SLOVAKIA:

from *Landscape Atlas*
towards *Landscape Typology*

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The current need - to unify the view of the distinctiveness and diversity of the Slovak landscape types and their sustainable use

Where are we?

Why do we need to move forward?

Landscape Atlas

- in 2002
- a new source of information in the field of natural and social sciences
- a unique work that presented **the scientific view of the landscape**
- Scale:
  1 : 500 000
  1 : 750 000
  1 : 1 000 000
  1 : 1 500 000
  1 : 2 000 000
  1 : 3 000 000
  1 : 4 000 000

Landscape Typology

- started in 2008, no finished yet...
- **Objective**: to propose the hierarchy of landscape classification, from the supranational to the local levels
- With a special emphasis on the cultural-historical aspects
- As a tool to reach a better landscape management + the increase awareness of the landscape values
- **Natural-cultural landscape types**

Where are we?

Why do we need to move forward?

Landscape Atlas

As a unique multi-functional map

the atlas is focused on

- the comprehensive knowledge of landscape values
- and also on the characterisation of economic use of the landscape
- stress factors affecting the landscape
- assessment of the environmental quality
- and assumptions of the future development of the territory

Landscape Typology should also be used when determining the potential and regulations within:

- landscape planning
- spatial planning
- strategic social-economical planning
- land consolidations
- integrated river-basin management
- forestry plans
- nature and landscape protection concept
- EIA, a.o.

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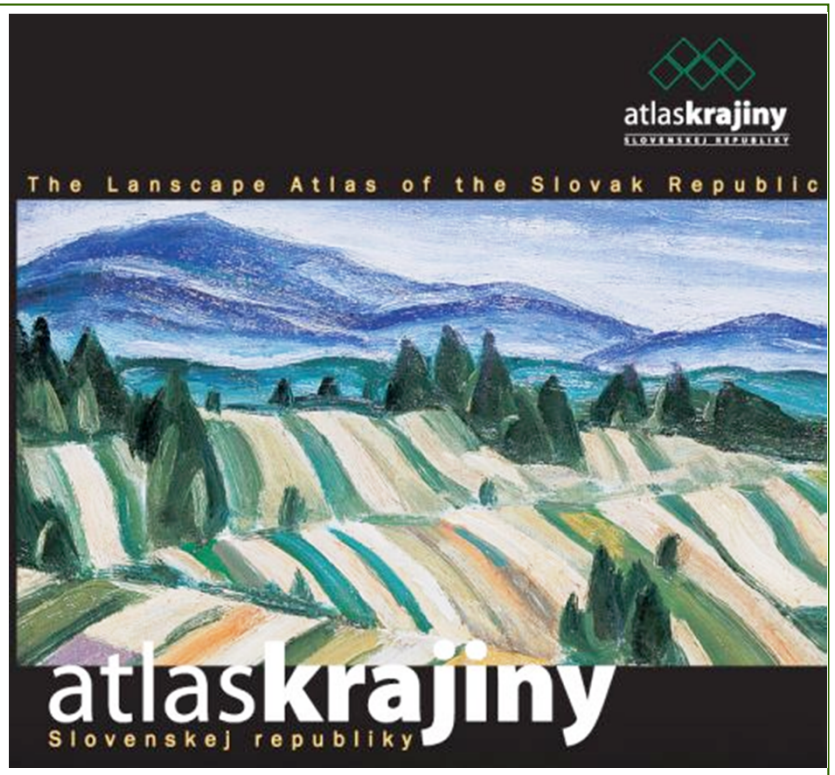
LANDSCAPE ATLAS

It contains 1,200 various graphic item

- <u>maps of various scales</u>
  analytic
  synthetic
  prognostic
- <u>and other graphic data</u>
  photographs
  tables
  graphs
  satellite and aerial photographs
  ortophotomaps
  drawings, etc.



The Atlas has been **published in the form** of a printed book (as a bound book and also as loose leaves) and in two electronic forms (CD-ROM and DVD). Text and legends in Slovak and English

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LANDSCAPE ATLAS

Atlas is divided into 10 chapters

- Landscape and its representation
- Development of settlement and map representation
- Location
- Primary landscape structure
- Secondary landscape structure
- Population and their activities in the landscape
- Natural-Urban regions
- Protected areas and natural resources
- Stress phenomena in landscape
- Landscape as the human environment

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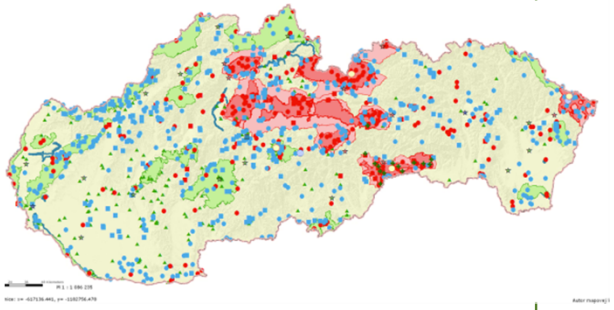
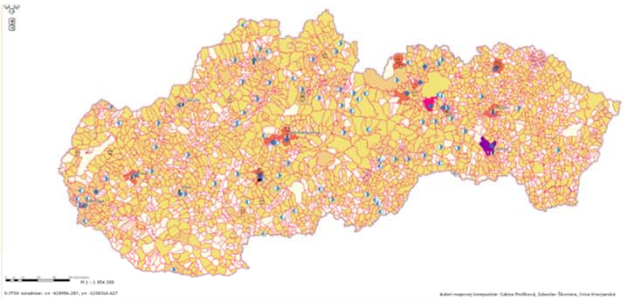
LANDSCAPE ATLAS

Comparison of protected areas in the SR in 2002 and 2010

Category	2002				2010			
	Number	Area (ha)		% of SR territory	Number	Area (ha)		% of SR territory
		core area	protective zone			core area	protective zone	
Protected landscape areas	14	525 547	-	10,7	14	522 582	-	10,66
National parks	9	317 821	238 124	12,1	9	317 890	270 128	11,99
Large-size protected areas	**23**	**843 368**	**238 124**	**22,8**	**23**	**840 471**	**270 128**	**22,65**
Protected sites	189	7 001	2 263	0,19	172	5 534	2 419	0,16
Nature reserves	376	11 767	243	0,25	388	13 175	247	0,27
National nature reserves	231	85 905	3 383	1,82	219	84 130	2 239	1,76
Nature monuments	230	1 531	208	0,04	254	1 585	496	0,05
National nature monuments	60	59	27	0,002	60	59	2 352	0,05
Protected landscape fragment	-	-	-	-	1	3	-	0,00
Small-size protected areas	**1 086**	**106 263**	**6 124**	**2,3**	**1 094**	**104 486**	**7 752**	**2,29**

Source: SNC SR





Trend in the structure of immovable national cultural monuments (NCM) by types

Categorization of immovable NCM*	2005	2006	2007	2008	2009	2010
Architectural monuments	7 738	7 799	7 802	8 069	8 092	8 408
Archaeological monuments	360	368	369	376	393	407
Historical monuments	1 386	1 382	1380	1394	1 401	1 399
Historical gardens and parks	340	341	344	344	373	382
Folk architecture monuments	1 833	1 823	1 821	1 902	2 055	2 099
Technical monuments	454	484	496	500	526	520
Art work monuments	1 005	1 015	1 007	1 367	1 506	1603
Total	**13 116**	**13 212**	**13 228**	**13 952**	**14 346**	**14 818**

Source: MB SR

* Presented is the number of monument buildings, which comprise the immovable NCM.

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LANDSCAPE ATLAS

The goal of the Atlas

- preparation was not only to present a scientific approach to the landscape perception but also to provide an opportunity to use the collected data in further work with the territories.
- Therefore, the territorial data were processed to create data structures usable in the **GIS**.

The film “Landscape of the Slovak Republic”

- was prepared in four language variations – Slovak, English, German and Russian.
- subtitles can be selected in English, Spanish and French languages.
- This documentary and educational film explains the scientific perception of the landscape to wide public.

Other resouces

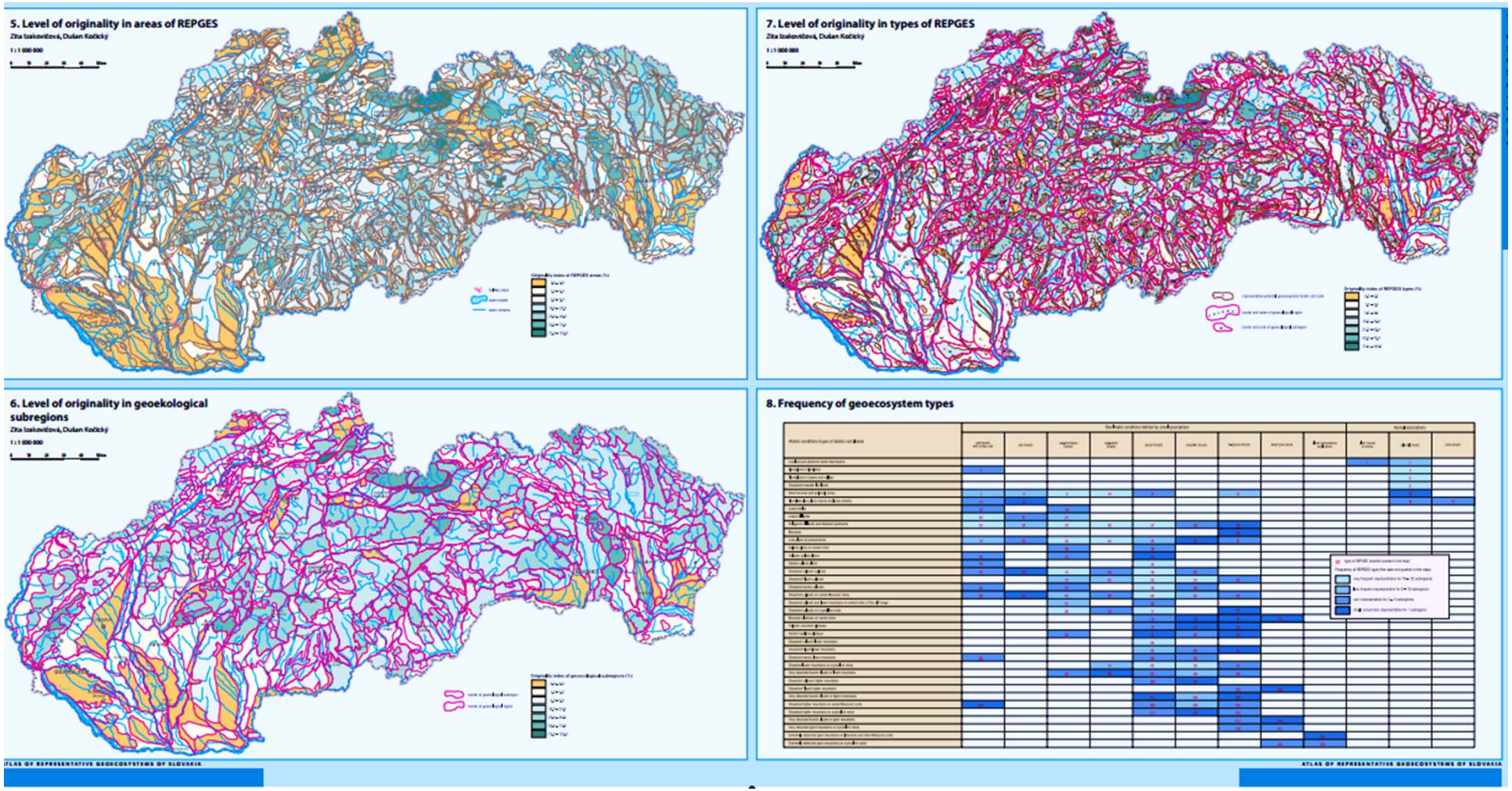
Classification maps, regional typification

- Jancura, 2006: **Metodology of Landscape Characterisitc Appearance**
- Miklos, Izakovicova et al., 2006: **Atlas of the Representative Geo-ecosystems**
- Izakovicova et al, 2007a: **Integrated Landscape Management 1**
- Izakovicova et al, 2007b. **Integrated Landscape Management 2**
- Otahel 1999: **Visual Landscape Perception: Landscape Pattern and Aesthetic Assessment**

Other resouces

Classification maps, regional typification

Atlas of the Representative Geoecosystems



Ondavská vrchovina

STRUČNÁ CHARAKTERISTIKA

Typický horský flyšový krajinný celok s prikrovovo-vrásovou stavbou s mierne hladkou modeláciou tvarov lokalizovaný v provincii Východných Karpát, v oblasti Nízkych Beskýd. Typické je striedanie pozdĺžnych chrbtov karpatského smeru s pozdĺžnymi depresiami – brázdami a kotlinami. Najvyšším bodom je Smilniansky vrch (750 m n. m.).

FYTOGEOGRAFICKÉ ZAČLENENIE

Oblasť západokarpatskej flóry (Carpaticum occidentale), obvod východobeskydskej flóry (Beschidicum orientale).

ZOOGEOGRAFICKÉ ZAČLENENIE

Provincia listnatých lesov, podkarpatský úsek.

KLIMATICKÁ OBLASŤ

Prevažne mierne teplá oblasť, okrsok M3 – mierne teplý, mierne vlhký, pahorkatinový až vrchovinový alebo okrsok M6 – mierne teplý, vlhký, vrchovinový; na juhu zasahuje teplá oblasť, okrsok T7 – teplý, mierne vlhký, s chladnou zimou.

SÚČASNÁ KRAJINNÁ ŠTRUKTÚRA

Na vyvýšených chrbtoch prevažujú lesné ekosystémy, v nižších polohách dubové, vo vyšších bukové porasty, častý je aj výskyt sekundárnych ihličnatých lesov. Erózne brázdy, ploché chrbty a kotliny sú odlesnené, premenené na ornú pôdu a trvalé trávne porasty.

SOCIOEKONOMICKÁ ŠTRUKTÚRA

Z hospodárskeho hľadiska možno v území vyčleniť dva typy krajiny: lesnatú, neosídlenú krajinu vyvýšenín a horských chrbtov s dominantnou lesohospodárskou funkciu a brázdovú krajinu s kultúrnou stepou a lesostepou, prevažujúcim vidieckym osídlením s dominantnou poľnohospodárskou a priemyselnou funkciou. Región je významný aj z hľadiska výskytu prameňov minerálnych vôd, na báze ktorých sa v Bardejove rozvinulo kúpeľníctvo. V území sa nachádza 233 sídiel, ktoré administratívne patria do 5 okresov – Vranov nad Topľou, Humenné, Bardejov, Stropkov a Svidník.

CHRÁNENÉ ÚZEMIA

V regióne sa nachádzajú 3 CHA – Medzianske skalky, Radomská slatina, Štefanovská borina, 2 NPR – Stebnícka Magura, Regetovské rašelinisko, PP Petkovský potok a 6 PR – Demjatské kopce, Livovská jelšina, Pod Beskydom, Radomka, Slatina pod Lieskovcom a Zborovský hradný vrch. Predmetom ochrany sú fytocenologicky a floristicky jedinečné lokality prirodzených a pôvodných lesných spoločenstiev miestami až pralesového charakteru a typická vegetácia aluviálnych lúk a mokraďových spoločenstiev.

PRVKY NATURA 2000

V regióne sa nachádza (alebo doň zasahuje) 5 území európskeho významu – Demjatské kopce, Hubková, Medzianske skalky, Dukla a Tok Udavy s prítokom Ilovnica, ako aj 1 CHVÚ – Laborecká vrchovina.

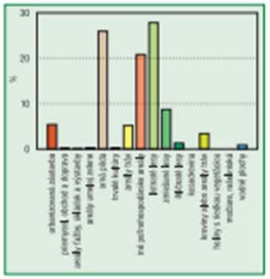
POTENCIÁL

Lesohospodársky, poľnohospodársky, zdravotno-rekreačný.

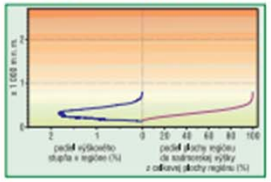
ENVIRONMENTÁLNE PROBLÉMY

Lokálne znečistenie ovzdušia z priemyselných zdrojov sa vyskytuje v mestských centrách. Územie je citlivé na zosuvné a erózne procesy.

SÚČASNÁ KRAJINNÁ POKRÝVKA



VÝŠKOVÁ CHARAKTERISTIKA RELIÉFU



ARCHÍV CHKO VÝCHODNÉ KARPATY

MARTIN DUBAS

TYPY REPGES

Kód REPGES	Výmera (km²)	Podiel plochy REPGES z celkovej plochy regiónu (%)	Početnosť REPGES v regióne	Podiel plochy REPGES v 2. stupni ochrany (%)	Podiel plochy REPGES v 3. stupni ochrany (%)	Podiel plochy REPGES v 4. stupni ochrany (%)	Podiel plochy REPGES v 5. stupni ochrany (%)
52	837,1	45,05	13	0,00	0,00	0,05	0,05
34	301,7	16,23	11	0,00	0,00	0,00	0,00
26	260,1	13,99	11	0,00	0,00	0,00	0,00
5	132,7	7,14	5	0,00	0,00	0,00	0,00
53	93,8	5,05	3	0,00	0,00	0,00	0,10
35	78,7	4,23	1	0,00	0,00	0,00	0,00
27	65,1	3,50	1	0,42	0,00	0,11	0,18
10	48,3	2,60	3	0,00	0,00	0,00	0,00
51	20,6	1,11	2	0,00	0,00	0,00	0,21
54	19,6	1,06	1	0,00	0,00	0,00	0,29
33	1,2	0,06	1	0,00	0,00	0,00	0,00

1 NÍŽINNÉ KOTLINOVÉ A ÚPÄTNÉ DEPRESIE
PÔVODNE SO SLATINNÝMI JELŠINAMI

STRUČNÁ CHARAKTERISTIKA

Geoekosystém je viazaný na depresné časti rovín a nížin, ktoré vznikajú vyplňaním mŕtvych ramien nánosmi a následným zarastaním vegetáciou. Vzniká tak reliéf s miestnymi zníženinami, kde vystupuje podzemná voda. Geoekosystém má rozlohu 166 km². Najvýznamnejšie je zastúpený na Podunajskej rovine, Borskej nížine a Podunajskej pahorkatine. Ide o REPGES značne antropogénne pozmenený, poľnohospodársky intenzívne využívaný. Priemerný podiel prírodných spoločenstiev predstavuje 2,3 %.

DOMINANTNÉ SPOLOČENSTVÁ

typické spoločenstvá slatinných jelšín, slatín aj prechodných mezotrofných rašelinísk, príp. zvyšky spoločenstiev slaných vôd

DOMINANTNÉ RASTLINNÉ DRUHY

jelša lepkavá *(Alnus glutinosa)*, vŕba krehká *(Salix fragilis)*, vŕba popolavá *(Salix cinerea)*, vŕba päťtyčinková *(Salix pentandra)*, čremcha obyčajná *(Padus avium)*, krušina jelšová *(Frangula alnus)*, baza čierna *(Sambucus nigra)*, fuľak sladkohorký *(Solanum dulcamara)*, papraď ostnatá *(Dryopteris carthusiana)*, topoľ kanadský *(Populus x canadensis)*

PÔDY

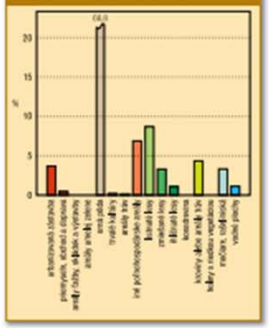
fluvizem glejová, sprievodný glej z karbonátových a nekarbonátových aluviálnych sedimentov, ovplyvňovaný kolísajúcou hladinou podzemnej vody, hlinito-piesočnatá, piesočnato-hlinitá, hlinitá

CHRÁNENÉ ÚZEMIA

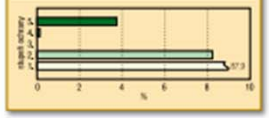
Časť REPGES leží v území v 2. stupni ochrany v CHKO Záhorie. Súčasťou REPGES sú územia v 4. a 5. stupni ochrany – CHA Devínske alúvium Moravy, NPR Klátovské rameno, PR Bodgalický vrch a PR Šmolzie. Najcennejšie chránené územia sú reprezentované prevažne mokraďovými lokalitami so slatinovými jelšinami.

ARCHÍV CHKO MALÉ KARPATY

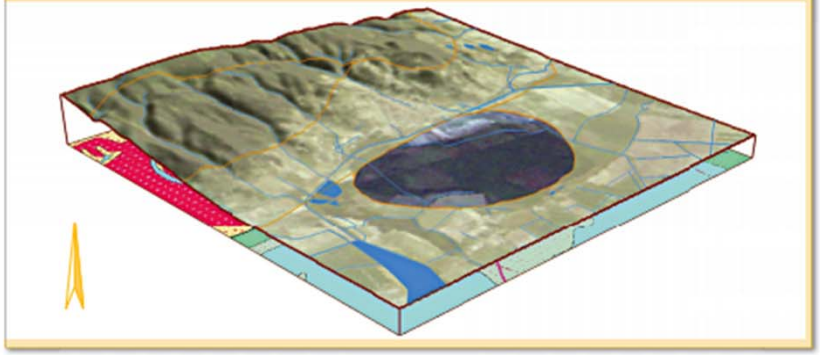
SÚČASNÁ KRAJINÁ POKRÝVKA



ŠTRUKTÚRA OCHRANY PRÍRODY

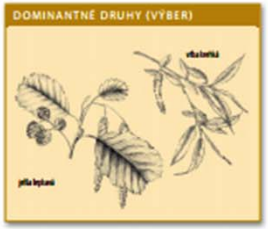


CHARAKTER RELIÉFU

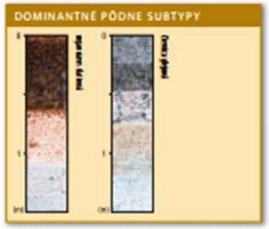


DOMINANTNÉ SPOLOČENSTVÁ

DOMINANTNÉ DRUHY (VÝBER)



DOMINANTNÉ PÔDNE SUBTYPY



LANDSCAPE TYPOLOGY

The core of the assessment will be pointing out and delimitating **the natural-cultural landscape types, which will be characterized by:**

- Relief-climate-soil-vegetation units, which had predetermined the form of land use in the past, as well as the form of historical settlement and the first landscape cultivations (categories will be appointed, which will be then filled in the natural units),
- Existing form of land use and settlement forms (the historical and the existing form of land use will be compared and the degree of distinctiveness will be determined),
- Level of protection (protected natural areas and monuments), where the reference to the landscape character and characteristic landscape features will be interpreted.

A special emphasis will be put on **cultural-historical aspects**, although many of its traces in the landscape are just fragmental. In spite of that, it is needed to include them and identify them as landscape historical layers.

LANDSCAPE TYPOLOGY

FRAMEWORK for the methodological procedure

Natural landscape identification - using methods of geo-ecological research, is primary mainly from the viewpoint of knowing the self-regulative abilities and potential of the landscape for social utilization. It is likely to present the results using the national and regional map scale (1:500 000 up to **1:50 000**) and methods of regional taxonomy, mainly regional typification.

Cultural landscape - is being represented by contemporary land use, material entity of which features land cover. Its identification through the CORINE land cover (CLC) method, mainly the newest data layer from the year 2006 (CLC2006), enables to present real landscape at the national and regional map scale (1:500 000 up to **1:100 000**).

Functional types - of contemporary landscape can be presented at the national map scale according to the basic CORINE land cover classes, completed with nature and landscape protection data, buffer zones of different landscape resources, urban and development plans, etc.

LANDSCAPE TYPOLOGY

Framework for methodological procedure

Cultural-historical phenomena of Slovakia

– can be presented on another landscape layer at different map scales. The historical view of Slovakia settlement differentiates regions and landscape types at the national map scale.

Landscape physiognomy, settlement character and utilization

– we perceive as a scenic quality (image) of the landscape. Landscape scenic quality and landscape character can be assessed using various approaches. One of the approaches works by the means of landscape physical state identification (land cover) and through accepting esthetical principles and criteria.

LANDSCAPE TYPOLOGY
Proposed methodology

- I. analytical part
- II. Synthetic part
- III. Interpretation and evaluation of the representative, rare and unique landscape types in Slovakia
- IV. Implementation and promotion of the project’s outputs

LANDSCAPE TYPOLOGY **Methodology**
I. analytical part

- **analysis of the contemporary state of processing and utilization of landscape typology within Europe** international aspects of landscape typology). It will be very important to provide for transmission of the European typology results to the Slovak level

- **analysis of the resources and criteria for working up the typology in the selected countries** (e.g. from the projects of surrounding countries: Czech Republic, Austria, Hungary and other countries: Netherlands, Great Britain and Belgium)

- **analysis of existing partial backgrounds for elaborating landscape typology in Slovakia**, their availability and feasibility (digital/analog form, scale, % of the coverage of the territory of Slovakia with a professional background, availability of the background, authors` rights, a.o.)

LANDSCAPE TYPOLOGY **Methodology**
I. analytical part

- **analysis and selection of the criteria for elaborating landscape typology of Slovakia** (natural landscape structure, historical landscape structure, contemporary landscape structure, cultural-historical structures, localities, objects and cultural-historical landscape potential and elements determining landscape perception)

- **Slovakia landscape analysis from the viewpoint of its implementation into planning and decision-making processes regarding land use**

- **specification of indicators** for agricultural, vineyard, forest, mining, urbanized, recreational and other types of landscape on different hierarchy levels

- analytical maps digital processing

LANDSCAPE TYPOLOGY Methodology
II. Synthetic part

- **Categorization of landscape types of Slovakia in reference to the European landscape types system**:

  In this part we expect to use the Pan-European Landscape Classification LANMAP2 from the year 2006, which methodically stems from synthesis of digital European databases on climate, relief, soils, potential vegetation and land cover. The eventual landscape type represents a functional hierarchy of the abiotic, biotic and cultural elements of landscape.

- **Synthesis of the initial criteria for creating landscape types on the national level**:

  synthesis/superposition of typical and specific classification features for landscape types identification and their categorization, scaling of classification features according to hierarchy levels, reference features and prevailing features identification, as well as their combination for individual landscape types)

LANDSCAPE TYPOLOGY **Methodology**
II. Synthetic part

- **synthesis of the initial criteria for creating landscape types on the regional, micro-regional and local level**. Several properly appointed model/example areas will be chosen on regional and local level

- digital processing of landscape types and the characteristic appearance of landscape in Slovakia, Landscape Encyclopedia concept.

LANDSCAPE TYPOLOGY Methodology

III. Interpretation and evaluation of the representative, unique landscape types in Slovakia

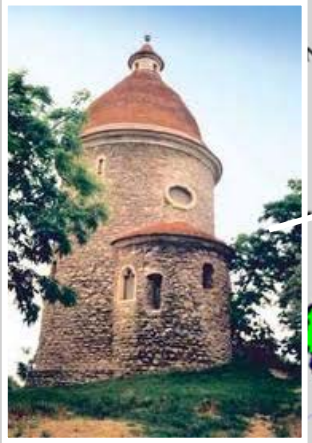
- determination of the **criteria of representativeness, rareness and uniqueness of the landscape types** in Slovakia from the viewpoint of their utilization for particular land use
- **interpretation and evaluation of types and regions in Slovakia** from the viewpoint of their representativeness, rareness and uniqueness
- identification, delimitation and interpretation of representative, rare, unique and **threatened landscape types i**n Slovakia
- **collision of interests assessment and determination of the degree of threat** of the delimited representative, unique and rare landscape types in Slovakia
- **criteria determination** for the assessment of the landscape types in Slovakia from the viewpoint **of land use**

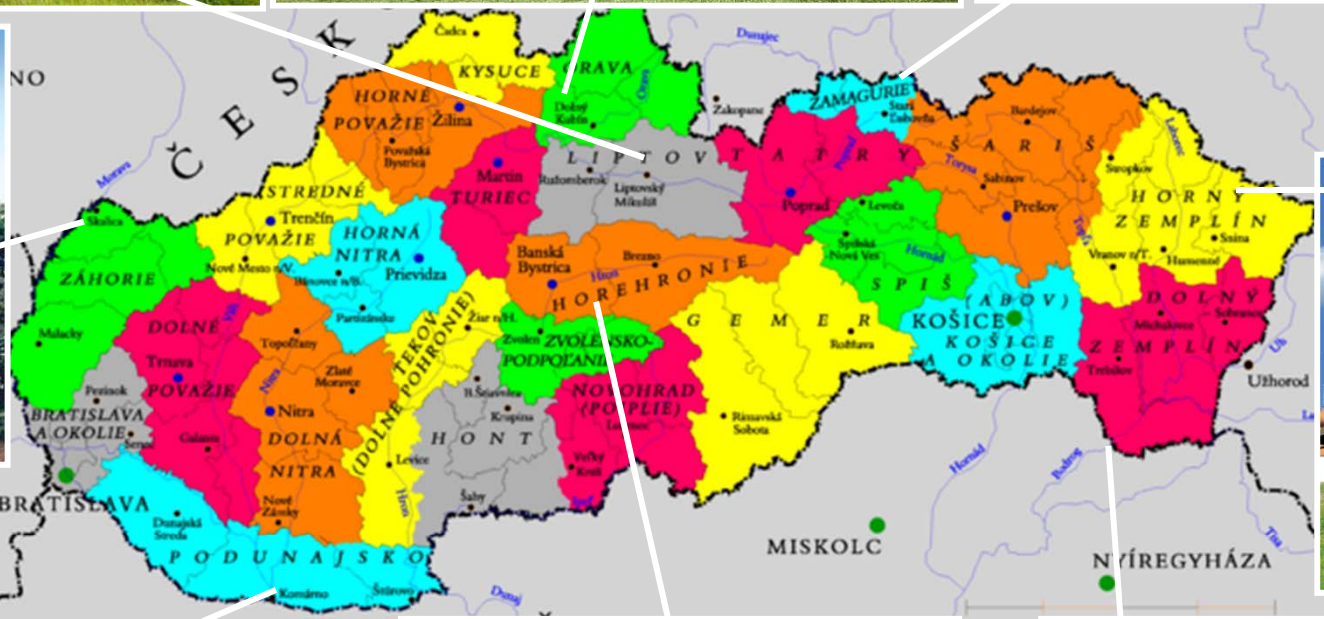
LANDSCAPE TYPOLOGY Methodology – III. Interpretation and evaluation of the representative, unique landscape types in Slovakia

- proposing areas to work up **model projects of special management** for representative, unique and rare landscape types at a more detailed scale
- **interpretation of land use structure** from the viewpoint of expected changes dynamics, including climate change
- **proposing regulations for location of new activities into landscape for individual landscape types – differentiated landscape types tending**
- **digital processing** of representative, unique, rare and threatened landscape types in Slovakia and other interpretation maps
- digital **Landscape Encyclopedia** of Slovakia elaboration

LANDSCAPE TYPOLOGY Methodology
IV. Implementation and promotion of the project's outputs

- implementation indicators determination
- elaborating a plan for the **work with public and media**
- supporting activities on the international level and strengthening **trans-border awareness**
- strengthening activities on the national, regional, micro-regional to local level supporting raising of the environmental public awareness, strengthening cooperation and **communication with stakeholders**
- **verifying** of the proposed procedures of **special management for the model areas**
- potential **identification for implementation of the project's outputs into related projects**
- project outputs **implementation into education** and **Action Plans**
- project outputs **implementation into enactments, documents and methodologies**




KYSUCE
HORNÉ POVAŽIE
Žilina
Martin
TURIEC
LIPTOVSKÉ TATRY
ŠARIŠ
STREDNÉ POVAŽIE
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HORNÁ NITRA
Prievidza
Banská Bystrica
HORNÝ ZEMPLÍN
ZÁHORIE
HORNÉHRONIE
SPIŠ
DOLNÉ POVAŽIE
Trnava
Nitra
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DOLNÝ ZEMPLÍN
BRATISLAVA A OKOLIE
DOLNÁ NITRA
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NOVOHRAD (PODPOLIE)
PODUNAJSKO
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