ABSTRACT

The landscape character has become a topical issue in many European countries as well as in the Czech Republic and in Slovakia in the 90s. Since that period a lot of scientists and experts of various disciplines have been solving problems of the landscape character, the question of its terminology and evaluation. The article is based on results of a master thesis, which deals with preventive landscape character assessment (LCA). Proposed methodology of LCA was applied in the southwestern part of Biele Karpaty Mountains (White Carpathians) in Western Slovakia. The model area is interesting because of the unique cultural landscape with characteristic dispersed settlement and mainly extensive farming. A part overlaps with the Landscape Protected Area White Carpathians, whose boundary has changed during the time. Consequently more valuable places have been separated from less valuable areas from the aspect of nature and landscape protection. One of the aims of the master thesis was whether it applied to the landscape character as well.

Key words: landscape character, landscape character assessment, landscape unit, landscape area, White Carpathians

1. Introduction

Landscape character is defined as natural, cultural and historical characteristics of place or area according to the law of nature and landscape protection (§ 12 of 114/1992 Sb.). It means the physical presence of features and phenomenon and their outward expression in spatial relations of landscape. The natural and aesthetic qualities of landscape character, harmonic scale and harmonic relations are to be pointed out in § 12. In this case subjective features are discussed, which belongs to the category of sense perception of landscape (except for the natural values).

Slovak legal norms do not know the term landscape character, Slovak terminology uses the term characteristic appearance of landscape or landscape picture, but they have different meanings. Although the characteristic appearance of landscape is mentioned in the law of nature and landscape protection, the definition misses. In the comparison with Czech law what is missing is also the possibility of area protection on the basis of visual quality of landscape (Jančura 2003).

Some authors interpret landscape character as visual expression, appearance, landscape picture, which is perceived through the human senses (Vorel 1999; Jančura 2003; Bukáček, Matějka 1998). It is also represented by spatial features or relations of landscape and by the ordering of relief forms and land cover. The explanation of landscape scene is very similar.

On the other hand landscape scenery is different. Jančura (2003) explains it as a subjectively perceived and sensually assessed dynamic aspect of landscape appearance, which depends on the actual and long-term changes and movements in landscape such as weather and seasons.

In context with landscape character the term genius loci is often used. It is not easy to define it exactly. According to Mimra (1998) the genius loci or spirit of a place is a cultural and spiritual dimension of landscape character, which has its material, objective basis (nature). Genius loci is determined by subjective perception based on an individual experience or knowledge of a place or on the memory of an entire generation. The real present objects in landscape are going to be transformed to the genius loci when a value or a quality of the place, through our sense perception of landscape, is created (Michal 1997).

Another significant aspect of landscape is its memory, memory of landscape – marks of historical development of landscape, documented changes in time (historical buildings, technical changes in landscape, remains of traditional farming) or important historical events like battle near Slavkov. However they must be not always visible. Typical example is “Babiččino údolí” (Grandmother’s valley) near Česká Skalice, famous because of the Czech author Božena Němcová and her work Babička (Grandmother).

In practice there are three types of landscape character assessment (LCA) differentiated at present (Bukáček, Matějka 1999):

a) preventive LCA – for purposes of landscape protection and determination of values or quality of landscape character and of its protection limits;
b) causal LCA – impact assessment of an investment project on landscape character;
c) creative LCA – creation in a landscape with disturbed landscape character, elimination of negative effects in landscape.

The issue of landscape character is the object of interest of scientists and specialists of various branches, which have a different view on not only the explanation and contents of the term. Methodologies of LCA developed in the Czech Republic differ from each other, too, depending on the profession of authors (Vorel 1997, 1999; Löw 1999; Bukáček, Matějka 1999, 2006; Michal 1999). Only in the case of causal LCA unified methodology is used (Vorel et al. 2004).

In Slovakia there has been developed a methodology of LCA called “Differential methodology of identification of landscape character” (DMI) by Jančura (2003), which was approved by the Ministry of Environment of the Slovak Republic as the official methodology for evaluating the characteristic appearance of a landscape (Jančura et al. 2010).

The new Czech construction law from 2006 has established for the authorities of nature and landscape protection the statutory duty of including conditions of landscape character protection into the documents of territorial planning. Landscape character is also a part of the process of environmental impact assessment (ELA) as well as in Slovakia, where the impact on the landscape scenery is evaluated. In addition to that characteristic appearance of landscape in Slovakia is required for the documentation of landscape planning.

Protection of landscape character (eventually characteristic appearance of landscape) is provided in Slovakia especially by the institute of special protection – by Landscape Protected Area (specially protected area). In the Czech Republic the institute of natural park (general area protection) is primarily used according to the law about nature and landscape protection. The institute of significant landscape feature (general area protection) serves to this purpose, too. The landscape character can be protected also within the specially protected areas and

![Fig. 1 The model area](image-url)
their protective zone. In Slovakia there are not so many possibilities to protect landscape character in comparison to the Czech Republic.

2. The model area

The area of interest is situated in southwestern part of White Carpathians in Slovakia near the villages Vrbovce and Chvojnica, district Myjava (Figure 1). The Landscape Protected Area White Carpathians covers more than 50% of the model area (109 km²). In the past the total area of the entire Landscape Protected Area changed. Large, intensive managed blocks of fields were excluded from the Landscape Protected Area and on the other hand valuable places (on the forest-land resources) were included.

The White Carpathians, the main orographic form of the model area with the highest point Žalostiná (622 m a.s.l.), was modeled mostly during alpine folding in the Cretaceous and Palaeogene period. Mountains belong to the flysch belt because of sandstones and claystones (flysch rocks) in the ground. Typical features of flysch belt are gentle rounded forms, ridges, long slopes and deep water flows (Kuča et al. 1992). The area of interest is drained by stream flows Teplica (Vrbovčianka) and Chvojnica into the river Myjava (river basin Morava). The western part of the model area (less than 10%) is formed by Chvojnica pahorkatina (hilly land), where the lowest point is situated (247 m a.s.l.).

Relief, moderately warm climate and eutric cambisols prevailing in the model area have influenced the vegetation cover. Deciduous forests cover almost 45% of the area, Carpathian oak–hornbeam forest on the south slopes, submontane beechwood in the higher localities. In the surrounding of the settlement forests have been transformed to the fields, meadows and pastures. Blossom meadows are the typical non-forest type of vegetation (Kuča et al. 1992). Orchid family is the most remarkable, which expansion adequate natural conditions and extensive kind of farming on the meadows and pastures have caused.

Typical feature of the model area is dispersed settlement, called “crofts”, what gives a specific character to the landscape (with exception of village Vrbovce). Houses with features of popular architecture typical for the region and sporadically built farm buildings characterize the dispersed settlement. A solitary farm from specific materials has become the landscape dominant in this region. On the southeast slopes, protected from wind, orchards growth, characteristic feature of the crofts. Only a few of them have survived until today.

As a consequence of the social and the cultural diversity, the variety of folklore speech as well as due to the typical kind of settlement the Landscape Protected Area White Carpathians was declared in 1979.

3. Methodology

For the purpose of the preventive LCA a lot of methodologies have been developed and published by authors from various branches (Vorel 1997, 1999; Löw 1999; Bukáček, Matějka 1999, 2006; Michal 1999; Jančura 2003). Each of them has a different point of view on the way how to evaluate landscape character according to their profession.

Methodology of the preventive LCA presented in this article has been influenced by the authors Bukáček, Matějka (1999). The process consists of the following steps:

3.1 Differentiation of the model area into the small landscape units

The model area has been divided into smaller individual landscape units (landscape unit and landscape area), which are unique and do not occur any more.

Landscape unit according to Bukáček, Matějka (1999) means landscape cutout from the model area with the specific aesthetic, natural, historical or other properties, which differ from the other landscape units in all of the characteristics or only in some of them. Under the term landscape area they understand a smaller, relatively closed and very specific area inside the landscape unit. It is created by landscape elements, which specify, differ the landscape area.

Landscape units have been created by overlaying of thematic map layers such as geomorphological regionalization, height articulation, land cover or land use, monument and area protection of nature and landscape (the principle of superposition).

The percentage share of the CORINE Land Cover areas, landscape pattern and proportion of greenery in the landscape unit, observed on the aerial photographs, were considered by differentiation of landscape units into the landscape areas, smaller individual units.

Boundaries of the landscape units have been verified empirically. It is difficult to find their course explicitly. It happens sometimes, that some characteristics blend together.

3.2 Landscape survey

Landscape survey is very important part of the process of LCA. It serves for data collection, verification of the correctness of determined landscape units and for taking photographs. It is not possible to assess the qualities of landscape without direct contact with it.

3.3 Identification of the characteristics of the landscape areas

In this step the typical features (main features of landscape units) of primary, secondary and tertiary landscape structure (characteristics) have been
identified in a table for every landscape area. It should be clear from the tables, in which features the landscape units differ from each other. Description of the landscape unit’s boundary and photos from the landscape survey complement the table of identified features of landscape area.

The primary landscape structure means the natural part of the landscape (components of the physical geography), which are not influenced by human activities (or minimally) like geological structure, relief, waters or potential vegetation.

Features created by man, landscape transformed by human activities point out the secondary landscape structure (culture-historical characteristics). This group is characterized by land cover or land use, urbanism, buildings outside the municipalities etc.

The tertiary landscape structure is also created by human being. To this group belong the features, which have intangible character like the interests of society and the limits of land use. In this connection it means that natural and esthetetical values like protected nature and the limits of land use, for example symbolic importance of the area, landscape, sights as well as spiritual values (genius loci, symbolical expression, meaning, the memory of landscape) and historical events (Jančura 2003).

3.4 Assessment of the features of the landscape character

The evaluation of the typical features of the landscape character is based on the selected criteria:

- Importance of the feature
  a) Determining, dominant [++++] – it determines the type of landscape character, for example relief forms, landscape structure, landscape dominants, view points, symbolic significance of area;
  b) Concomitant, supporting [++] – it creates landscape character together with dominant features, but it is less distinctive and decisive than the first one, for example height articulation, hydrological features, land use, line features;
  c) Additional [+] – all the other features, they do not create the total image of the area/landscape.

- Effect, impression
  a) Positive [+] – a feature with the positive effect in the landscape;
  b) Neutral [0] – neither positive nor negative;
  c) Negative [–] – a feature with the negative effect, negative events, impacts on the landscape.

- Oneness – the feature has been evaluated according to rarity of occurrence and risk of disappearance of the feature:
  a) Unique [++++] – within the area or wider territory, for example symbolic importance of the area, landscape, historical structures in landscape, dispersed settlement;
  b) Rare [++] – rare in the region, but common within the wider territory, for example castles, view towers, natural attractions etc.;
  c) Ordinary [+] – all the others (Bukáček, Matějka 2006).

After assessment of the features in the table the main characteristics and their importance for formation of landscape character have been summarized for each landscape area. In the end the total quality of landscape character has been classified into the following categories:

- Higher quality of landscape character – majority of positive unique and rare features with very small proportion of negative features;
- Average quality of landscape character – majority of neutral features with a small share of rare or unique positive or negative features;
- Lower quality of landscape character – majority of neutral and negative features with small share of positive features.

3.5 Determination of the level of the landscape character protection

According to LCA in the previous step one of five levels of protection has been assigned to the each landscape area:

I. level of landscape character protection – areas, territories with higher quality of landscape character (natural landscape, close natural or harmonized landscape under law protection);
II. level of landscape character protection – areas, territories with higher quality of landscape character (not protected, close natural landscape, by man changed landscape with present historical landscape structures and features);
III. level of landscape character protection – areas, territories with higher or average quality of landscape character (man-modified landscape with varied landscape pattern of small villages, fields, grass fields, pasture, gardens, forests, there is balance among them);
IV. level of landscape character protection – areas, territories with average or lower quality of landscape character (dramatically modified landscape, farming landscapes with big blocks of fields, wide-spread monocultures, recreation areas);
V. level of landscape character protection – areas, territories with lower quality of landscape character (devastated, industrial landscape, mining areas).

4. Results

Software ArcGIS 9.3 was used for the differentiation of landscape units and landscape areas (the smaller individual units). Landscape units were derived from input data layer (see below) and landscape areas on the basis of evaluation of percentage share of the CORINE Land Cover areas, landscape pattern and proportion of greenery in the landscape unit. The boundaries of landscape units
and landscape areas were pointed out experimentally and verified during the landscape survey.

Because of the limited availability of appropriate input data layers, the following data have been used:

- Types of abiotic complexes 1 : 500,000 from The Landscape Atlas of the Slovak Republic (2002)
- CORINE Land Cover 2000 1 : 50,000
- Territorial protection of nature and landscape 1 : 500,000 from The Landscape Atlas of the Slovak Republic (2002)
- Aerial photographs on the website www.mapy.sk

Four landscape units and eight landscape areas were differentiated in this process (Table 1, Figure 2). Landscape units have been named according to the local geographical names of rivers, municipalities, hills etc.

The landscape unit A Zlatnícka dolina – Raková represents dissected hill country landscape. Its typical feature is a compact forest cover, eventually forest in combination with meadows, pastures or shrubs and no settlement. It is a part of the Landscape Protected Area White Carpathians.

Natural forest cover dominates in the landscape pattern of the landscape area A1 Zlatnícka dolina, Šmatlavé uhlisko (Figure 3). Solitaire features such as feeding places or landmarks and forest roads are very significant.

The landscape structure of the landscape area A2 Richťárka, Koválovské lúky (Figure 4) is coarse-grained and of irregular shapes. The landscape pattern is formed by natural forest (matrix) and shrubs or natural meadows (patches). Linear elements such as water flows, paths and solitaire elements (raised stands, feeding places etc.) create fine features of the landscape area.

The landscape unit B Chvojnica – Vrbovce differs from the others in vertical articulation, landscape changes (big areas of arable land, meadows and pastures) and presence of the Habitat Directive Site (SCI) Žalostiná. In comparison with the previous one the landscape unit B is settled by man (two villages – Chvojnica and Vrbovce, with the typical dispersed settlement in the surrounding).

The first of the three landscape areas B1 Žalostiná, Chvojnica (part of the Landscape Protected Area) is

![Differentiated landscape areas](image-url)
located near river Chvojnica with the same named village Chvojnica along it. It represents strongly dissected hill country with the highest point of the entire model area called Žalostiná (622 m a.s.l.), which is an important viewpoint, as well (Figure 5). The landscape structure is varied, determined by dispersed character of settlement (Figure 6). Village Chvojnica has more dispersed than concentric character. With crofts, many elements such as old limes, orchards with old, nowadays very rare sorts of fruit, scattered greenery, are connected. They are surrounded by meadows, pastures, arable land and natural forest. High landscape diversity, typical urban structure of settlements, harmonic coexistence between man and nature, as well as the presence of rare biotopes and protected areas of interest of European Union determine high quality of the landscape area.

The landscape area B2 Village Vrbovce stretches along the river Teplica. It includes only built-up area of the village with adjacent lands. Rural character and typical urban structure is preserved until today, but the features of popular architecture are very rare. Famous phenomenon of this village is a high rate of population of evangelic religion, which has a significant influence on the folklore life of the village. The landscape mosaic is formed by built-up areas with public greenery and gardens. In the centre there is a square with two churches. Crossing to open land is smooth and gradual due to small fields, grass or recreation areas (football pitch, water basin) except of the north-eastern part where a big farmer cooperation is situated. It has negative effect on the landscape character of the village.

The landscape area B3 Vrbovský chotár (Figure 7) is formed by rolling dissected relief with water flows, dispersed crofts settlement and mosaic of big fields, grass vegetation and fragments of forest. The landscape structure is coarse-grained and of irregular shapes. Roads and water streams gently cross the landscape. Crofts are characterized by partially well-preserved architectonic features, granges such as solitary barns, orchards with traditional sorts of fruit trees, old limes and scattered greenery. Big areas of arable land, unmanaged overgrown meadows as well as dilapidation and unsuitable reconstruction of houses have negative effect on the landscape character.
The landscape unit C Pecková – Ostrý vrch is mainly agricultural landscape of extensive character which differs from the previous one in vertical articulation and varied mosaic of fields, meadows, pastures, forest, scattered greenery and crofts. It spreads on the left side of the river Teplica. The main axis of the landscape unit is given by four hills – Pecková (576 m), Vesný vrch (564 m), Nad Osičím (503 m) and Ostrý vrch (601 m).

The landscape structure of the landscape area C1 Vesný vrch, Nad Osičím, Ostrý vrch (Figure 8) is varied. In the mosaic pastures and meadows predominate over arable land as it is in the landscape area B3. Dispersed settlement, old orchards, small fields, forest fragments and scattered greenery determine high landscape diversity. The hills enable long distance views. The landscape dominant of this landscape area has become a wind power plant on the hill Ostrý vrch (601 m a.s.l.). It is visible from far surroundings, which has a negative effect on the landscape character of the area.

The landscape area C2 Javorec, Pecková, Malejov (Figure 9) is a part of the Landscape Protected Area White Carpathians. Large areas of natural forest are significant in the landscape structure (about 50%); the rest of it is formed by croft settlement with fragments of orchards, fields, grass vegetation and scattered greenery. Crofts are characterized by typical urban structure with only partially well-preserved architectonic features, what is a big problem of the entire crofts.

The landscape unit D Radošovský les is situated in the western part of the forest stand in the cadastre Radošovce. It differs totally from the others. The landscape unit spreads in hilly land on loess sediments with warm climate. It is also a part of the Landscape Protected Area covered by oak-hornbeam forest on the entire area.

The last step of the methodology lies in classification of landscape areas into categories by quality of landscape character and levels of landscape character protection (Table 1).
5. Discussion and Conclusion

The model area in the White Carpathians was divided into four landscape units and into eight landscape areas on the basis of input data analysis. Result of using preventive LCA is the classification of every landscape area into the categories of quality of landscape character and the levels of landscape character protection. Fifé landscape areas (A1, A2, B1, C2, D1) are of higher quality of landscape character and therefore they were included into the I. level of landscape character protection. They are already protected by the law because of present natural or aesthetic values. Three left landscape areas (B2, B3, C1) have average quality of landscape character but B3 and C1 were classified as II. level of landscape character protection. Although both of them belong to the harmonized type of landscape with dispersed settlement there are some landscape features which take negative effect on the landscape character (big blocks of arable land without scattered greenery, wind power plant on the hill). The landscape area B2 Village Vrbovce was integrated into III. level of landscape character protection because of a big farmer cooperation in the north-eastern part of the village without any masking greenery. It has very negative impact on the picture of the village and thus degrades the quality of landscape character (Demková 2009).

LCA was provided also in the rest of the Landscape Protected Area White Carpathians by the Slovak Agency of Environment (SAŽP) Banská Bystrica. Research was finished in 2009, but the results of this assessment are so far not available.

The model area in southwestern part of the White Carpathians was threatened by building of new wind power plants on the hills Vesný vrch and Žalostiná (Chrenka, Omasta 2010). However these business plans were rejected due to degradation of the quality of the area from the point of view of landscape character, negative impact on harmonious scale and relations as well as on recreational function of the area.

Results of LCA confirmed high landscape qualities of the model area in consequence of dispersed crofts settlement and extensive kind of farming as well as the correctness of exclusion of some places from the Landscape Protected Area White Carpathians because of land use changes. Thus it is very necessary to specify principles of protection and subsequent support of landscape character in the model area.

Acknowledgements

The work was supported by the grant SVV-2010-261 201 “Research of physical-geographic changes of natural environment of the Earth”.

REFERENCES

BUKÁČEK, R., MATĚJKA, P. (1998): Metody hodnocení kvality krajinářského rázu a stanovení jeho ochrany a limitů. In: Sklenička, P., Zasadil, P. (eds.): Krajinářský ráz, způsoby jeho hodnocení a ochrany. LF ČZU, Praha, pp. 32–40.
BUKÁČEK, R., MATĚJKA, P. (1999): Hodnocení krajinářského rázu (metodika zpracování). In: Vorel, I., Sklenička, P.: Pěče o krajinářský ráz, cíle a metody. Vydavatelství ČVUT, Praha, pp. 159–187.
BUKÁČEK, R., MATĚJKA, P. (2006): Využití metodiky preventivního hodnocení krajinářského rázu k posouzení venkovských urbanizovaných prostorů. In: Vorel, I., Sklenička, P. (ed): Ochrana krajinářského rázu – třináct let zkušeností, úspěchů i omylů. Nakladatelství Nadežda Skleničková, Praha, pp. 99–104.
DEMKOVÁ, K. (2009): Krajinářský ráz v CHKO Biele Karpaty. Magisterská práca. KFGG PF UK, Praha, 106 p.
HRNČIAROVÁ, T. et al. (2002): Atlas krajiny Slovenskej republiky. MŽP SR, Bratislava, SAŽP, Banská Bystrica, 342 p.
CHRENKA, B., OMASTA, Š. (2010): Vidiecká kultúrna krajiná na vs. obnoviteľné zdroje energie: Boj o priestor na príklade myjavských kopaníc. In: Drobilová, L. (ed.): Venkovská krajiná na 2010. Sborník z 8. ročníku mezinárodní mezioborové konference konané 20.–23. května 2010 v Hostětině, Biše Karpaty, pp. 35–39.
JANČÚRA, P. (2003): Významovo-hodnotové vlastnosti krajiny a hodnotenie krajinářského rázu. Habilitačná práca, FEE TU Zvolen, Banská Štiavnica, 189 p.
JANČÚRA, P. et al. (2010): Metodika identifikácie a hodnotenia charakteristického vzhladu krajiny. MŽP, Bratislava, SAŽP, Banská Bystrica, TU vo Zvolene, 8 p.

| Landscape unit | Landscape area | Quality of landscape character | Level of landscape character protection |
|----------------|----------------|-------------------------------|----------------------------------------|
| A Zlatnícka dolina – Raková | A1 Zlatnícka dolina, Šmatlavé uhlisko | Higher | I. |
|                  | A2 Richtárka, Kovalovské lúky | Higher | I. |
| B Chvojnica – Vrbovce | B1 Žalostiná, Chvojnica | Higher | I. |
|                  | B2 Village Vrbovce | Average | III. |
|                  | B3 Vrbovský chotár | Average | II. |
| C Pecková – Ostrý vrch | C1 Vesný vrch, Nad Osíčím, Ostrý vrch | Average | II. |
|                  | C2 Javorec, Pecková, Malejov | Higher | I. |
| D Radošovský les | D1 Radošovský hájik | Higher | I. |
Krajinný ráz v kopaničiarskej oblasti Vrboviec a Chvojnice (južná časť slovenských Bielych Karpát)

Predložený článok vychádza z výsledkov diplomovej práce (Demková 2009), zaobravajúcej sa problematikou krajinného rázu, ktoréj sa odborná verejnosť venuje od počiatku 90. rokov minulého storočia. Príspevok vysvetluje základné názvoslovie súvisiace s krajinným rázom, predkladá možné spôsoby jeho hodnotenia a ochrany v Českej republike i na Slovensku. Hlavným cieľom práce je zhodnotenie krajinného rázu na preventívne účely vo vybranom území – v juhovýchodnej časti slovenských Bielych Karpát – na základe zostaveného metodického postupu. Záujmová oblasť sa vyznačuje vrchovinným reliéfom pastvinného typu s rozptýleným kopaničiarskym osídlením, v súčasnosti veľmi vzácnym a ohrozeným. Časť územia patrí do chránenej krajinnej oblasti Biele karpaty, ktorej hranice sa priebežne menili. Prípadne sa preto, že i hodnota krajinného rázu bude s týmito zmienami súvisieť. Záujmová oblasť bola diferencovaná do ôsmych krajinných jednotiek, pričom piatim z nich bola pridelená vyššia hodnota krajinného rázu, priemerná sú súvisieť. Záujmová oblasť bola diferencovaná do ôsmych krajinných jednotiek, pričom piatim z nich bola pridelená vyššia hodnota krajinného rázu a trom zvyšným príame ma. Výsledky preventívneho hodnotenia krajinného rázu potvrdili správnosť zmien plošného vymedzenia chránenej krajinnej oblasti a poukázali na unikátnosť územia z kultúrno-historického hľadiska a estetických hodnot.