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LANDSCAPE FUNCTION ANALYSIS AS A BASE OF RURAL DEVELOPMENT STRATEGIES

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Abstract

Research on ecosystem services and landscape functions are highly important in landscape ecology, landscape planning and open space design. The terms of ecosystem service and landscape function have been evolved parallel to each other in the scientific literature but have different focus. The term of landscape functions evolved from the scientific field of landscape ecology; it reflects the goods and services provided by regions, landscapes where the cultural, economic factors are important as well. As a framework assessment method with additional economic assessment, a landscape function analysis could be an additional tool of rural development, as it gives a complex analysis of multiple aspects, thus it is highly appropriate to explore, analyze the potentials, resources and limits of landscapes and land use systems. In the current research a landscape function analysis was compared with the rural development strategies in Hungarian micro-regions. We focused on the level of landscape functions and the objectives of the rural development strategies of the study areas. The local development strategies do not focus on territorial differences nor potentials evolving from natural, cultural resources or local constrains. The only exception is tourism development, where in some cases there is a holistic spatial approach which intends to develop the region as a whole.

Keywords: landscape functions, rural development, micro-regions of Csorna, Pásztó, Gönc

INTRODUCTION

The terms of ecosystem services and landscape functions are very popular in landscape ecology research, landscape planning and open space design. Since decades experts realized that the welfare of the society depend on the interactions with nature. The growing threat on our natural resources fostered researches on ecosystem services or landscape functions.

The concepts of ecosystem services and landscape functions have similar meaning but different focus. These terms have been evolved parallel to each other in the literature. For the first time Ehrlich and Ehrilch (1981) used the term of ecosystem services and later Costanza et al. (1997) dealt with the economic assessment of ecosystem services. The most important turning point was the publication of the results of the international research program Millennium Ecosystem Assessment supported by the UN, which remained the most comprehensive and complete program among those which have emerged in the field of ecosystem services (MEA, 2005). The research program focused on the relation between social welfare and ecosystem services. Those goods, services and spiritual, aesthetic values provided by nature as ecosystem services were considered which are used directly or indirectly by the human society (Costanza et al., 1997; de Groot et al, 2002). The landscape functions usually refer to the goods and services provided by regions, landscapes, when researchers analyze next to the environmental issues the infrastructural, cultural and economic characteristics of land use systems as well (Bastian, 1997; Hermann et. al,. 2004). Schößer et al. (2010) compares the similarities and differences of the three concepts of ecosystem services. The goods and services provided by landscapes can be distinguished by different methods, but usually these values are divided into three major groups: production/economic, ecologic/environmental (cultural, aesthetic, educational etc.) goods and services. De Groot and Hein (2007) distinguished the carrier functions in the frames of production functions providing space and suitable substrate for settlements and cultivation. In the model of landscape functions Brandt and Vejre (2004) distinguished land use functions referring to material processes connected with land use. Lamarque et al. (2011) highlights the fact that a clear demarcation between landscape functions and land use functions is not possible.

What is the relation of landscape services and rural development? Several researches focus on the multifuncinality of the landscape. The research of Willemen et al (2010) underlined the trend that at multifunctional locations the total provided goods and services by the landscape were higher than at monofunctional sites and similarly de Groot and Braat (2012) explored the relation between land use intensity

and the level of ecosystem services highlighting the fact that extensive land use systems provide wider range and higher level of services.

Several researches (MEA, 2005; de Groot and Hein 2007; Willemen et al., 2010; Norgaard, 2010 etc.) have clearly defined the correlation between social welfare and ecosystem services/landscape functions, but especially in case of quality of life in rural areas we consider the wide range and complexity of landscape services extremely important. Land use conflicts occur in such cases when a dominant land use /landscape function hinder the harmonious functioning of other functions mostly regulation, habitat or cultural functions.

Herman et al. (2014) emphasize the spatial analysis of landscape functions in order to reach well founded landscape development decisions. In spite of the vast research, mapping the term of landscape functions has not been introduced into the landscape management neither in practice of rural development (Norgaard, 2010). But also Norgaard is the one who reminds us for the most important shortages of ecosystem service analysis which is that they are simplifying the real circumstances and cannot consider the impacts of human activities. That is why it is extremely important to consider the complexity and synergies of our ecologic and social systems.

The multifunctional agriculture, which represents a similar approach to landscape functions, highlights the social, cultural and ecologic role of agriculture as well (EEC, 1992; Ángyán and Menyhért, 2004). In case of rural regions of extensive use and dominantly of natural land cover we can consider ecosystem services as landscape functions since the focus is here on goods and services provided by nature and self-sustaining processes (Konkoly-Gyuró, 2011).

In our research we focus on rural development because its focus is more the locality, local communities, ecology and landscape values, while regional development highlights the importance of economic, technologic development. The Cork Declaration emphasizes the multidisciplinary character of rural development and complex, integrated, multisectoral approaches and their local focus (EC, 1996.). The EU Common Agricultural policy and the former experiences collected in regional development form rural policy in Hungary. Because of the financial shortages the tools of the EU rural development policy are the most important determining factors in this field in Hungary. The New Hungary Rural Development Programme forms the main priorities of agricultural and rural development. The rural development programs are realized mostly in the frames of LEADER program. The 96 Local Action groups try to mobilize local stakeholders and realize multisectoral development programs based on local strategies. The effectiveness of rural development depends on the depth of analysis of rural development strategies, whether the strategies consider the landscape conditions in reality, and react on the real values and conflicts. Our research focused on the following objectives:

- to analyze of the landscape-ecologic and economic characteristics of selected micro-regions through landscape function assessment method;
- to compare the results of landscape function assessment and the rural development strategies of the study areas.

STUDY AREAS

As study areas three rural micro-regions were allocated situated in different parts of Hungary: micro-regions of Csorna, Pásztó and Gönc (Fig. 1). These micro-regions are part of the new administrative system elaborated in 2011, they are administrative units (group of 27-33 settlements) which in size are similar to the statistic units of LAU1 level. All study areas are of rural character, of different landscape conditions and can be considered as peripheries.

Micro-region of Csorna

Micro-region of Csorna is situated in Kisalföld, in Region of Western Transdanubia which is the second most developed region of Hungary (% of the EU-28 average, EU-28 = 100, Central Hungarian Region - 105,45; Western Transdanubian Region – 74,53). But the development potential of Csorna lags behind the neighboring regional centers (Győr, Sopron, Mosonmagyaróvár). The micro-region consists mostly of villages of landscape of Hanság and Rábaköz. The settlement structure is characterized by small villages, 72% of the settlements have less than 1000 inhabitants, and just the center of the micro-region has slightly more than 10 000 inhabitants. Rábaköz has been an intensively cultivated landscape since centuries while in the North because of the vast marshland of Hanság large areas remained untouched. During 19th and 20th century drastic landscape changes took place because of the intensive drainage works. The remained moors, lakes, wet habitats, meadows of Hanság are the most important ecologic values of the region. The river Rába with its riparian forests mean a natural border in the South. The Rábaköz Rural Development Association holds the majority of the settlements together.

Micro-region of Pásztó

Micro-region of Pásztó is situated in county Nógrád, at the feet of mountain Mátra and the undulating landscape of Cserhát, relatively far from the major transportation corridors and the busy cities. The region similarly to Csorna can be considered as an inner periphery, characterized by small villages. Its center, Pásztó is located on the peripheries of the micro-region and the county, on the riverbanks of Zagyva. The city of Pásztó still in the medieval ages has been a busy cultural and economic center, transportation node but after the Ottoman occupation it couldn't regain its former significance. The fruit production, local vines, and the products of the water mills couldn't compete with the industrialization of the neighboring cities. Even the relocation of the major transportation corridors fostered this decline. The formerly important mines were closed. Beside these negative processes the growing importance of tourism can be seen in the region. The diverse landscape resources, the 'Palóc'

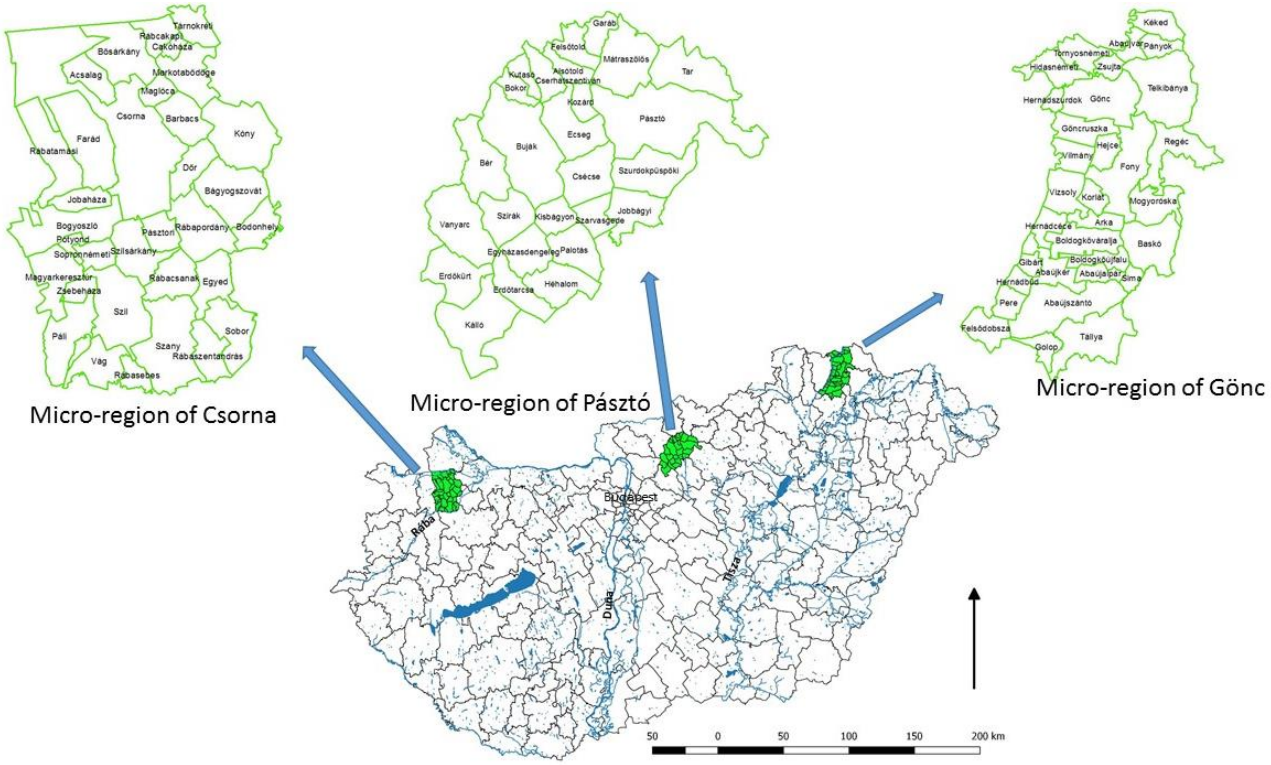

Fig. 1 The location of the study areas, the micro-regions of Csorna, Pásztó and Gönc

cultural heritage, the Nature Park of Cserhát and Geopark of Nógrád provide the base for the tourism and economy of the region. The mountains of Mátra and Cserhát surround the region offering picturesque landscape scenery, the cultural heritage of the villages are mostly of local, regional significance (Fig. 2). The majority of the settlements of the micro-region, with the exception of one single settlement belong to the Cserhátalja Local Action Group.

Micro-region of Gönc

Micro-region of Gönc is one of the most disadvantaged regions of Hungary in spite of the rich natural and cultural values. The studied region is located along the Slovakian border. From its 32 settlements two are towns (Gönc and Abaújszántó), 19 settlements have less than 1000 inhabitants. All the most important social and economic indicators show the unfavorable situation of the micro-region. In contrast, Gönc is rich in cultural heritage as the remnants of the old settlement structure the Hussite House in Gönc, or the castle in Boldogkő (Fig. 3 a, c). The Eastern-Southern Slovakian regional centre, Košice with its 300 000 population has a remarkable influence on the neighboring Hungarian areas as well especially after the opening of Schengen boarders. The Slovakian center is much closer to Gönc than Miskolc, the county seat. The recent connections have traditions since previously the region was called as "pantry of Košice". The settlement and infrastructure network of the micro-region have been formed by geographic conditions. The main transportation corridor of the region is stretching parallel to river Hernád (road Nr 3.). The majority of the smaller settlements are dead end villages. The Abaúj Leader Association (Local Action Group) holds 81 settlements together, and the majority of the micro-region of Gönc.

METHODS

The conditions and differences in and among the study areas were explored by landscape function analysis using landscape indicators. Our assessment is mostly based on data of the Hungarian Statistical Office and the Corine CLC database 2012 and the system of TEIR (National Information Database of Spatial Planning). Agricultural production and forestry, nature protection and habitat value based on naturalness, furthermore the cultural heritage were assessed. To investigate agricultural potential the ratio of arable land, ratio of fruit and grape plantations and forests were calculated. Almost half of our country's territory (48%) is arable land, thus we consider high intensity of cultivation in case the ratio of arable land is higher than 60 %, medium 40%-59% and low in case of lower values than 39% considering the ratio of arable land.

To characterize habitat value, the ratio of natural/semi-natural land cover forms and the ratio of protected areas were considered. We assessed the ratio of natural or semi-natural Corine land cover forms using the following Corine CLC types: land principally occupied by agriculture with significant areas of natural vegetation, natural grassland, moors and heathlands, Sclerophyllous vegetation, transitional woodland scrub, broad-leaved forests, mixed forests, inland marshes, peat bogs, stream courses, water bodies.

Fig. 2 Landscape and cultural values in micro-region Pásztó (Photos made by E. Dancsokné Fóris) a, The picturesque mountain line of Cserhát; b, Panorama of Mátraszőlős with mountain Mátra in the background; c, View of Tar

Fig. 3 Landscape and cultural values in micro-region Gönc (Photos made by I. Valánszki) a, Hussite House in Gönc; b, panoramic view of river Hernád; c, Boldogkő Castle

To assess ecologic value, the ratio of protected areas was calculated. If we consider nature and landscape protection, there are several levels and types of protection in Hungary. Beside the nature protection categories (there are 10 national parks, 36 landscape protection areas, 147 nature conservation areas in Hungary) there are Natura 2000 areas (European Union's level of protection) and the National Ecologic Network. The National Ecologic Network represents the widest type of landscape protection in Hungary, as this category is elaborated for spatial planning and includes all types of nature protection areas (Natura 2000 and national park areas as well) and other officially not protected but all the ecologically valuable areas. The National Ecologic Network as a regulation zone is available in the National Spatial Plan and in all the master plans of the settlements. To avoid the duplication and overlapping of different protection types we focused our assessment on the National Ecologic Network. In the frames of the National Ecologic Network three categories are distinguished: core areas, buffer zones and ecologic corridors. The percentage values of naturalness and protected areas were divided by 10 to get a scale between 1 and 10 to help the multi-aspect comparison between the study areas.

The evaluation of the beauty of the landscape is highly complex and sometimes because of its subjective judgment it is really difficult to find indicators. In order to avoid subjectivity, landscape beauty was related to naturalness (proportion of natural/semi-natural land cover forms) and as a weighing factor we considered the number and significance of cultural heritage/monuments based on the database of TEIR. The value of cultural heritage was calculated by the monument density per settlements and according to the significance we weighted the values. To get the final value of landscape aesthetics we summarized the values of naturalness and cultural heritage and calculated their average.

We assessed touristic and recreational values (number of guest nights, commercial accommodations) using the database of the Hungarian Statistical Office (2014). The data describing tourism potential varies on different scales, so to be able to summarize them and compare them on the level of settlements and micro-regions the data on a scale of 10 were projected and average value of data of number of guests and number of commercial accommodations were taken.

The economic value and availability are important factors in the welfare of local inhabitants. To be able to compare the regions the data on a scale of 10 were projected. We evaluated the economic value by domestic income indicator (Hungarian Statistical Office, 2015).

In the second phase of our research project the objectives and tools of the rural development strategies of our study regions were analyzed. We assessed how the strategies reacted or were adjusted to the local levels of landscape functions or ecosystem services.

RESULTS AND DISCUSSION

The landscape function analysis revealed the conflicts, limits of landscape resources and where certain landscape functions can be considered lower than the appropriate level.

Ecologic and habitat values

There are large differences in micro-region Csorna considering the ecologic values. We considered all types of nature protection areas including Natura 2000, national park and the National Ecologic Network but to avoid duplication in the comparison analysis we focused on the National Ecologic Network. In the Northern part of micro-region of Csorna, in Hanság high ratio of nature protection areas can be found. Hanság is part of the National

Park Fertő-Hanság, with Natura 2000 and Ramsar areas (proportion of Natura 2000 areas: 54% Tárnokréti, 36% Barbacs, 33% Maglóca, 33% Csorna) meanwhile Rábaköz consists of mostly intensively cultivated arable land (Fig. 4) and landscape protection is represented just by the parts National Ecologic Network, mostly as pastures and the riparian forests along river Rába. The lowest value among the study areas, 25% of the micro-region is part National Ecologic Network.

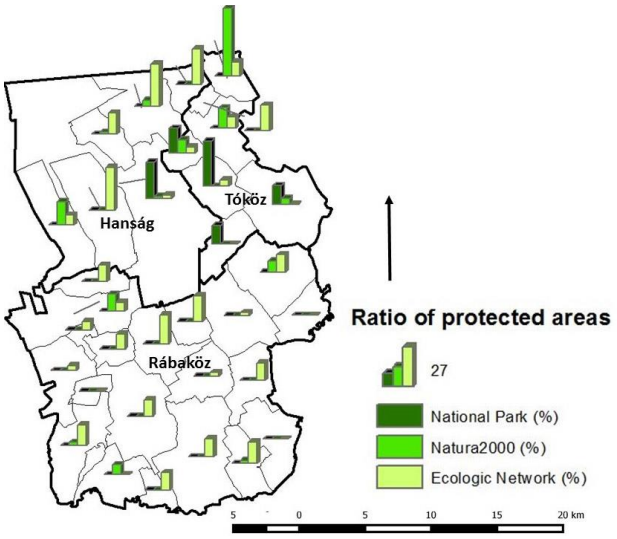

Fig.4 Ratio of nature protection areas in settlements of micro-region of Csorna with two characteristic landscape parts of Rábaköz and Hanság, Tóköz

Even micro-region of Pásztó can be considered inhomogeneous but with higher ratio of landscape protection areas, 47% of its total area is part of the National Ecologic Network. The Landscape Protection Area of Eastern Cserhát (Eastern part) and Landscape Protection Area Mátra (Northern part) are divided by intensive cultivated land and busy transportation corridors along river Zagyva. There are a few settlements where almost the whole territory is part of the National Ecologic Network (Felsőtold, Garáb, Cserhátszentiván).

In micro-region of Gönc Landscape Protection Area of Zemplén Mountains with a wider zone of Natura 2000 areas and protected areas along river Hernád (almost 80% of the micro-region is designated Natura 2000) are the most important nature protection areas. Among the study areas here the total percentage of the National Ecologic Network is the highest: 80%. But the connection between the core areas is insufficient, missing.

The proportion of natural and semi-natural land cover forms (naturalness values in Fig. 5.) is in case of micro-region Csorna the lowest 20%, in Pásztó 46% and the highest value can be found in Gönc micro-region 62%.

Landscape aesthetics

Landscape aesthetics was assessed based on the naturalness values and the number and significance of cultural heritage (database of national monuments TEIR database). If we consider the number of monuments (data base of TEIR) we find similar values in the study areas (micro-region of Csorna 66, micro-region of Pásztó 58, micro-region of Gönc 57, the density is ap. the same 2 per settlements), but in Csorna and Pásztó with a few exceptions the cultural heritage is mostly of local significance. In micro-region Csorna the most significant cultural value is the Norbertine Abbay. The villages are rich in architectural values but these are mostly of local significance. The indicators of landscape aesthetics reveal great differences in the micro-region. The majority of Rábaköz (the Southern part of the region) can be described as intensive arable land with large fields while Hanság, Tóköz are more diverse landscapes with higher proportion of natural vegetation or cultivated areas of lower intensity. As Csorna is situated in a plain, the diversity of different land use forms is highly intensive from point of view of aesthetics, the large fields of Rábaköz create a monotonous landscape.

Micro-region Pásztó has rich, living Palóc cultural heritage. The Palóc cultural trail connects the cultural, architectural values of the villages. The remnants of the former mediaeval city of Pásztó are still unknown for the greater public. Dense network of tourist trails connects the natural values of Nature Park Cserhát, Landscape Protection Area of Mátra and the Geopark. Hiking, eco-tourism and rural tourism are significant in the region.

In micro-region of Gönc the most important cultural and architectural values can be found in Gönc, Boldogkőváralja, Vizsoly and Tállya. The castle of Boldogkő or Regéc are remarkable landmarks with the

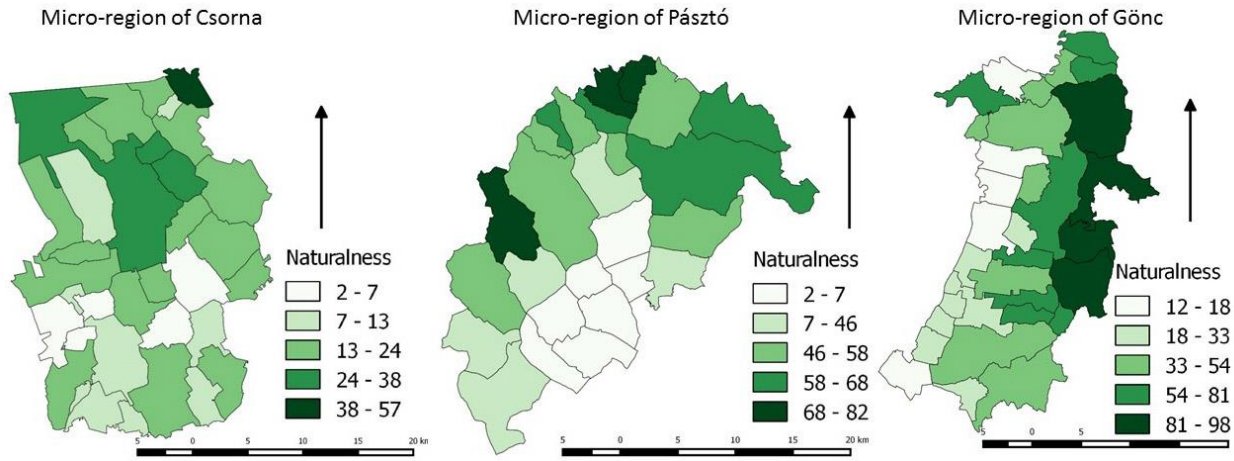

Fig. 5 Ratio of natural, semi-natural land cover form based on Corine Land Cover 2012 data

natural environment creating a highly attractive scenery. There are several values of national importance as Chuch of Vizsoly, Bible Museum of Gönc, castles of Boldogkővár and Regéc, wine production related heritage in Tállya and Abaújszántó. The traditional wine yards in the Southern settlements which are part of World Heritage Site Tokaj Wine region represent also unique landscape values. Values of less significance as rural churches, mansions can be found in all settlements. Because of the differences in significance of the cultural heritage we tripled the value of micro-region of Gönc (micro-region of Csorna: 2,1; micro-region of Pásztó 2,2; micro-region of Gönc: 5,7). According to the summarized and average values of naturalness and cultural heritage Gönc has outstanding values (micro-region of Csorna: 2,3; micro-region of Pásztó 3,4; micro-region of Gönc: 7).

Agriculture and forestry

In micro-region Csorna agriculture is still an important base of the local economy, unfortunately the volume of the former flourishing vegetable and fruit production dropped below the national average since 1990. Especially vegetable production was remarkable during the 1980's and the 1990's the cucumber was called as the "gold of Rábaköz". Rather the arable land became dominant, especially in Rábaköz the ratio of arable land is extremely high in several settlements (Cakóháza 86%, Egyed 84%, Rábapordány 88%, Rábacsanak 90%). The arable farming has less added value and lower need in labor force which reduces the population retention capacity of the villages. Rábaköz can be characterized high, Hanság low or medium intensity of agricultural production. Forestry is not significant in the region the proportion of forests is just 9,5%.

Micro-region of Pásztó is mostly covered by forests with higher ratio of arable land in the hilly landscape of the South. On the hillsides of favorable conditions after wine production was abandoned there is flourishing fruit production. Pásztó micro-region has 32% forest cover.

Considering agricultural production two characteristic regions can be distinguished in Gönc micro-region. The ratio of arable land is high in Hernád valley, meanwhile in Zemplén Mountains the forests are dominant. The Southern villages of the micro-region belong to the Tokaj Wine Region Historic Cultural Landscape, UNESCO World Heritage Site which still hold the traditions of worldwide famous wine production. In the vicinity of Gönc fruit production is significant (apricot Pálinka). Forestry is an important economic sector; the average proportion of forests is higher than 40%. Naturally there are great differences in the region, in the valley there are settlements with 4-4% and in the mountains some settlements have more than 80% forest cover.

Tourism and recreation

Tourism infrastructure is underdeveloped in Csorna, recreational activities, with a few exceptions, are low in the region. The National Park Fertő-Hanság offers a great potential but mostly the strictly protected areas of the National Park (Lake Barbacs) belong to the micro-region which are not open to the public. Mostly the centre, study trails and the programs organized by the National Park are located around Lake Fertő with the exception of a few attraction (Study trail Hany Istók, Esterházy Madárvárta). Just in case of two settlements can we see considerable guest turnover (Csorna 1502, Farád 2226 guest nights spent in commercial accommodations in any other settlements none at all). Looking at the data reflecting tourism potential micro-region of Csorna has the lowest values with 3 807 total number of guests on the commercial accommodations and just 58 commercial accommodations (Hungarian Statistical Office, 2014).

The highest values describing tourism can be found in region of Gönc with 14 860 total number of guests on the commercial accommodations and 851 commercial accommodations, although the recreational opportunities are extremely uneven in the micro-region. A few settlements do not have at all any tourism potential, meanwhile Telkibánya, Regéc (castle) are of national significance. Telkibánya has the highest values in guest number at commercial accommodations (8387). The number of overnight stays per 1000 inhabitants is just slightly lower than the national average (2421). Significant tourism types are: nature and rural tourism.

Micro-region of Pásztó represents medium values among the study areas considering tourism potential with 4 787 total number of guests on the commercial accommodations and 308 commercial accommodations. In Pásztó the open-air bath and the hiking trails are used mostly by locals and visitors from the neighboring villages in spite of the fact that the location between Mátra and Cserhát mountains offers great potential. The pilgrim route to the holy well of Mátraverebély-szentkút crosses the region. The nearby Old Village of Hollókő, World Heritage Site can be reached through Cserhát Greenway from the region. The Palóc cultural trail and Nature Park Cserhát have more potential. In spite of the existing potential the number of overnight stays per 1000 inhabitants (212) is just one tenth of the national average (Hungarian Statistical Office, 2014). Apart from Szirák (3270 number of guests) just a few settlements have any commercial accommodations.

Accessibility

Major transportation corridors (M85, M86) cross micro-region of Csorna. Settlements along these corridors have great public transport accessibility, unfortunately the peripheral villages especially in Southern Rábaköz have really unfavorable accessibility. We can see similar dichotomy in micro-region of Gönc. The Southern and Western settlements have proper availability. In Zemplén Mountains the transportation infrastructure is underdeveloped, there are several dead end villages. Pásztó is located 80 km from Budapest, but there are no direct public connection to the capitol, the villages have even worse availability.

Economic value

According to Figure 6 micro-region of Csorna has the highest income values (927 376 Ft) among the study regions, the average per capita domestic income is 30% higher than the amount of Gönc micro-region. If we look behind the average values in all regions large differences

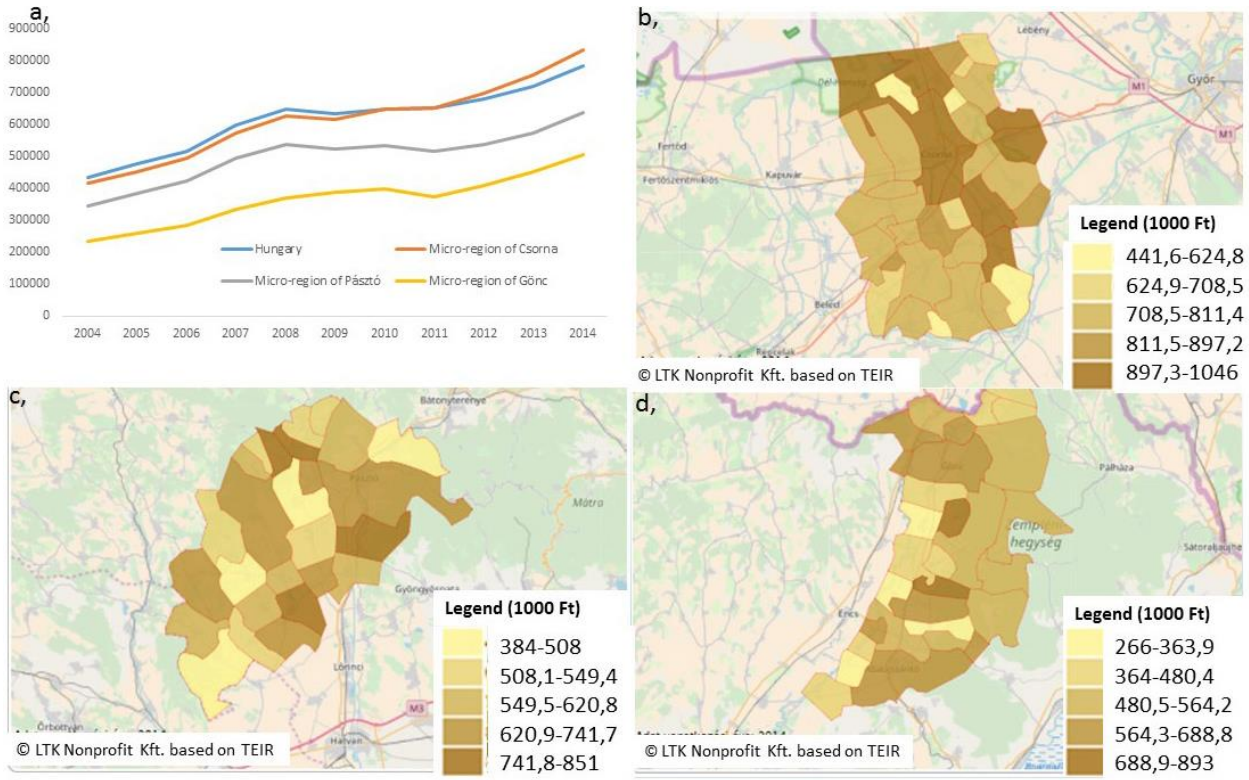

Fig. 6 Net domestic income per inhabitant (Ft) a, Comparison between national average and the study areas; b, Micro-region of Csorna; c, Micro-region of Pásztó; d, Micro-region of Gönc 2015; Source: www.teir.hu

can be found, especially in micro-region of Csorna the Northern-Sothern division is remarkable. Pásztó is situated east from the developed Budapest agglomeration and North to the development line Budapest-Miskolc. The average per capita domestic income is in micro-region of Pásztó 761 639 Ft. Gönc micro-region is one of the least developed areas of the country in 2012 the unemployment rate is 21,8 % (national average 9%), total income per capita 480 502 Ft (national average 810 000 Ft).

Comparing the studied regions (Fig. 7) different levels of landscape functions can be seen. Csorna is the most developed from economic point of view but here the lowest levels of landscape aesthetic, habitat values can be found. Of course generalization hides the territorial differences: the most problematic is the Southern part of Rábaköz due to the intensive agriculture where it is crucial to develop the ecologic network by enhancing multifunctionality of agricultural production. The natural, cultural values are stable base for tourism and recreational development in Gönc and Pásztó micro-regions. From tourism attractiveness Gönc has to be highlighted, where just the high differences in the level of tourism infrastructure hinders the effectiveness and profitability of tourism.

Landscape functions in rural development strategies

The most important goal in rural regions according to the New Hungary Rural Development Programme (2014) are "enhancement of the population retention capacity… and improvement of the income generation capabilities". The Programme highlights the need for maintaining proper level of ecosystem services. The Strategy states that the main functions of rural development policy are:

1. Preservation and sustainable use of landscape, natural assets and resources, maintenance of ecosystem services.
2. Processing and provisioning healthy and safe food.
3. Enhancing economic development and quality of life and strengthening local communities in rural areas.

The New Hungary Rural Development Programme mentions the term of ecosystems or ecosystem services 16 times. The strategy even highlights the importance of landscape management. Regarding the local strategies the Rural Development Programme of Rábaköz Leader Group which holds together the majority of settlements of micro-region Csorna formulates general framework of goals containing tourism development, enhancement of agricultural competitiveness. The strategy is not based on complex landscape assessment, the analysis focused on economic and social factors and description of the state of the environment (waste, sewage water, noise, water quality), in spite of the fact that the local stakeholders consider the most important potential of the region the tourism development based on natural values of Hanság and thermal water. In case of the wider environment, the landscape is not considered the wish of a few villages to become rural tourism or eco-tourism destinations remains just a wish. Diversification and enhancement of the ecologic value of the landscape require wide range of development projects, land use changes. However, the local strategy sets wide range of objectives even protection of natural values but unfortunately the focus is on business development, and the measures were reduced even further, containing only the support of organization of exhibitions, events (Rábaköz Rural Development Association, Local Development Strategy 2014-2020) (Table 1).

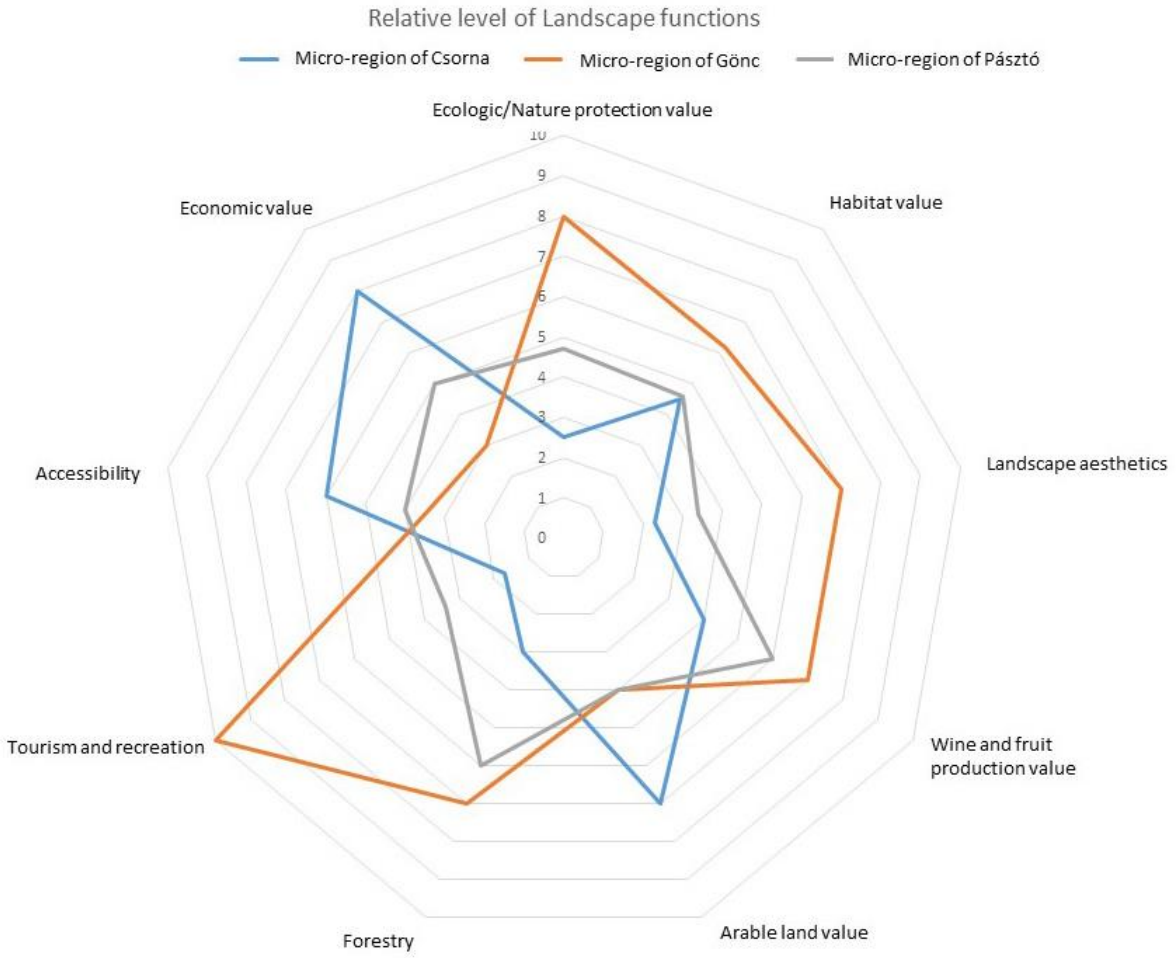

Fig. 7 General comparison of the level of landscape functions in the study areas

The Local Development Strategy adopted by Cserhátalja Rural Development Association (micro-region Pásztó) (HFS, 2016) sets wide range of objectives related to business development, small scale industrial development, tourism services, organization of events, strengthening local communities, preparatory documentation, safety investments, equal opportunities, low-waste issues, use of green energy (Cserhátalja Rural Development Association, Local Development Strategy 2014-2020) (Table 1).

The Local Development Strategy of Abaúj Leader Group (micro-region Gönc) among the general objectives as enhancement of economic development, quality of life, regional marketing, strengthening local communities, and education highlights the importance of tourism development, landscape management and diversification of agricultural production. The strategy highlights the importance of forestry and tourism potential of Zemplén Mountains, and lists the natural and cultural values (Abaúj Local Development Strategy, 2013). The analysis is focusing on potential and less on weaknesses. The concept is just mostly focusing on economic and demographic trends and agricultural production (Table 1).

The local development strategies do not focus on the real local resources, territorial differences nor potentials evolving from natural, cultural resources or local constrains. The only exception is tourism development where we can sometimes see the holistic spatial approach which intends to develop the region as a whole highlighting the development of the missing parts of the network and fosters local projects connecting tourism attractions, of course just in case there will be any initiatives.

In rural development it is extremely important to harmonize the ecologic, social and economic aspects/needs of different land use forms evolving from the landscape conditions. This means diversity, which is manifested in the proper level of varied landscape functions, considering the rural economy providing diverse and wide range of economic activities (Filepné et al., 2014; Valánszki and Filepné, 2015). Economic diversity offers favorable conditions for the local population as well. This needs rural development policy responding the spatial development trends and differences following the landscape conditions stressing and using synergies and regional or systematic initiatives in spite of isolated projects.

The disharmony of landscape functions weakens the population retention capacity of rural regions (Filepné and Valánszki, 2015). Because of the extreme complexity of land use systems, the effective and long lasting changes can be realized only based on processes initiated and elaborated by varied stakeholders including all sectors of rural economy. The proposed land use changes have multiple economic, social conditions but their complex realization is needed for the improvement of the population retention capacity. Unfortunately, in the present legal environment just

isolated rural development projects can utilize and improve in complexity the local resources when just devoted local actors are capable to mobilize local engagement. While the rural strategies cannot reach the roots of local conflicts by deep landscape analysis the strategies will fail.

Table 1 General overview of the significance of landscape values in rural development strategies (Cserhátalja Local Development Strategy 2014-2020, Abaúj Local Development Strategy, 2013, Rábaköz Local Development Strategy 2014-2020);

XXX – The main priorities of the development concept are related to the function; XX – The development concept stresses the enhancement or development of the mentioned function; X - The landscape function is not stressed or neutral in the concept

Landscape function	Micro-region Csorna	Micro-region Gönc	Micro-region Pásztó
Nature protection value	X	XXX	XX
Habitat value	X	XXX	X
Landscape aesthetics	XX	X	XX
Wine and fruit production	XX	XXX	X
Arable potential	X	X	X
Forestry	X	X	X
Tourism and recreation	XX	XXX	XXX
Accessibility	X	XX	X
Economic value	XX	XX	XX

CONCLUSIONS

Economic, social and environmental factors need to be considered in order to develop rural areas in a sustainable way. Rural development strategies shall base on detailed landscape analysis assessing the landscape functions of the region. Just based on grounded assessment will be possible to elaborate effective rural development strategies which respond the needs of the landscape, and local communities. Exploring of the shortages of landscape functions in three study regions the rural development strategies were analyzed. Our general conclusion is that the strategies lack detailed and complex landscape analysis exploring the limits and potentials. The strategies supported activities mostly related to marketing, business development, and tourism services. Because of the financial shortages the range of supported activities were reduced recently which reduces the possibility of large scale complex programmes and gives way to small isolated developments.

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