Landscape and tourism potential in the protected landscape areas

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Abstract: Reasons to travel and to visit concrete destinations in the Czech Republic are especially the nature and cultural/historical sightseeing. The presented paper specializes on the first reason and it studies the specific landscape features together with the primary tourism potentials. It focuses on the protected landscape area of Kokořínsko, which is divided into 6 landscape units according to their landscape character. In these landscape units, the authors study the primary tourism potential and the elements of natural, cultural-historical and aesthetical characterization of landscape. The relation between the tourism potential and the landscape features is measured by the Spearman´s coefficient. Moreover, the expert's evaluation of landscape characteristics is confronted with the the landscape perception of tourists which were questioned in the PLA Kokořínsko.

Key words: tourism potential, protected landscape area, landscape evaluation

The term landscape has several connotations and interpretations. Knudsen et al. (1995) clarify that landscape cannot be the same for two individuals because each of them has a different interaction with the landscape and their knowledge of landscape differs. Therefore, they do not suggest any universal definition for the landscape. Nevertheless, some definitions of landscape can be found in the literature, international documents and also in the national legislative. The European Landscape Convention and Explanatory report defines landscape as follows: "*Landscape means an area, as perceived by people, which character is the result of the action and interaction of natural and/or human factors*" (Council of Europe 2000, article 1). In the Czech Republic, the term landscape is defined in the Act No. 114/1992 Coll, on the protection of nature and landscape as: "*a part of earth surface with characteristic relief, which is created by functional connection of ecosystems and civilizing elements*". In literature, there can be found other definitions, for example Valenta (2008) in his work connects landscape with aesthetical values and defines it as follows: "*Landscape represents determinate space, this space used to be determine by borders, shapes, colors, light, proximity and distance of elements, interrelation of these elements, subspaces within the space.*"

The perception of landscape has changed during the time. In general, there may be distinguished two basic perceptions of landscape. The first one is a classical perspective, in which the view is taken that the creation of livable and usable space, such as urban areas, is a mark of civilization and progress. The second approach is the romanticism, in which untouched space has the greatest value, and wilderness assumes a deep spiritual significance (Holden 2008).

Healy (1994) determines that the ability to view natural and man-made scenes that are interesting is an important part of the tourism experience and it is probably the principal motivation for many visitors. Macagno et al. (2010) have a similar opinion and publishe that it is widely acknowledged that the landscape features can play a major role in determining the tourist destination choice. The simple interaction between landscape and tourism is illustrated in Figure 1. According to Oguz et al. (2010), the landscape is shaped by consumer demand, recreation and tourism.

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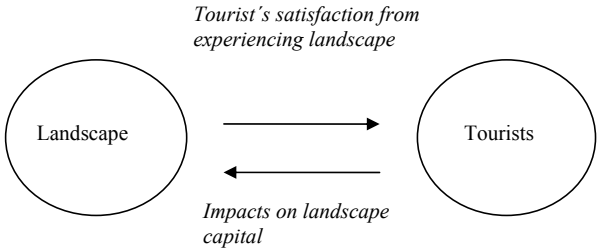

Figure1. Model of the interaction between tourism and landscape

Source: Authors' modification of Garrod et al. (2006) approach

Within the field of tourism studies, the landscape is connected to the visual hegemony and it is expressed in the terms as "the tourist gaze" and "place consumption" (Daugstat 2007: 402–426). The term tourist view is strongly connected to the Urry's theory. The Urry's theory is inspirited by the Foucault´s work The Birth of the Clinic (1973), in which the power associated with the gaze in the medical understanding by presenting the active vision attributed to the physicians is discussed (Knudsen 1995). Urry (2002) published in his work that the tourist gaze is directed by the features of landscape which separate them from the everyday experience. The viewing tourist sights involve different forms of social pattering with a much greater sensitivity to the visual elements of landscape. Holden (2008) adds that Urry observes a person's wish to visit a particular environment which is something that is socially constructed and depends upon developing a cultural desire for the particular landscape.

Knudsen et al. (1995) conclude that the focus of the study of tourism is and should be the landscape. They agree with Minca and Oakes (2006), in whose point of view the tourism landscape is a result of several processes made by the state, regional offices, tourist agencies, tourists and others.

The term used for tourism which respects and protects nature is green tourism. Ryglová (2007b) characterizes green tourism as a desire of tourists to connect nature and human environment. Human environment, especially cultural heritage, is dealt by the authors Hudečková and Ševčíková (2007) in their work. They focuse on cultural heritage as a part of infrastructure for certain forms of tourism. (Ryglová 2007a) adds that with the growing importance of tourism for the economies, the topic of sustainable tourism is and should be discussed more often.

The article focuses on the protected landscape area of Kokořínsko and studies the landscape values and the primary tourism potentials.

MATERIALS AND METHODOLOGY

The PLA Kokořínsko is situated near Prague, in the Northern part of the Czech Republic (Figure 2). All this territory is divided into 6 landscape units (LU) according to their landscape character (Figure 3):

A Vlhošť – Dubová Hora
B Údolí Liběchovky
C Beškovský Kopec-Vrátenská Hora
D Supí Hora
E Spálený Vrch-Vidim
F Kokořínský Důl

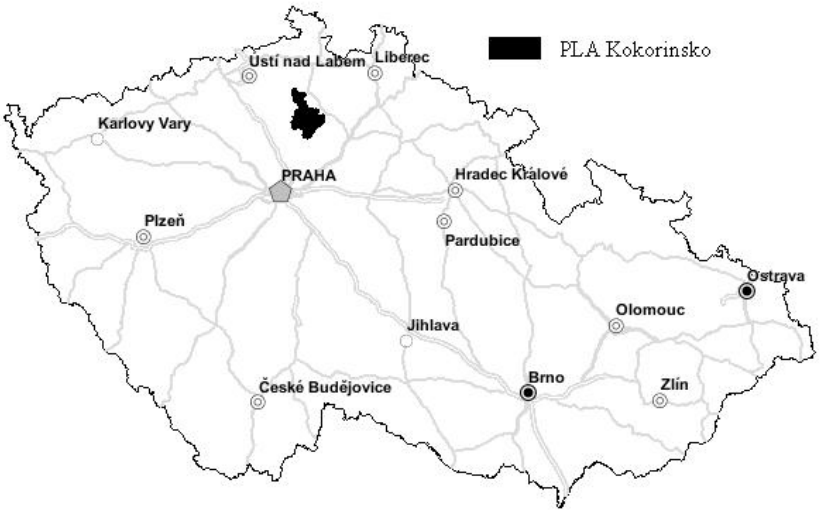

Figure 2. Location of the PLA Kokořínsko

Source: Modified from http://geoportal.cenia.cz

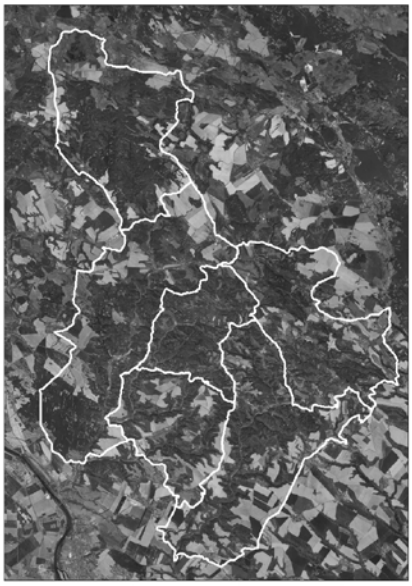

Figure 3. Landscape unit

The data for the further analysis were provided from various resources.

The necessary data with tourist evaluation of landscape and their preferences were obtained through a survey conducted during the summer 2010 in the PLA Kokořínsko under the project "Influence of aesthetics values on tourism in some protected areas" (grant CIGA – No. 20094209). The sample was drawn from the individuals passing through the tourist trails. The information about the evaluation of landscape, settlements and forest was requested. The tourists expressed their opinions by the range from –3 (totally dislike) to +3 (totally like).

The other source was data dealing with the evaluation of the tourism primary potential (natural, cultural and historical potentials) in municipalities of the Czech Republic (Bína 2001). Bína used this method to categorize geographic data with information about point values (14 categories) and intenzity zones divided into 6 categories. He adopted the concept of two basic tourism subsystems: natural and cultural. Inside these concepts, he evaluated 24 elements (14 natural and 10 cultural elements). Among natural elements, there were evaluated the natural sightseeing and the feasibility of landscape for several tourist activities such as hiking biking, skiing, water recreation, rural tourism and others. Among cultural elements, there were evaluated the following elements: cultural-historical sightseeings, museums, spas, conferences, cultural events, sport events, church events, trade fairs and fairs, local products and border specifics. These elements were evaluated by three grades of the feasibility of the localization conditions; from the basic level through the enhanced level to the high level of localization conditions. To all elements, there were assigned weights according to the expert's judgment. Finally, the potential was divided into 6 intensity zones:

- 0 without potential
- 1–25 basic potential
- 26–50 elevated potential
- 51–100 high potential
- 101–200 very high potential
- 201 and more – exceptional potential

The other source used in this study was the document Preventive evaluation of territory in the PLA Kokorinsko from the perspective of landscape character (Vorel et al. 2010). The information about the elements of natural, cultural-historical and aesthetical characterization of the landscape type in Kokořínsko was used. Several features within the above mentioned categories are evaluated according to their significance and richness. Each of these indicators is evaluated by grades 1–3 according to their importance.

Analysis

GIS analysis

The geographic data with information about the evaluation of the general tourism potential by Bína (2001) and its type were analysed. The analysis was focused on the surface calculating area of each point value, intenzity zone and the type of potential.

The Government of the protected landscape area of Kokořínsko was contacted and asked for a shape file data format with the information about the landscape character which was divided into six landscape units. The rest of the data, such as the border of the area of interest, towns, ortofoto, were used from the accessible internet map service of the agency Cenia. The ARCIMS address of this map service is http://geoportal.cenia.cz.

Maps and layouts were done in the program GIS version 9.3 ESRI (Arc Catalogue, Arc Map and Arc Toolbox). In all maps, the coordinated system S-JTSK Krovak East North was set up.

Analysis of the tourism and landscape elements

The GIS technique enables to determine the area of intensity zones of the primary tourism potentials in each landscape unit. The determined area and the average values of the appropriate interval of intensity zones pointed out the primary tourism potential for the individual landscape unit.

The information about the elements of natural, cultural-historical and aesthetical characterization of the landscape type serves to determine the landscape potential of each landscape unit. The landscape potential for the individual landscape units is derived from the arithmetic mean of each evaluation.

The evaluation of landscape values by tourists was determined from the primary research. For the data collection, there was chosen the method, which combines the self-administered data collection (questionnaire was filled without the presence of the investigator) and other-administered data collection. In this case, the investigator was absent during filling of the questionnaire but he/she spoke to the respondents, gave them questionnaires with the information about filling. Finally, there were analyzed 127 questionnaires.

Spearman coefficient

To determine the relation between the tourism potential and the landscape character, the Spearman's coefficients is used. Spearman's correlation coefficient (Spearman's rho) is a nonparametric statistic, which works by first ranking the data, and then applying

the Pearson's equation to those ranks. The Spearman coefficient is defined as follows:

$$r_s = 1 - \frac{6\sum d^2}{n(n^2-1)} \quad (1)$$

where $\sum d^2$ is the sum of the squared differences between the pairs of ranks ($x - y$), and n is the number of pairs. The coefficient runs in the interval <–1; 1>. If $r_s = -1$ the relation between x and y is perfectly monotone decreasing. If $r_s = 0$, there is no monotone relation between x and y. If $r_s = 1$, the relation between x and y is monotone increasing. Values of r_s close to –1 or 1 indicate a strong tendency for x and y to have the monotone relationship (increasing or decreasing). Values close to 0 indicate a weak relationship (Brase 2009).

The relation between the variables is tested by two alternative hypotheses. The left-tailed hypothesis which claims there is a monotone decreasing relation between x and y (one-tailed – lower) and the right-tailed alternative hypothesis, which claims there is a monotone increasing relation between x and y (one-tailed – upper), were tested.

one-tailed – lower

$\mathbf{H_0}$ there is no correlation between x and y

$\mathbf{H_1}$ there is negative correlation between x and y

one-tailed – upper

$\mathbf{H_0}$ there is no correlation between x and y

$\mathbf{H_1}$ there is positive correlation between x and y

RESULTS AND DISCUSSION

Tourism primary potential

In the analysis of the geographic data giving information about the point values (14 categories) and intenzity zones (6 types), the area of each point value was calculated. There was found out that the PLA Kokorinsko represents 7 types of point values and 3 types of intenzity zones (Figure 4). In comparison with the average value of the general potential in the whole Czech Republic, the PLA Kokořínsko belongs to the regions with the above-average potential.

Most of the area of the PLA Kokořínsko (57%) has a high potential. 26% of the area can be characterized by a very high potential. Only 17% of the area corresponds to the elevated potential.

Based on the areas of each intensity zone of primary potential and its point interval, the primary potentials

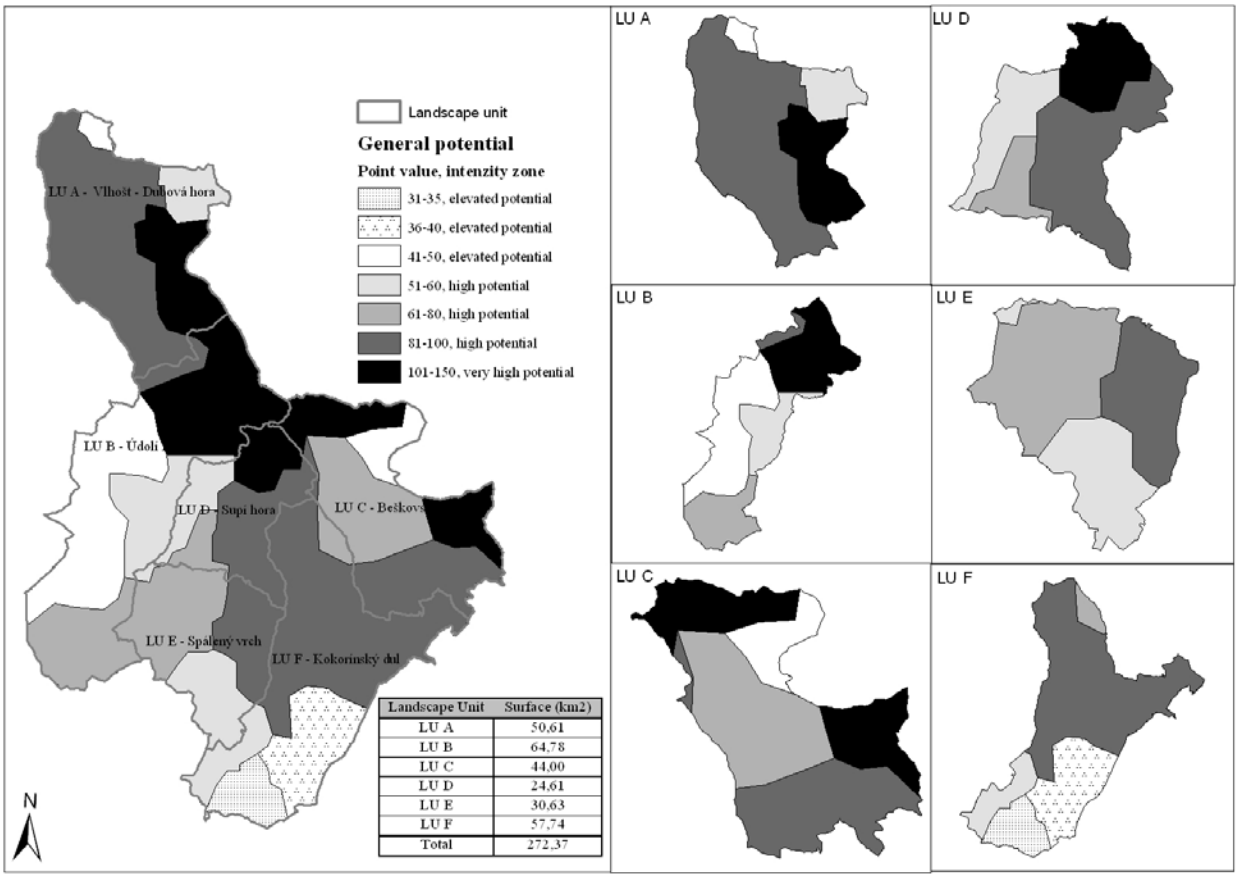

Figure 4. General potential of tourism in the PLA Kokorinsko

Source: Own layout

Table 1. Primary tourist potentials

Landscape unit	Primary potentials
A	55.36
B	48.94
C	39.41
D	21.81
E	22.08
F	40.61

Source: own calculation

in each landscape unit are determined (Table 1). It is evident that the highest tourism potential has the LU A Vlhošť – Dubová Hora, in which 66.8% of its area are represented by a very high potential, 33.3% by a high potential and the rest of the area is characterized by the elevated potential. On the other hand, the lowest potential is determined in the LU D – Supí Hora: this area is the smallest one of all landscape units, with 28.4 % of its area in a very high potential (Table 4). Taking into consideration the relative area of each potential, the rank of the landscape unit differs. The LU with the highest potential is still the LU A, followed by the LU C, LU D, LU B, LU E. The LU with the smallest relative potential is the LU F, which corresponds to 64% of the relative potential of the LU A.

Evaluation of landscape character

Among the *elements of natural character,* there are evaluated the features of vegetation, geomorphology and hydrology. The most highly evaluated area is the LU C – Beškovský Kopec, followed by the LU A – Vlhošť – Dubová Hora and the LU F – Kokořínský Důl. The most highly evaluated feature is the valuable rock formation LU D and LU C area (3 points). Highly evaluated is also the specific terrain of the Polomené Mountains in all LUs (2.5 points).

Among the *cultural and historical elements,* there are evaluated architectural features, the recreational landscape character, relics of the traditional agriculture and other cultural dominating factors. The LU B – Liběchovka Valley is the area with the highest score of evaluation, followed by the LU F – Kokořínský Důl and the LU C – Beškovský Kopec, together with the LU E – Spálený Vrch. The most highly evaluated is the valuable architecture in the LU B –Liběchovka Valley (2.5 points). The recreational landscape character is evaluated by 1.5 points in all LUs. The relics of traditional architecture are evaluated by 1 point in four areas (LU B – Liběchovka Valley, LU C – Beškovský Kopec, LU D – Supí Hora and LU E – Spálený Vrch). Tourist attractions such as the Houska and the Kokořín castle are evaluated by 2 points.

Elements of aesthetical values are most highly evaluated in the areas of LU A – Vlhošť – Dubová Hora (13.5 points) and the LU C – Beškovský Kopec (13 points). In these landscape units, the most highly perceived is the visually closed landscape of the rock town (3 point) and the rock mines (2.5 points). Highly judged is also the visually close forest landscape in the LU D – Supí Hora (3 point). Among other 2.5 pointed elements, there can be named the strong visual exhibitions of nature – closed exteriors or valuable settlement sceneries in the LU D – Supí Hora. Within the LU F – Kokořínský Důl, there can be named the long corridor of the Pšovka river.

Tourist evaluation

Tourists evaluate the landscape in the PLA Kokořínsko positively. 97.7% tourists evaluate the landscape by the grade 1–3, from these 58.3% judge it by the grade 3. Only 1.6% tourists evaluate the landscape negatively (by the grade –1). Grades –2 and –3 are not indicated. In average, the landscape is evaluated by 2.44. Settlements are also evaluated positively (81.2% tourists judge them by the grade 1–3). The mostly indicated grade is 2 (by 33.1% tourists). Only 6.3% tourists evaluate the settlements negatively (grade –1; –2). The average evaluated grade is 1.82. Forest is mostly evaluated positively (88.9%). The same percentage of tourists (35.4%) evaluates forest by the grade 2 and 3. 6.3% tourists judge the forest negatively. From the interviews with tourists, there comes out that the negative evaluation is caused mainly by the woodmen and wood works. In average, the forest is evaluated by 1.44.

Relation between the landscape characteristics and tourism

Testing the relation between the variables by the Spearman's rho proved the significant correlation between the primary tourism potentials and the elements of natural characteristics, and the tourism potential and cultural/historical values. This correlation is proved by the significance value $\alpha = 0.1$ and it can be characterized as positive and quite strong. Relations between other variables are not statistically significant (Table 2).

Testing the relation between the variables (evaluating landscape – settlement; landscape – forest; settlement – forest) by the Spearman' rho proved the significant correlation between all variables. Testing the one – tailed hypothesis proved that there was a

Table 2. Correlation between the primary tourism potentials and the elements of natural characteristics

		Tourism potential	Natural values	Cultural/ historical values	Aesthetical values
Tourism potential	correlation coefficient	1.000	0.706	0.618	0.029
	sig. (1-tailed)	.	0.058	0.096	0.478
Natural values	correlation coefficient	0.706	1.000	0.379	–0.537
	sig. (1-tailed)	0.058	.	0.229	0.136
Cultural/ historical values	correlation coefficient	0.618	0.379	1.000	–0.313
	sig. (1-tailed)	0.096	0.229	.	0.273
Aesthetical values	correlation coefficient	0.029	–0.537	–0.313	1.000
	sig. (1-tailed)	0.478	0.136	0.273	.

Source: Own calculation

Table 3. Correlation between the variables evaluating landscape, settlement and forest

		Landscape	Settlement	Forest
Landscape	correlation coefficient	1.000	0.327**	0.338**
	sig. (1-tailed)	.	0.000	0.000
Settlement	correlation coefficient	0.327**	1.000	0.216**
	sig. (1-tailed)	0.000	.	0.007
Forest	correlation coefficient	0.338**	0.216**	1.000
	sig. (1-tailed)	0.000	0.007	.

**Correlation is significant at the 0.01 level (1-tailed)

Source: Own calculation

positive correlation between the tested variables and this correlation between all variables can be characterized as quite weak (Table 3).

To compare the expert´s evaluation of landscape, the settlement and forest with the tourist's perception, the relative frequencies are taken into consideration. The ratio of the gotten values to the maximal values is shown in Table 4.

The differences between the expert's evaluation and the tourists' perception are not high, especially between the evaluating settlements and forest. A higher variance can be indicated between the landscape evaluations, almost 10%, however, still this difference is not considered as significant.

Table 4. Comparison of the expert's and tourists' evaluation (%)

	Landscape	Settlement	Forest
Experts' evaluation	81.36	60.89	48.29
Tourists' evaluation	72. 39	58.88	46.29

Source: own calculation

CONCLUSION

One of the priorities in these days is the sustainable development and the economic support in the protected landscape areas. It is evident that the interrelationship between tourism and a protected landscape area plays an important role. In the Czech Republic, there are in total 25 protected landscape areas, which occupy 13.6% of the total surface. According to Kajala et al. (2004), the majority of protected areas are at the same time scenic and interesting recreation and tourism destinations that attracted tourists even before they were established as the protected areas. Although the main purpose of protection is nature conservation, the legislation usually allows for a certain amount of recreation and research as well.

The main objective of this scientific work was to analyse the tourist evaluation, landscape values and

the primary tourism potentials, to evaluate the primary tourism potential and the landscape character, to find relations between the landscape characteristics and tourism in the PLA Kokořínsko. The study joins up the data about the tourism primary potentials in the PLA Kokořínsko, which can serve especially for the improvement of the economic, ecological and social conditions in this area. It is evident that the promotion of this area should be focused on nature and its natural potential, as this was confirmed by the map analysis (see map 4) and by the tourist evaluation where 97.7% of them evaluated landscape positively. The objective of this paper is to provide tourists' information about the area itself and the possibilities for its use in tourism development, which can serve for the Government of the protected landscape area of Kokořínsko, regional authorities, town halls and entrepreneurial subjects.

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