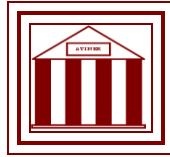


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**Effect of Nature Protection on Urban
Planning in the Protected Landscape
Areas**

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Effect of Nature Protection on Urban Planning in the Protected Landscape Areas

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Abstract

Today there are 25 protected landscape areas declared in the Czech Republic. These areas are defined as extensive areas with harmonic landscape, characteristically developed relief and significant proportion of natural ecosystems of forests and permanent grasslands, with abundant trees, or preserved historical settlements.

Oldest PLA was announced in the Czech Republic in 1956. The size of the PLAs is very different, ranging between 7,000 – 116,000 km². The total area of the PLAs is now about 10,000 km². It is about one eighth of the area of the Czech Republic. This is obviously an important part of the territory. The specific sets of limits, restrictions and requirements that are associated with specific protection of nature and landscape are applied in this territory.

Although the nature and landscape protection is primary in these areas, they contain not only precious natural territories but a large number of settlements as well. These settlements have different size, structure and importance. There are parts of large regional cities (NUTS 3) and district towns (NUTS 4) in the PLAs. PLA administrations express their opinion on all building and urban planning documentation in their areas. Their decisions therefore directly and indirectly affect the images of the landscape and settlements (including technical and transport infrastructure).

Therefore the question is how the principles of nature and landscape protection affect the sociodemographic and socioeconomic characteristics of these settlements and the sustainable development.

Keywords:

Corresponding Author:

Introduction

PLA administrations are on their territories concerned government authorities. They express to all building control and planning documentation. Their decision would directly and indirectly affect the potential construction of a territorial planning. The presence of PLA affects therefore not only the appearance of open countryside, as well as individual residences.

On the territories of the PLA we often witness the conflict of interests regarding the requirements and needs to protect the wildlife and landscape, and the requirements for residential development and principles of territorial planning since they pursue mostly quite opposite goals.

PLA in the Czech Republic

According to § 25 of Act No. 114/1992 Coll., On protection of nature and landscapes, the protected areas are defined as:

"A major area of harmonic landscape, characteristically developed a significant proportion of natural ecosystems of forests and permanent grasslands, a sizeable proportion of trees, or preserved historical settlements. "

Protected Landscape Areas are basically divided into 3 – 4 zones and a protective zone is not there declared. Elementary protective conditions in individual zones are in general features specified in § 26 Act No. 114/1992 Coll., in more details these limitations and requirements are always specified within a legal regulation through which the PLA is declared.

In the 1st and 2nd zone the protection is the most rigid and new constructions are fully banned there. Therefore only the 3rd and 4th zones are interesting for the determination of the influence of the wildlife and landscape protection on the urbanization. Even the imminent vicinity of the PLA might influence the urbanization because it enhances the attractiveness of the territory first of all for housing development. On the other hand it does not have to make demands on the wildlife and landscape protection which can be, however, in some cases also fatal for these localities and enable for example "satellite housing development" or factory building in close vicinity of Protected Landscape Areas.

As the groundwork for territorially planning documentation and first of all for the rectification and influence of human activities on the territories of PLA and for the determination of middle-term and long-term tasks of wildlife protection we suggest and approve care plans of Protected Landscape Areas. These care plans are usually elaborated for 10 – 15 years and are made by the administration of the PLA. Nevertheless they are not legally binding as far as their implementation into individual territorially planning documentation is concerned.

Activities Permitted in PLA'S Zone

1st zone – CORE ZONE - the most rigid protection, limited human activity and banned cultivation

2nd zone – HALF-WILDLIFE ZONE - extensive cultivation permitted

3rd zone – CULTURAL LANDSCAPE - more intensive extensive cultivation permitted

4th zone – PERIPHERAL SETTLEMENT - cultivation based on general principles, prohibition of dangerous substances storage

Relationship of PLA and the Settlement Structure of the Territory

The current layout of the settlement structure of the Czech Republic is the result of construction and urban development having last for several centuries. The settlements are also part of the Czech countryside and have been functioning in mutual interaction during the formation of individual features and the overall image of the area. Spatial and functional structure of settlements creates the environment for the operation of socio-economic processes within the settlements, between separate seats, and between seats and landscapes.

The modern concept of the nature and landscape protection established by the law No. 114/1992 Coll., On nature and the landscape, has become an important entry to the territorial planning process and important limitation of land use. Nature and landscape protection is one of the determinants that determine the decisions regarding land use and coordination of private and public interests.

It is necessary to confront a long-term development of settlement structures including the assessment of contemporary urban problems and a relatively modern effort to ensure adequate protection of the nature and landscape.

After finding relevant indicators, it is possible to assess to which extent the environmental aspects affect the formation of the settlement structure and vice versa. The aim is to ensure that the inputs into the territorial planning process might include adequate consideration of all aspects of the environment formation, including the protection of not only the natural, historical or urban values but also social and economic ones.

To monitor the effects of intensive protection of specially protected natural areas on the urbanization, the following indicators are set up.

Figure 1. Protected landscape areas in the Czech Republic (31. 12. 2006)

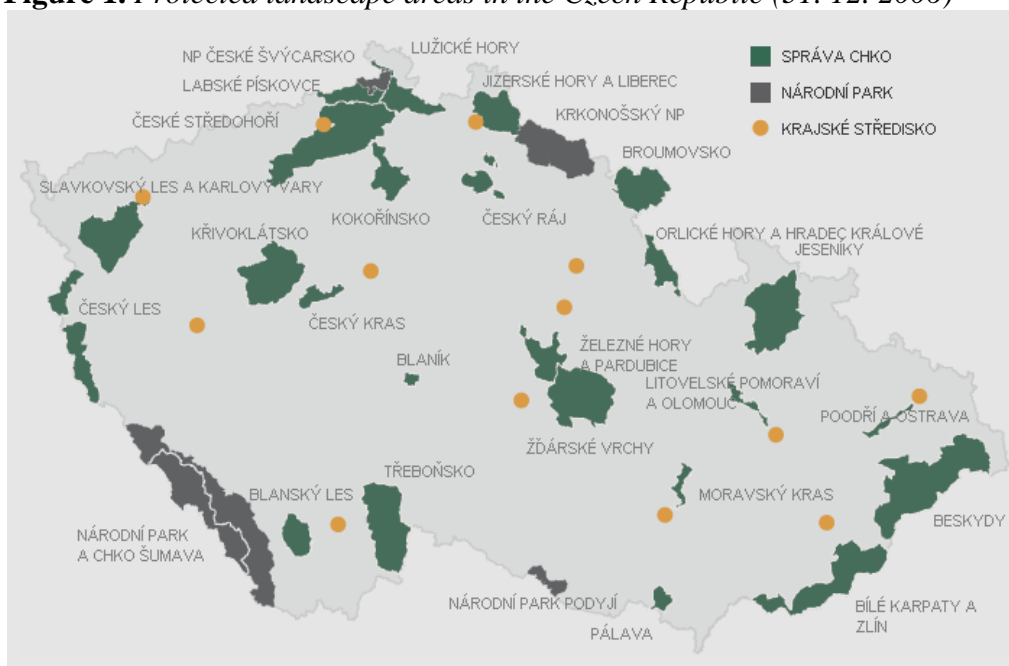
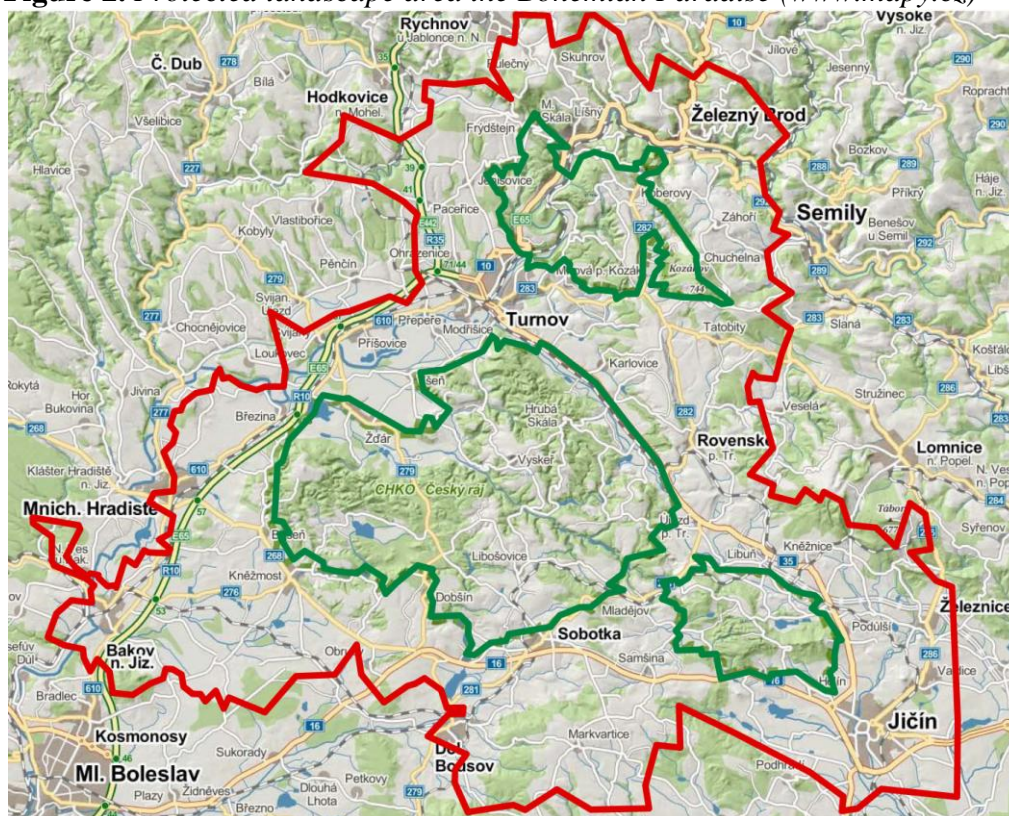


Figure 2. Protected landscape area the Bohemian Paradise (www.mapy.cz)



Group of Socio Demographic Indicators

- Development of permanent residents

- Density of population per 1 km²
- Development of the number of houses in relation to population

Group of Socio-Economic Indicators

- Budget revenues progression of individual municipalities including the progression of individual
- Changes in the value of investments in public infrastructure by municipalities
- Development expenditures on environmental protection
- Expenditure on the protection of nature and landscape
- Results of the municipal economy

In this article we have evaluated socio-demographic and socio-economic indicators in the PLA Bohemian Paradise case study which we chose especially due to the fact that it is the oldest declared PLA in the Czech Republic.

In order to compare both groups of indicators in the PLA with the indicators outside the PLA we created a Buffer Zone. This is the cover boundary of cadastral territories close to the PLA boundary (Fig. 3). The area of the PLA is 181,52 km², the area of the Buffer Zone is approximately 650 km².

Figure 3. Protected landscape areas the Bohemian Paradise (photo by author)



PLA Bohemian Paradise

Bohemian Paradise has been from the first half of the nineteenth century the landscape between towns Turnov, Jičín and Mnichovo Hradiště. The

landscape which with its expression and features is entirely consistent with tendencies of romanticism. Thanks to the exceptional combination of natural values and historical monuments, the Bohemian Paradise was declared as the first protected area in Czechoslovakia.

The PLA Bohemian Paradise was declared on the first March, 1955. On December 5, 2002 the government order issued in the Collection of Laws under No. 508/2002 Coll. expanded the original 92 km² to 181.5 km² today, that is about twice the size. To the original localities also Maloskalsko area, Kozákovian, Klokočské rocks, Prachov rocks and territory between Kněžmost and Sobotka were added.

So today the PLA Bohemian Paradise consists of three separate parts - north, west and south. Thanks to this extension, the PLA today lies in three regions - Central, Liberec and Hradec Kralove region and extends into four districts - Liberec, Jičín, Mlada Boleslav and Semily. It also partially covers the administrative territory of 41 municipalities.

The Settlement Structure of The PLA Bohemian Paradise

The residential structure in the Bohemian Paradise is quite dense, about 2 seats fall to 1 km² area of the PLA, and is made up exclusively of villages and settlements. The largest settlements in different parts of the PLA are Prachov, Koberovy and Mašov, which is the largest settlement in the PLA at all.

Most of the Protected Landscape Area Bohemian Paradise belongs to the 3rd zone (63,2%, i. e. 114,7 km²). The area of the 4th zone is only 4,7 km² (2,6%) which means that in the Bohemian Paradise this 4th zone is only complementary and is composed first of all of compact built-up area in several more significant municipalities in the PLA.

According to the PLA Bohemian Paradise Care Plan edited in 2004 (valid till 2013), the emphasis during the assessment and building authorization in the PLA is put first of all on respecting the character of the settlement and preserving landscape features with traditional country appearance.

Due to high variability and particularity of individual localities in the Bohemian Paradise, it is necessary, also for the determinatin of typical features of a built-up area, to divide the PLA into eight architectonic areas for which it is possible to search similar features of constructions. The division into these architectonic areas works as the groundwork for the PLA administration when executing state administration competences, first of all at constructions authorization during the territorial and construction procedures and is anchored in the PLA Care Plan.

Selected Socio Economic Characteristics of the PLA Bohemian Paradise

The Municipalities for Budgets Monitoring

Monitoring various economic indicators based on budgets of about 100 villages in the PLA and in the buffer zones in the period from 2000 to 2011 per

head did not reveal any dependence of the results of the municipality economy on the fact whether the municipality is located in the PLA or in the buffer zone.

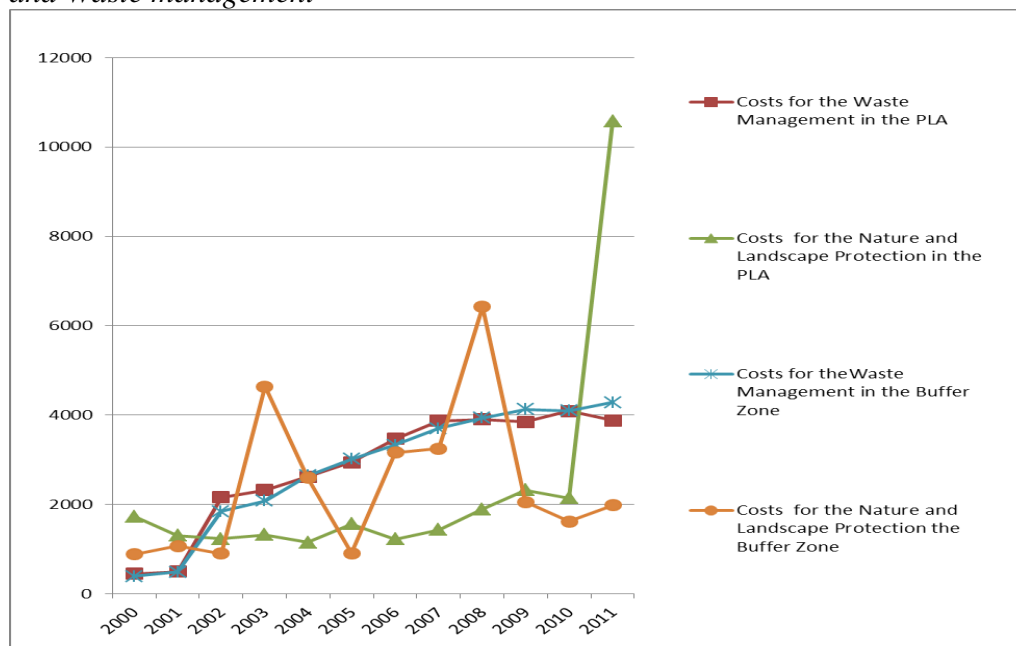
Therefore for the research purposes we have chosen 5 pairs of municipalities – always one lying in the PLA and one in the Buffer Zone and their budgets were subjected to a more detailed analysis. These pairs were chosen according to the size, number of residents and houses, the way of the original design, traffic accessibility, similarities of the terrain and their vicinity so that the selected pairs might be maximally similar and therefore also comparable. The total area of selected municipalities inside the PLA is 56, 4 km² (in the Buffer Zone 51,9 km²). Approximately 1/3 of the PLA territory has been assessed this way and can be taken as a representative sample. Other municipalities in the PLA are for this assessment unsuitable for example due to small area and a low number of residents (in period of tens) or their built-up area lies partly inside the PLA and partly outside (in these cases it is not possible to obtain detailed data).

Selected pairs of municipalities are Hrubá Skála – Karlovice, Vyskeř – Radostná pod Kozákovem, Zámostí-Blata – Ostružno, Koberovy – Záhoví and Libošovice – Markvartice.

Budget Analysis of the Observed Municipalities

In the area of municipalities expenditures we observed first of all the expenditures related to the environment protection (recalculated to 1 resident). From the comparison follows that the municipalities in the PLA have been investing into the protection of the environment for a long time period and in a linearly increasing tendency. On the contrary, the municipalities lying outside the PLA have been spending financial means rather in leaps (see graph 1).

Graph 1. *Development of the Costs for the Nature and Landscape Protection and Waste management*



However, this indicator should be divided into capital expenditures and lifting expenses and further into the expenses related to waste management and expenses related to a wildlife and landscape protection (Care of municipality appearance and public greenery).

As it is obvious from the graph no. 1, in the wildlife and landscape protection the expenditures are affected by one-time investments during various years. On the contrary, the waste management expenses are for the municipalities inside and outside the PLA quite comparable.

Nevertheless we also carried out the analysis of the incomes of individual budgets of observed municipalities (see table. 1).

Table 1. Comparison of the averages of the municipal budgets in 12 years

per capita; in CZK	Hrubá skála	Karlovice	Vyskeř	Radostná	Záměstí-Blata	Ostružno
Income tax (total):	8065,3	9580,8	7005,5	6348,5	7836,5	7267,1
Taxes on personal income	1854,7	2426,2	1682,8	1919,4	1448,1	1402,8
Taxes on corporate income	1614,5	2053,4	1501,8	1577,9	1462,1	1382,8
Taxes on property	827,0	859,0	861,0	476,4	1771,8	1738,9
VAT	2387,0	2339,9	2440,8	2305,5	2128,4	2218,4
Fees and charges in the environmental field	520,3	410,3	423,3	56,5	443,6	217,1
Non-tax revenue:						
Income from rental property	452,9	2448,8	1059,2	80,9	1614,3	211,3
Income from own business	792,1	1412,2	457,8	814,7	1548,4	659,2
Grants	4798,8	1972,2	6049,1	2139,9	3556,3	3195,5
Expenditure on environmental protection	668,5	771,0	1024,1	883,8	1376,3	1651,9
Waste Management	644,8	502,9	598,8	549,3	597,6	524,8
Nature and landscape protection	23,8	268,1	425,3	334,5	778,8	1127,1
per capita; in CZK	Koberovy	Záhoří	Libošovice	Markvartice	PLA average	Buffer zone average
Income tax (total):	6342,5	7326,8	8298,2	9271,8	7509,6	7959,0
Taxes on personal income	1926,5	1900,5	1684,6	1880,8	1719,3	1905,9
Taxes on corporate income	1710,3	1854,6	1709,7	1737,4	1599,7	1721,2
Taxes on property	255,9	625,8	1785,5	2631,3	1100,3	1266,3
VAT	2374,3	2359,0	2528,7	2614,3	2371,8	2367,4
Fees and charges in the environmental field	2,4	568,9	491,7	374,6	376,2	325,5
Non-tax revenue:						
Income from rental property	207,7	89,2	492,3	344,1	765,3	634,9
Income from own business	927,1	796,1	378,6	1194,8	820,8	975,4

Grants	3891,3	5883,7	2399,1	10341	4138,9	4706,5
Expenditure on environmental protection	652,3	823,5	1438,8	1153,9	1032,0	1056,8
Waste Management	403,8	482,9	591,7	766,8	567,3	565,4
Nature and landscape protection	248,5	340,6	847,2	387,1	464,7	491,5

Municipality revenues can be divided into income tax, non-tax, capital and other subsidies. When examining tax revenues with selected pairs of municipalities, no significant difference in the development of tax revenues in the PLA and the buffer zone was found even though in many cases the growth of tax revenues in the PLA is noticeably faster.

There are interesting data on non-tax revenues of municipalities, where the revenues from their own economizing have in most cases a markedly faster growth rate.

Further research should focus on municipality income benefits issues in the PLA and detailed monitoring of the municipality husbandry itself in a larger sample.

Selected Socio Demographic Characteristics of the PLA Bohemian Paradise

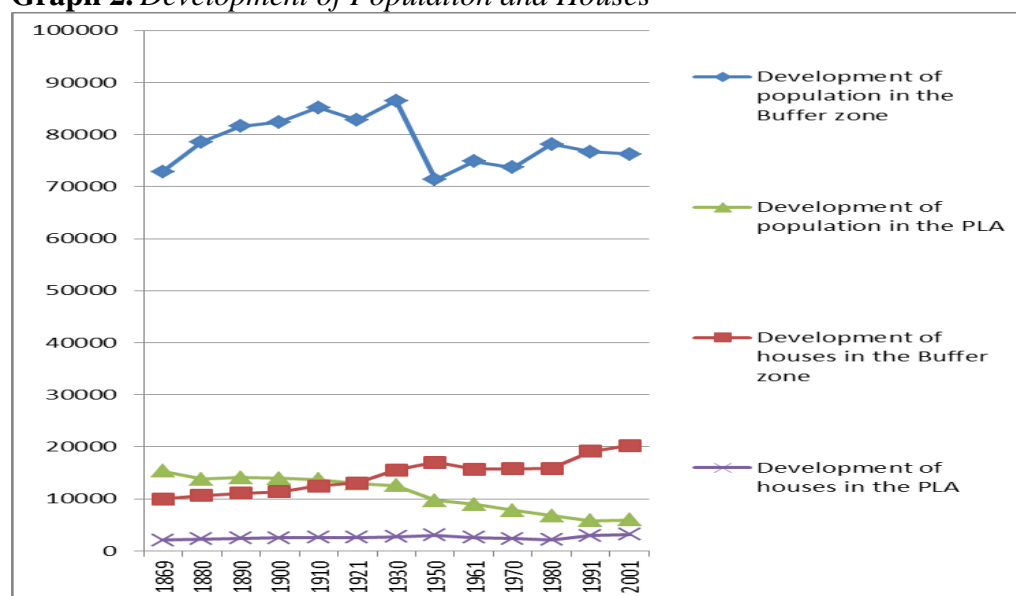
The Population Density

The population density in the PLA is 33 inhabitants per 1 km². It is interesting to compare the population density with the average density in the Czech Republic, which is 130 inhabitants per 1 km², or with the average density in the Buffer zone (117 inhabitants per 1 km²). In case of the PLA Bohemian Paradise the density of population makes one quarter in comparison with the republic average.

Development of Population and Development of Houses

The importance of monitoring indicators lies in the differences between the development of population, intensity of construction of houses in the PLA and the construction in the buffer zone and in the relationship between the number of population and the number of houses. (We assume that the population living in dwellings is negligible, they are mostly a small houses). The development of these indicators are presented in the graph no. 2.

Graph 2. Development of Population and Houses



As shown in Graph 2, the population of the PLA has had a decreasing tendency of an almost linear course and the declaration of the PLA in 1950 and 1992 did not cause major ups and downs. It is clear, however, that the population is on decline, which is not marginal - in 1900 about 14,000 inhabitants, in 1950, about 9,600 inhabitants, in 2001 about 6,000 inhabitants.

Quite different development of the inhabitants is in the buffer zone. Although this area is larger than the PLA and thus the development of the number of population may be affected by other factors, we cannot omit the long-term growing number of population with a significant decrease in the period of the World War II.

Comparing the number of houses with the development of the number of population it is possible to find out that these numbers have in the PLA the countercurrent development – the population decline and growing number of homes. We can deduce the conversion of permanent housing to leisure housing which will be subjected to more detailed investigation.

The Town Turnov

The town Turnov is undoubtedly the most interesting and largest urban structure of the Bohemian Paradise. Although most of the cadastral areas do not lie in the PLA, it is beneficial to deal with its urban structures. The uniqueness of the Bohemian Paradise and from the urbanistic viewpoint also the fact that thanks to the extension of the PLA in 2002 the town Turnov was incorporated into the northern and western part of the landscape protected area and some of its cadastral areas are already behind the border. Some urban quarters are in the protected areas and some of them are even in direct contact

with the rock formations Hruboskalsko and Maloskalsko, i. e. two most valuable localities in the PLA.

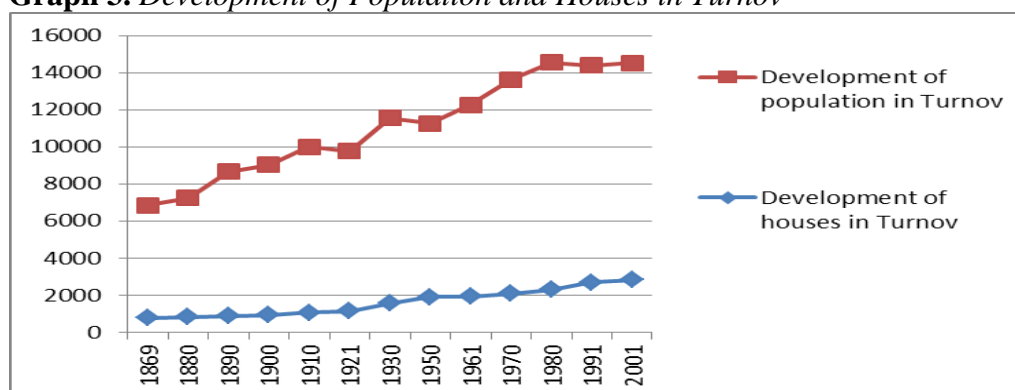
Turnov therefore lies in the center of the PLA and this is undoubtedly the reason why Turnov is the seat of the PLA administration and got the nickname "the Heart of the Bohemian Paradise."

Due to the above mentioned arrangement, the town Turnov has been developing mainly in the western direction, which also predermines the connection to the motorway connecting Prague and Liberec. This results in the formation of a relatively large industrial zone in the northern part of Turnov.

On the other hand, it is remarkable that for example a strategic plan for the town Turnov of the year 2004 works with the issue of the PLA only and exclusively in terms of tourism and recreation. The re-negotiated territorial plan locates areas suitable for housing, areas for public facilities, recreation areas and areas for agricultural production, in which the conditions for the spatial arrangement protect both the natural and cultural values of the PLA and the values of a landscape character.

In terms of urbanistic development, the town Turnov is the seat with a huge potential - the ever-increasing number of houses and inhabitants (Graph 3).

Graph 3. *Development of Population and Houses in Turnov*



Conclusion

When searching for the connections and influences of the protection of the wildlife and landscape on the landscape urbanization we applied the method of monitoring selected socio-demographic and socio-economic indicators. Even though the conclusions may be influenced by the way of the determination of the parameters, we can assume that the results of this analysis are relevant and describe at least a part of the whole issue. Based on the lessons learned it is possible to generalize the issue in the following propositions:

The wildlife and landscape protection is heavily anchored in the legislation and has been also executed by the competent authorities.

The monitored areas both in the PLA and the buffer zone are of a similar spatial and potential character. This potential lies first of all in the natural values and attractions, which are higher in the settlements in the PLA.

When observing socio-demographic indicators we found out different results during the monitoring of the area as a whole and during the monitoring of small rural settlements. The development potential of settlements is therefore more related to the size of the settlements and not to the existence of stricter conditions in the PLA. As the comparison of similar small municipalities in the PLA and the buffer zone shows, their development proves consistent decrease of the population also with similar rates of decline.

If the development in the number of population was related to the strict protection conditions of the PLA, then the municipalities in the buffer zone should benefit from the natural attractions in the immediate vicinity of the PLA, and at the same time from the absence of the protective conditions. The above mentioned data, however, prove that the development of the municipalities in the area is not significantly affected or limited by protective conditions of the PLA, on the contrary, this development reflects a general societal trend: the depopulation of small towns for lack of employment opportunities and lack of public infrastructure, both in the protected area and outside it.

As a result of the above mentioned facts, it is possible to argue that fostering the development of small towns in the PLA and its close proximity should be pursued through strengthening public infrastructure while maintaining the values of the PLA.

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