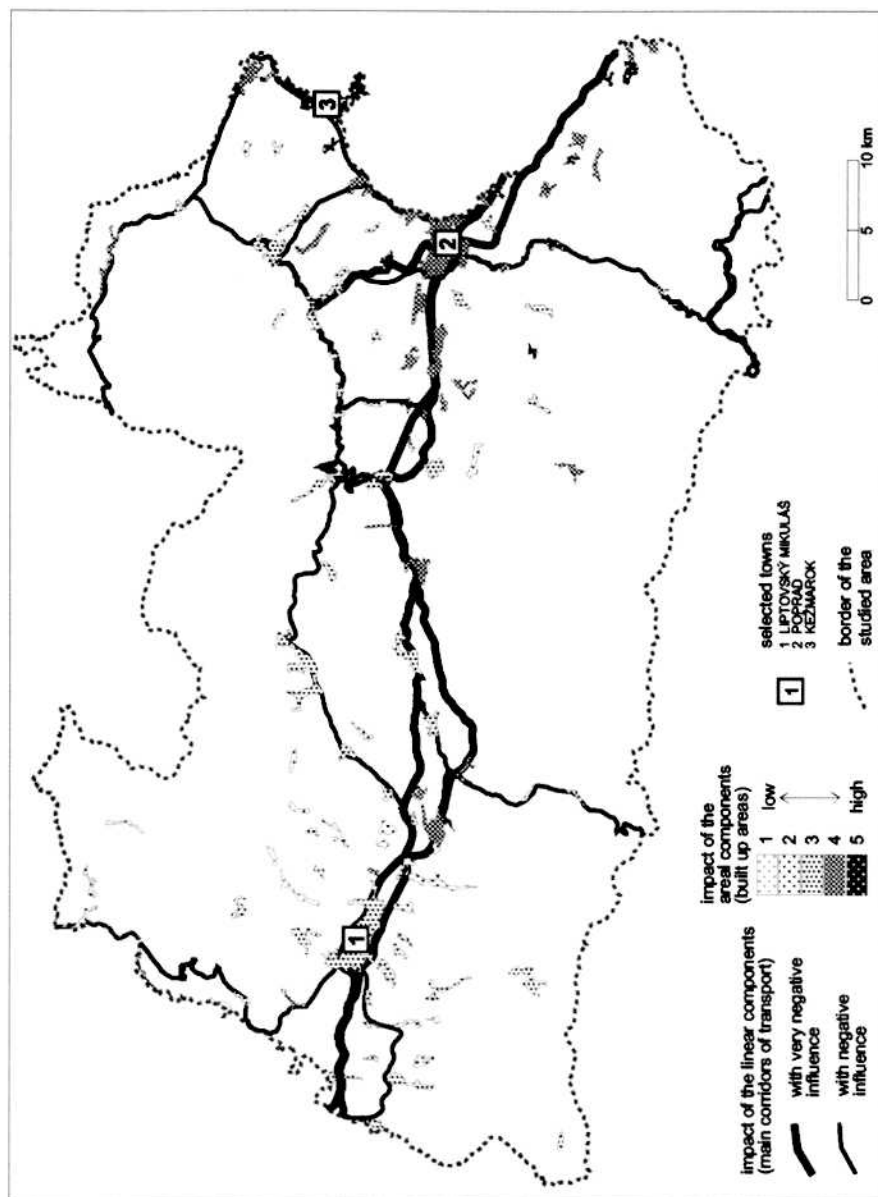


Fig. 3. Impact of man and his activities on the landscape

Management system

In this part we deal with institutional, legislative, organizational as well as informational aspects. The management systems boast three basic dimensions:

- *Public administration sector* (compulsory, stipulated by the law or other generally binding legal norms active in the top-down direction) – the EU international conventions, state administration (national, regional and local levels) including the inspection bodies and specialized organizations and self-administration (regional and local);
- *Non-governmental and non-profit sector* (voluntary based on the initiatives of citizens or their voluntary associations and acting in the bottom-up way) – non-governmental organizations (NGOs) specialized in the topic of our research (nature protection, biodiversity, NATURA 2000, sustainable development) and NGOs oriented to related issues (local development, participation of public in planning and decision making, etc.), ad hoc citizen associations (participation in the process of environmental impact assessment, in administrative procedures, petitions, and the like), association of entities (municipalities, citizen associations, travel agencies, etc. from the local to international level), opinion-making individuals and groups and other entities such as the media constitute a special category including schools, cultural organizations, research-scientific institutions and agencies (developmental, counselling or implementing).
- *The business sector* is important from the point of view of administration and use of territory. It consists of businesses in agriculture, forest management and the wood-processing industry, transport, services, travel and balneal sector, and the like.

The corresponding organizational units are the State, municipal, churches and other relevant sectors, like associations of forest owners, agricultural cooperatives, private farms, industrial and other companies, networks of stores, tourist industry, financial institutions, investors/developers (above all in the sphere of motorway and communication building, construction of flats and corection facilities, etc.)

PERCEPTION AND EVALUATION OF PROTECTED AREAS IN THE CONTEXT OF SUSTAINABILITY (ANALYSIS AND INTERPRETATION OF STANDARDIZED INTERVIEWS)

The standardized interview is such form of enquiry, which uses the standardized structure of questions. Essentially, in this way it is possible to obtain information on any subject. The way questions are formulated and presented is single and common for the whole set of respondents. Interviewers use a questionnaire, a note sheet or other aids, which provoke the response of the questioned persons. A strict observation of the prescribed standard form by the interviewer is crucial (Maříková et al. 1997).

Analysis and interpretation of the data collected by standardized interviews in autumn 2007. were conducted in a similar way to that applied in previous research in the regions of Dolné Pomoravie, the Tatras and the Eastern Carpathi-

ans (Huba and Ira 1999 and 2000, Ira 2001) and in the area of Poľana (Ira et al. 2006). Standardized interviews were carried out with local and regional representatives of the decision-making sphere and with opinion-forming personalities. The entity of respondents was represented by representatives of local government from communes and towns of the region studied, by representatives of the State administration or independent persons with a decent knowledge of the local or regional issues.

The character of the development in any territory decisively determines the sustainability and quality of life. In this context respondents were asked: *What development of your commune/region do you expect in the next years?* More than a half of respondents (54 %) expected a distinct development while a third of them expect moderate development. Only one respondent expected a moderate decay.

The respondents also answered the question: *What importance do you ascribe to problems connected with provision for economically, socially and environmentally balanced, that is sustainable development of your commune/region?* Air and water quality, waste management, safety, the population's health condition, sewage, shortage of subsidy from the State or the EU, and unsettled property rights were quoted as very important and important issues.

Analysis of answers to the question: *How do you evaluate the activities in your commune/region, which contribute to a good quality of life and are in harmony with the idea of sustainable development/way of life?* brought interesting information relevant for the assessment of sustainability and quality of life in the protected area. Respondents commented on individual types of activities whether they were realized fully or partially or were not even planned but considered viable or on the contrary considered not practicable. The fully or partially accomplished activities included separation of waste and recycling, water management or construction of water mains, public greenery, improvement of housing quality/available amenities and appliances, improvement of local shops with basic food and other goods.

The research results offer wider possibilities to deal with the concept of development that offers qualified answers to the questions connected with improvement of the life quality of locals and improvement of the care for the protected territory. Many a respondent, although possessing decision-making powers, was not sufficiently informed either about nature protection and other relevant assets within the scope of their influence or about the importance of PAs networking and conservation. It is therefore necessary to increase and improve the level of information, education and training involved with the issue of PAs and their networking in the region.

All important stakeholders (individuals, governmental and non-governmental organizations, businessmen) should participate in a wide and exhaustive discussion about the future of their particular commune and region or "their" Protected Area. Participation of locals and their relative independence is the keystone of a successful model for the management and use of the PAs. In fact it should become the opportunity to change the existing attitudes to local problems and the use of the valuable protected landscape.

CONCLUSIONS AND PROPOSALS

As the PAs are seen from the perspective of sustainability as a multidimensional system where real phenomena and networks represented by elements of the natural landscape couple with virtual, immaterial phenomena and networks (management, institutional, organizational, informational and other aspects) (Fig. 4), it is appropriate to specify the proposals for improving the position and functions of PAs in the context of SD in all the above mentioned fields. The graphic model (Lehotský and Podolák 1987, Lehotský 1998) was used as a tool for the presentation of the networking system in the Tatra region (Fig. 4).

Socio-economic and natural systems in the landscape depends on, and require special approaches, methods of management and in certain cases, special support. The system of PAs in context of SD should be relatively stable over time and should contribute to the overall stability of the region. For the sake of securing development in the territories with special natural-conservation value it is necessary to pay special attention to nature protection in some of their parts (above all in the core territory). Other parts of such territories should secure conditions for the selected human activities, which are admissible in terms of nature protection.

The aim of the sustainable development of PA core areas is to reach the state very close to the original natural conditions with emphasis on protection of threatened ecological structures and natural processes that represent the essence of nature protection.

The aim of sustainable development in buffer zones should be based on securing the protection of the core territory and provision of suitable conditions for its functioning. Eventually, sustainable development in transition zones should secure the basic functions and quality of life of inhabitants while respecting the conservation regime.

The sustainability of the natural landscape and landcover function of PAs in the study area can be achieved by their integration which leads to connecting of two or more PAs. Another tool is areal expansion of the PAs with projection of linear functional elements into the surrounding un protected landscape which means increased landscape stability in the environs of the PAs. It strengthens the sustainable function of PAs. A stream or a strip of forest are such linear elements. In detail it means:

- Improvement of existing and generating new connecting lines (between and among PAs),
- Removal of barriers (by prevention of fragmentation),
- Generating/strengthening the cores and making them functional (integration),
- Justification by the territorial expansion of PAs or their buffer zones (linear or areal expansion).

Cognition of socio-economic structure is the result of analysis of human potential and assessment of individual socio-economic activities. If the development is economically and socially stable it forms the basis for balanced development of the area.

The future development of the whole territory will be viable if the region remains stable in socio-economic and resource exploitation terms. Selection of individual measures must respect the research results of the natural environment on one side and the local cultural values including the economic, social, legal and political context on the other.

Hence, it is necessary and appropriate to:

- Raise the “environmental awareness” concerning the protected areas, especially in communes with higher representation of low-educated population,
- Build information centres in communes with higher tourism and recreation potential, and provide increased information level regarding the protected areas,
- Cooperate with expert institutions in preparation of the Territorial system of ecological stability and programmes of social and economic development at the level of communes or their associations (microregions),
- Support the development of settlements and infrastructure in the foothill settlements of the Tatras with a sensitive respect for the natural landscape limits (reasonable and not massive construction), not to expand the urban fabric and infrastructure in the vicinity of the PAs, sensitive construction of leisure facilities (routes of tracks for cyclists, horses, etc.), or sport areas,
- Prefer the sustainable forms of agriculture, water management and forestry, to minimize the pollution output from them,
- Provide systemic solutions to environmental problems and progressive setting of the environmental debt in the region (finishing of the technical environmental infrastructure – water mains, sewage, waste water treatment stations) elimination of pollution sources, securing the protection of water sources and completion of the waste management programmes (waste separation and recycling),
- Transform the local economic activities towards the economical and considerate exploitation of local resources and conditions (environment-friendly methods, support for the highest possible exploitation of local raw materials, support for traditional trades),
- Organize preservation and maintenance focused activities of the natural and cultural/historic assets for the territory,
- Strengthen the local integrity and support of the renaissance of the region.

The scope of relevant subjects or “stakeholders” in this field is really wide. The immediately competent central body in the sector of nature conservation is the MoE of the SR and the institutions controlled by it, in this case the Slovak Nature Conservancy (SNC) of the SR seated in Banská Bystrica, but there are many other entities that control PAs and their networking. Their work differs in subject (from protection to exploitation), and in hierarchy (from international, through national to local levels).

The efforts of several entities active in the sphere of tourism with the principal aim of achieving rapid profit at the cost of nature protection and loss of natural and cultural values, are uncoordinated, unilateral and short-term focused.

The approaches to the development of the Tatra region accompanied by the preference for quantitative development rather than sustainable forms of development more oriented to quality are uncoordinated, contradictory and conflicting. Some recommendations of institutional activities to improve the situation in the PAs in the sustainable development context are important for future development.

- Provision for generally accessible consulting services involved with PAs, their specific features, assets and activities unfolded in their territory (beside other, strengthening and improvement of safeguarding and guiding services of the Ranger type);
- Designation of territories or localities of European significance under the NATURA 2000 system,
- Improvement of coordination and transparency of competency and support for cooperation of the SNC with PAs owners/users and other relevant stakeholders (state administration, regional/local government, businesses, NGOs) on a partnership basis;
- Inclusion of the public in the decision-making process concerning PAs,
- Adequate compensation for property damage to land owners in PA or redemption of PAs (pursuing agreements with owners),
- Promotion of integrated approaches to PAs and their networks in general and in particular cases,
- Improvement of coordination of PAs administration and other relevant segments above all horizontally (networking) and improvement of their linkages to the voluntary nature protection sectors,
- Approximate the PAs management, PAs networks and the interacting landscape to close-to-nature forms,
- Development and support for scientific research and objective cognition of the PAs and networking subjects in the SD context not only in natural sciences but also in humanities.

Conservation of inherited natural and cultural assets and their optimal integration into regional planning processes and landscape management requires some well-considered and highly sophisticated strategies relying on integrated approaches. The objective is to move the above quoted opinion and proposals from the level of wishes to that of everyday practice. Integrated planning, management and decision-making should make full use of qualified, comprehensive scientific sources in order to implement international conventions on national, regional and local levels with a profound knowledge of the particular landscape/ecological, environmental, cultural, and other implications. Support for production of such integrated sources is probably the best way to implement the corresponding international conventions and fulfil our international commitments on the path to a sustainable future.

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CHRÁNENÉ ÚZEMIA V KONTEXTE UDRŽATEĽNÉHO ROZVOJA V REGIÓNE TATIER

Problematika chránených území (CHÚ) v kontexte udržateľného rozvoja sa študovala v oblasti Tatier, v severnej časti Slovenska (obr. 1), vymedzenom pohoriami Západné, Východné (Vysoké, Belianske) a Nízke Tatry, Slovenským rajom, ako aj príslušnými časťami kotlín, kde je najväčšia koncentrácia CHÚ na Slovensku a jedna z najväčších v Európe. Tu sa na ploche 2 690 km² nachádza 107 maloplošných chránených území s rozlohou 481 km² a 2 071 km² veľkoplošných CHÚ kategórie národný park (NP) a ochranné pásmo národného parku. Zo 107 maloplošných CHÚ je na povrchu 90, zvyšných 17 sú jaskyne. Administratívne patrí takto vyčlenená oblasť do krajov Žilina a Prešov. Žije tu 290 tis. obyvateľov (108 obyvateľov na km²) v 108 sídlach.

Cieľom príspevku je identifikovať a analyzovať vzťah medzi štruktúrou systému CHÚ a aspektmi udržateľného rozvoja v študovanom území. Tak systém CHÚ ako aj koncept udržateľného rozvoja majú svoje vlastné parametre, štruktúru, dimenzie, riadia sa určitými princípmi, hodnotia sa prostredníctvom určitých kritérií a indikátorov a sú vzájomne prepojené rôznymi vzťahmi. Zatiaľ čo CHÚ sú súborom jednotiek s vysokou prírodnou a environmentálnou hodnotou, ktoré sú viac-menej presne definované a klasifikované, udržateľný rozvoj je čiastočne praktický program zmeny reality, čiastočne koncept, paradigma či vízia, založená na rôznych, niekedy nie celkom jednoznačných cieľoch a prioritách. Napriek týmto a ďalším odlišnostiam oboch kľúčových pojmov či fenoménov, ktorým sa venujeme v tejto štúdii, považujeme za produktívne zaoberať sa problematikou CHÚ v kontexte udržateľného rozvoja.

Metodika použitá pri výskume, prezentovanom v tejto štúdii, pozostáva zo štyroch postupných krokov. Jednotlivé metodické kroky pritom nemožno chápať ohraničene či izolovane, ale ako postupné a v mnohých smeroch sa prelínajúce činnosti. Významným zdrojom poznania, korektívom výstupov a vodítkom pri tvorbe záverov a odporúčaní sú okrem vlastných analýz aj názory zúčastnených inštitúcií a vplyvných osôb („decision a opinion makers“) na problematiku CHÚ v kontexte TUR, ktoré sme získali metódou riadených rozhovorov.

V úvodnej časti po stručnom náčrte použitej metodiky analyzujeme tri základné oblasti, ktoré zásadným spôsobom determinujú charakter a režim študovaného územia a v konečnom dôsledku aj problematiku CHÚ vo vzťahu ku konceptu udržateľného rozvoja.

Prvá oblasť – *prírodná krajina a krajinná pokrývka* - pozostáva zo subsystémov prírodnej krajiny a druhej, kultúrnej krajiny, ktorá je vyjadrená charakterom krajinej pokrývky (land-cover). Na základe vyhodnotenia primárnej spojitosti (podmienej reliefom resp. priebehom riečno-dolinových systémov) a druhej spojitosti (podmienej charakterom land-cover) sme územie rozdelili do piatich stupňov podľa potenciálu spojitosti krajiny. V druhej oblasti *človek a jeho aktivity* analyzujeme obyvateľov skúmaného územia, jeho činnosti a prvky, ktoré boli vytvorené človekom v krajine. Túto časť sme rozdelili na štyri klastre (demografický, sociálny, ekonomický a infraštruktúry). Oblasť *riadenia/manažmentu* (inštitucionálno-právny aspekt spravovania územia, ale aj aspekty organizačného, informačného a pod. charakteru), analyzujeme vplyvy podmienej človekom (právne a organizačné aspekty, štátny a neštátny sektor, riadenie, záujmové skupiny a ich vplyv na fungovanie priestoru). Tu sme identifikovali tri základné sektory: *verejnú správu, neziskový sektor a podnikateľský sektor*.

Výsledky štandardizovaných rozhovorov sa hodnotili v ďalšej časti. Témou rozhovorov bola percepcia a hodnotenie chránených území v kontexte udržateľnosti. Ukázalo sa, že mnohí respondenti, vrátane respondentov na riadiacich funkciách, neboli dostatočne informovaní o problematike ochrany prírody a udržateľnosti a že je potrebné zvýšiť dôraz na informovanosť a vzdelávanie.

Socio-ekonomické a prírodné systémy v krajine si vyžadujú zvláštne prístupy a metódy riadenia a v niektorých prípadoch aj cieľnú podporu. Systém CHÚ by mal byť v kontexte udržateľnosti relatívne stabilný v čase a mal by prispievať k celkovej stabilite regiónu. Na zabezpečenie rozvoja v územiach s mimoriadnymi prírodnými hodnotami je potrebné venovať pozornosť najmä ochrane prírody v najcennejších častiach (jadrové územia). Ostatné časti územia by mali zaistiť vhodné podmienky pre vybrané ľudské činnosti, prijateľné pre ochranu prírody.

Udržateľnosť prírodnej krajiny a krajinej pokrývky dosiahneme optimálnym spájaním CHÚ do sietí prostredníctvom líniových prvkov, územnou expanziou CHÚ a odstraňovaním bariér.

Budúci udržateľný rozvoj územia sa bude dať realizovať len za predpokladu socio-ekonomickej stability regiónu ako aj účinnej ochrany a optimálneho využívania jeho zdrojov. Výber opatrení na jej zaistenie musí rešpektovať miestne prírodné a kultúrne hodnoty.

Predstava o podpore udržateľného rozvoja v riadiacej oblasti sa vyznačuje veľkou komplexnosťou a rozmanitosťou foriem, metód a prístupov, čo je podmienej širokým okruhom zainteresovaných strán. Tu bude potrebné zabezpečiť koordináciu opatrení v správe a rozvoji regiónu a uprednostnenie kvalitatívneho rozvoja nad kvantitatívnym.