Planning a New Nature Park along the Tisza River in Hungary

Edina, Dancsokné Fóris[1], Krisztina, Filepné Kovács[1], Ágnes, Sallay[1], Zsolt, Szilvácsku[1], Virág, Kutnyánszky[1], Nóra Hubayné Horváth [2], Ildikó, Módosné Bugyi[2], László, Kollányi[1]
[1]Hungarian University of Agriculture and Life Sciences, Department of Landscape Planning and Regional Development, [2]Hungarian University of Agriculture and Life Sciences, Department of Landscape Protection and Reclamation

Abstract:

The preservation and renewal of rural landscapes and culture can only be achieved with the conscious and active participation and agreement of local people and their communities. In line with European practice, our nature parks in Hungary are organized and operate along the following four pillars:
- Preservation of natural, landscape and cultural heritage,
- environmental education, shaping attitudes and strengthening landscape identity,
- sustainable rural development,
- sustainable tourism and recreation.

Nature parks work on all four pillars in the framework of cooperation at landscape scale. As lecturers at the Hungarian University of Agriculture and Life Sciences, we are helping to develop a new nature park integrated into our educational program of the MSc II Landscape Architecture students. The character of the nature park as a model of sustainability appears in becoming more resilient and, in this case, in the strengthening the community and its personal connection with the Tisza River. The nature park establishing study that we are preparing will develop a set of statutory themes across the four nature park pillars. Firstly, a complex landscape assessment has been prepared summarizing the natural landscape features. In the second chapter, a comprehensive assessment of the situation, a set of objectives and proposals on rural development, local economic development and spatial development is presented, and issues of landscape identity, community development and awareness-raising are also addressed. The next chapter of the document deals with the natural and cultural heritage of the area and its conservation possibilities. The final section looks at the tourism potential and development opportunities in the area. This chapter includes a proposal for a greenway to showcase the area's key landscape assets. Information from the available thematic maps has been collected and then supplemented and refined by field surveys. The data was used to create a complex geospatial database. More than 60 thematic maps were collected and analyzed in a detailed database. The data collection covered many issues from geological, topographical, relief, hydrological, flood protection, agricultural, infrastructure, land use, nature conservation and cultural history data. The planned area of the nature park covers 27 municipalities and covers more than 1200 km^2, with a length of about 70 km along the Tisza River. The preparatory research for the establishment of the nature park has been completed and discussions with the municipalities and other stakeholders are underway to start the formal process of gaining the title of nature park.

Introduction

The second-year landscape architecture students at the Institute of Landscape Architecture of the

Hungarian University of Agriculture and Life Sciences participate in a complex spatial planning project for one semester, which is a collaboration of six courses (Landscape Planning, Landscape and Heritage Protection, Regional and Rural Development, Spatial Planning and Development, Tourism, Green Infrastructure Development). Their professional guidance was provided by the authors of this article, the lecturers of the Department of Landscape Planning and Regional Development and the Department of Landscape Protection and Reclamation. These projects serve a dual purpose: on the one hand, the real planning sites provide an excellent teaching ground, with students solving real planning problems in a "live situation". We also see our projects as a mission. Our aim is to contribute to the protection of landscape heritage in different regions of the country, to the sustainable development of these areas, to the preservation of the rural population retention and to the protection of the landscapes concerned in general. The 2024 project served the planned Central Tisza Valley Nature Park initiative.

As the *European Regional Nature Parks Declaration* (2017) states, nature parks, as integrative protected areas for humans and nature, combine the protection, use and development of landscape within sustainable development; however, nature parks are not necessarily nature protection areas. The initiative is a completely bottom-up approach without central financing, the municipalities decide about the cooperation.

Our work began with a complex landscape assessment to identify the landscape features. We then prepared a comprehensive assessment and a package of proposals on rural development, local economic development, tourism and regional development, and we also addressed issues of landscape identity, community development and shaping attitude. The research covered the natural and cultural heritage of the region and its conservation potential as well. Looking at the tourism potential and development opportunities in the area we prepared a proposal for a greenway to showcase the area's key landscape assets. The nature park character, as a model of sustainability and resilience, was emphasized in the strengthening of the landscape, community and personal connection with the Tisza River. The present paper focuses on these latter two interrelated issues: greenway and resilience.

The initiator of the project was the Central Tisza Valley People's Academy Society, who provided a lot of help in liaising with the actors of the region and in organizing fieldworks, as well as providing the physical conditions of the field work (accommodation, meals, travel), to whom we would like to thank them.

Literature Review

The study we conducted during the project (Dancsokné Fóris, E., Hubayné Horváth, N. 2024) forms the basis of this paper.

Central Tisza Valley is located in a flat, agricultural dominated area, its natural and cultural values are hidden, therefore it became clear from the beginning of the research that tourism development requires a spatial attitude, a landscape approach and some kind of linkage between the different elements. The multi-disciplinary nature of the landscape study makes it well suited to exploring tourism resources because of the potential for exploring a wide range of attractions (Uusitalo, M. 2007). Research on tourism-based development opportunities in rural areas in Hungary has shown that thematic routes connecting villages can play an outstanding role in the

tourism development of less frequented (small) villages (Lempek M. Z. and Tésits, R. 2021). Thematic routes can be well combined with greenways, especially in areas close to nature where there is a high demand for rural development. The creation of greenways is therefore an important element in the development of the local economy (INT-01). Current trends suggest that cultural, heritage, ethnic, village and adventure tourism will become more prominent, and that active forms of tourism will become more sought after as health consciousness spreads (Csapó, J. 2021), confirming the need for a greenway.

Tourism can often have a greater impact on the economies of less developed rural areas, for example in terms of employment, than other industries. It stimulates the production of local products and thereby increases household income. The infrastructure built for tourism also benefits the well-being of local people (Archer, B., Cooper, C., Ruhanen, L. 2005; Várhelyi, T. 2017).

The planning area is one of the driest in Hungary. The increase in average temperatures and the number of days of summer heat and the summer drought (INT-02) are making agriculture increasingly difficult. Increasing the resilience of the area is likely to require changes in land use.

The Planning Area

24 municipalities were included in the research. These settlements cover two counties, the study area covers 1160 km^2 and the Tisza River stretches 105 km far in the planning area. (Figure 1.) The lowest point of the area is at 75 m, while the highest point is at 107 m.

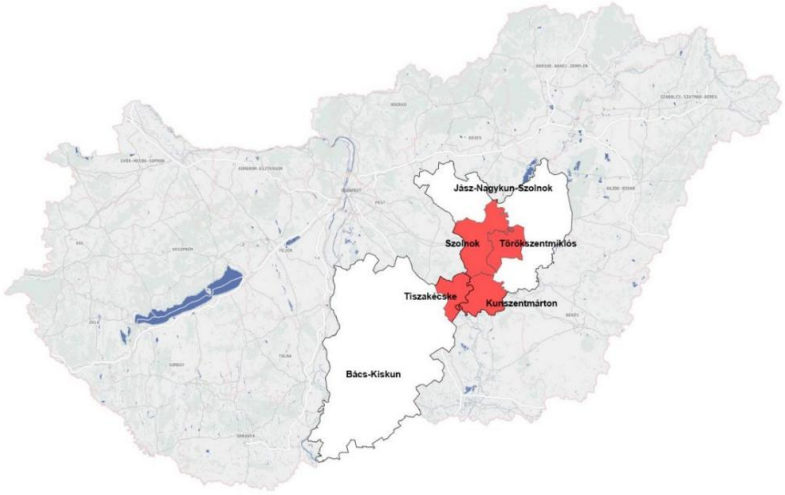

Figure 1. The planning area with the two counties concerned

A special feature of the area is the presence of ‘kunhalmok’ (earth mounds).In the predominantly flat areas of the Carpathian Basin, (1-10 m high) ‘kunhalmok’ are characteristic, mostly circular, artificial landforms, burial mounds, established for burial purposes before or during the conquest of Hungary, which are protected by law due to their cultural-historical, archaeological, landscape value and their special flora and fauna. (Árgay, Z., Deák, B. 2023) In Hungary, a total of about 1500 burial mounds have been preserved, of which 20 are known in the area of the Middle Tisza

Valley Nature Park. The presence of these mounds connects and unites the settlements in the area of the Nature Park, they are recurring and characteristic landscape elements that provide an excellent opportunity to present them in the planned greenway network in the area.

Method and Data

The analysis of spatial data was carried out in two ways: on the one hand, an extensive data exploration was carried out, which included the review and collection of existing digital maps, topographic maps, thematic maps of different sectors, databases, land use data, historical maps, topographic data, settlement and spatial planning maps, and aerial photographs. The digital maps were used to create a complex spatial database in Q-GIS, which was the basis for all subsequent analyses. Additional new analyses were carried out by comparing the initial data (e.g. sensitivity, carrying capacity, NDVI analysis, outlook analysis, etc.). Another source of data collection was field visits. The basemap for the processing was the National Ecosystem Service Baseline (NÖSZTÉP), which is a raster dataset with a resolution of 20x20 m. Digital maps of the military surveys (*Military Surveys* made for the *Kingdom of Hungary* and for the *Habsburg Empire* (1782−1785, 1841−1859, 1869−1887), the *Military Survey of Hungary* from 1941 (INT-03), and the so-called *Topographic Maps* made between 1980−1990 and Google Satellite image in 2019) were used for landscape history research and the definition of contemporary landscape structure.

Results

Besides active tourism, the importance and composition of tourism is mainly determined by the opportunities offered by spas, thermal springs and the Tisza River. Spa tourism and wellness attract visitors who come to the spas and thermal waters for health and wellness purposes. Hiking tourism offers visitors the opportunity to enjoy Tisza River and its surrounding areas, so nature lovers, birdwatchers and anglers will also find something to suit them. For active tourism, the Tisza River offers kayaking-canoeing, the surrounding countryside offers cycling and hiking, as well as camping and hunting tourism. The various types of cultural tourism, such as wine tourism and gastronomic tourism, play or could play an important role in the tourism offer of the region. In cultural tourism, the region's rich historical and cultural heritage is represented by museums, archaeological sites and local festivals. However, the elements of cultural heritage are not well known in the wider region and their presentation is rudimentary, with little information available. For example, the unique cultural and natural assets of the region are the ‘kunhalmok’ of which there may be hundreds in the planning area, but which are unexplored and have no role in tourism.

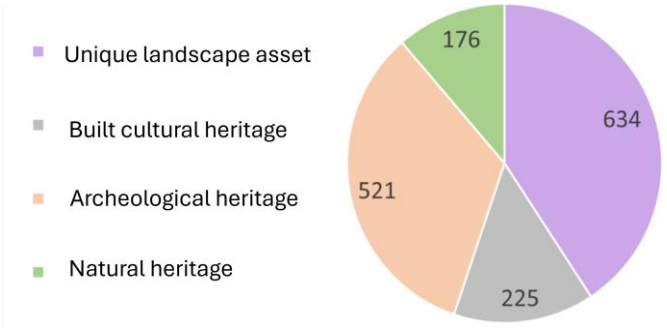

Figure 2. Distribution of territorial heritage elements by type (pcs)

A wide range of programs and cultural events also offer recreational and entertainment opportunities for both residents and visitors.

Attractions are point focused, disconnected and there is a complete lack of regional connections. The planned greenway will address these shortcomings. The greenway will create links between the municipalities in the area. It is not only a tourist attraction, but it also embodies the sense of belonging to the landscape and strengthens the identity of the nature park. (Figure 4.)

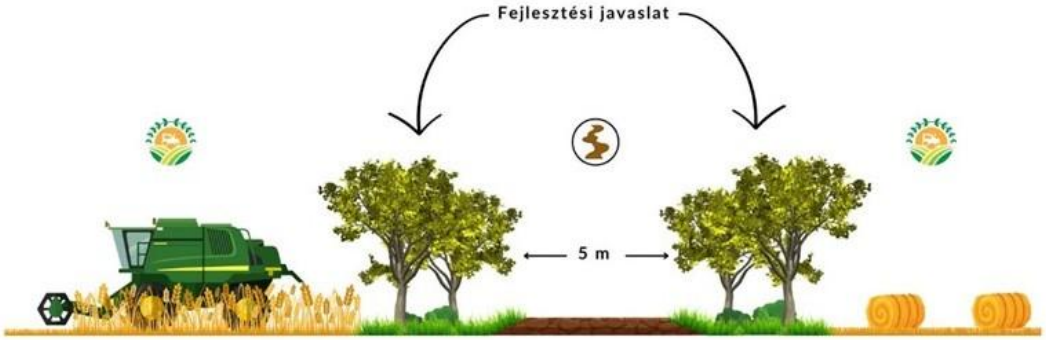

Figure 3. The greenway runs on a stabilized dirt road between the fields, planting trees is essential for shade

In addition to the trail proposal, we proposed new paths, improvements to existing roads, rest areas and improvements to dangerous intersections. The proposed greenway is designed for cycling and pedestrian traffic. (Figure 5.) Although there is an equestrian tradition in the area, the conditions for equestrian tourism are far from being met. Its development could be a long-term goal.

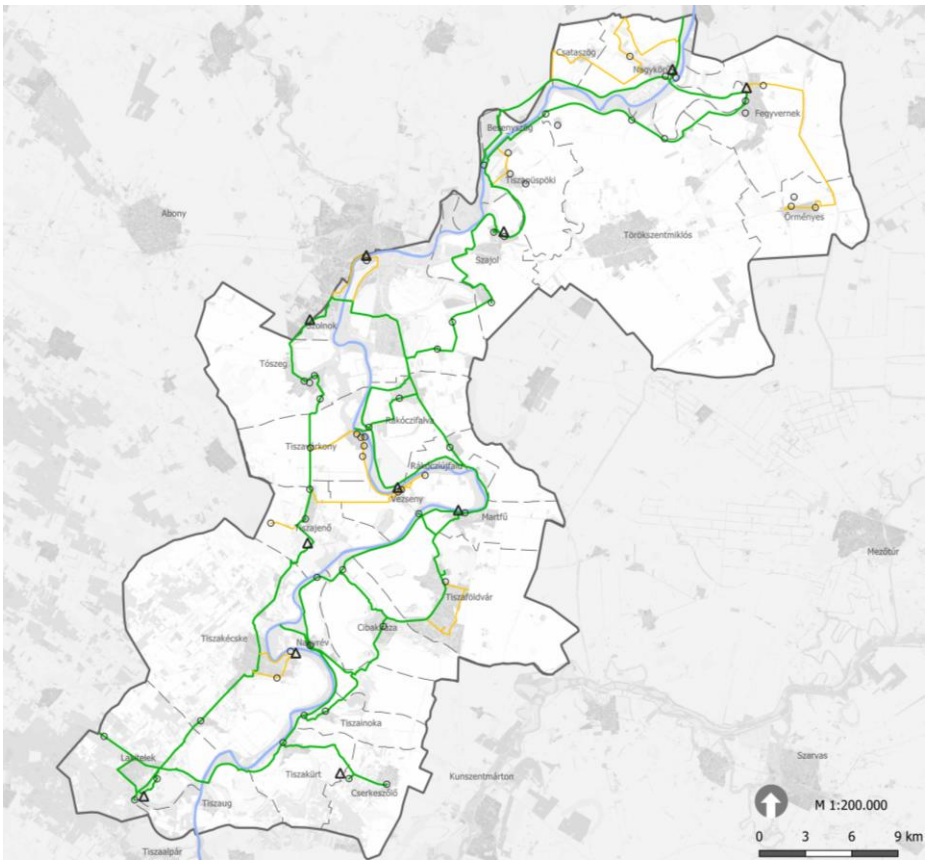

Figure 4. Greenway development proposal (green: main route, yellow: alternative routes)

The route has been designed taking into account accessible attractions, natural and cultural values, existing roads and transport links.

Figure 5. Cyclists on the path

Water, or lack of it, is a major issue in the region. River regulations have shortened the river, eliminated its tributaries, and the former floodplains are now used for agriculture. Water retention in the area would be important due to the drying out.

The traditional land uses of the area include grassland farming, vine and fruit growing, and, before the regulation of the Tisza River, the area was also suitable for ‘fok’-farming [’fok’ means ‘notch’ in English]. Fok-farming applies an artificial water retention method using special hydraulic structures in a floodplain area resulting opportunity of floodplain grazing and fruit growing. Nowadays, arable land dominates the area, and the slow disappearance and abandonment of traditional land uses is a typical trend. In our opinion, the development and implementation of landscape management frameworks, water recharge, water retention and regenerative tillage (nature-based solutions), regional land use agreements and the development of a landscape management network will encourage landowners to cultivate their land in a traditional way. These land uses and landscape management methods can contribute to the revival and preservation of the historical landscape and to the re-establishment of a more mosaic and a more livable and well-maintained landscape in the area. Wetlands created by water retention can contribute to the restoration and maintenance of semi-natural habitats in the landscape.
Conversion of arable production in these areas is justified. In some places, ploughland should be replaced or bordered by floodplain woodland or floodplain grassland. Low-lying areas that were once the bays of the Tisza River, it is worth abandoning arable farming and making use of natural reservoirs, which can also be used for fish farming in the frame of fok-farming. (Figure 6.)

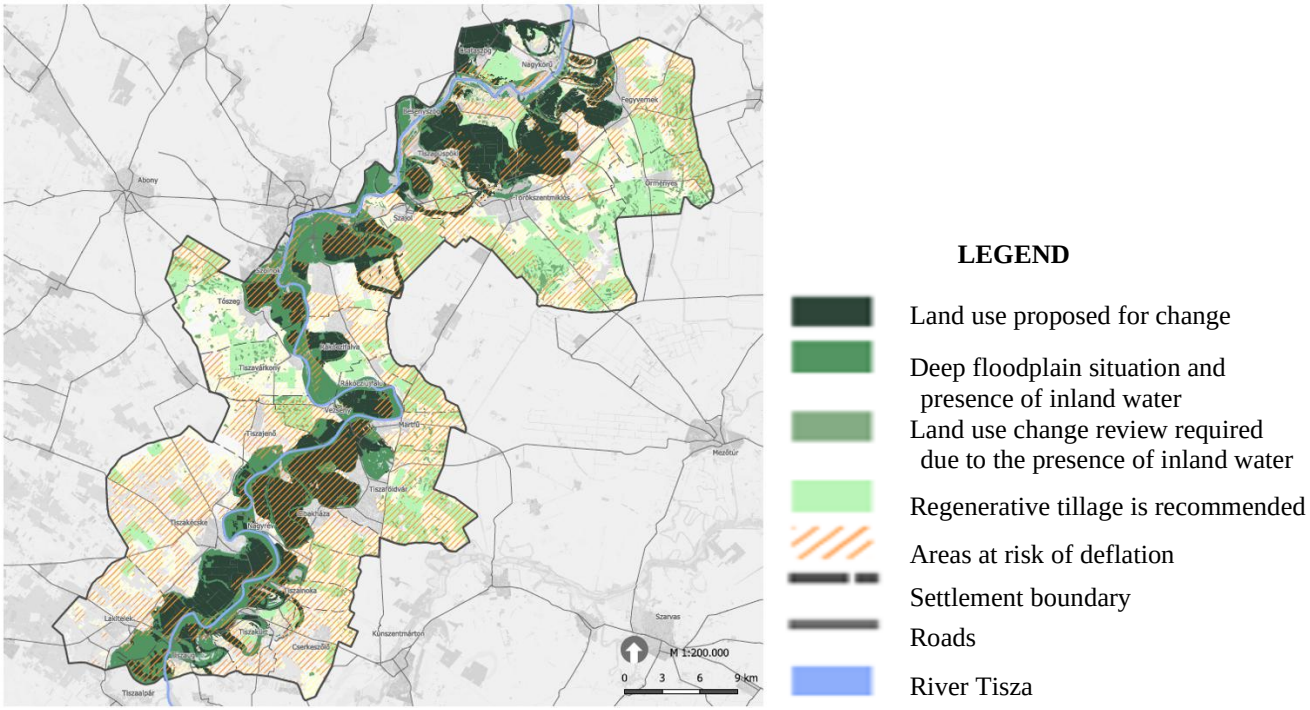

Figure 6. Landscape management based on water retention in the planned Central Tisza Valley Nature Park

Discussion and Conclusion

The realization of plans can be influenced by external and internal factors, which can present different possible scenarios for the future:
- A spontaneous development path - continuation of current trends
- Short-term profit-making scenario

- Prosperous nature park - emerging Central Tisza Valley scenario
- Quintuple innovation scenario.

Positive development requires the development of landscape identity, community development and a positive attitude towards the local population, farmers and tourists alike. Tourism development also requires joint management and high-quality marketing activities.

References

Árgay, Z., & Deák, B. (Eds.). (2023). Kunhalmok megőrzése mezőgazdasági területeken. Gyepek fenntartása és helyreállítása kurgánokon. Kiskunsági Nemzeti Park Alapítvány.

Archer, B., Cooper, C., & Ruhanen, L. (2005). The positive and negative impacts of tourism. In W. F. Theobald (Ed.), Global tourism (3rd ed., pp. 79 – 102). Elsevier Butterworth-Heinemann.

European Regional Nature Parks Declaration. (2017). European parks. https://www.europeanparks.org/publications/european-regional-nature-parks-declaration

Csapó, J. (Ed.). (2020). A nemzetközi és hazai turizmus legújabb keresleti trendjeinek bemutatása elméleti és gyakorlati megközelítésben: Egyetemi jegyzet. Pécsi Tudományegyetem, Közgazdaságtudományi Kar.

Dancsokné Fóris, E., & Hubayné Horváth, N. (Eds.). (2024). Közép-Tisza-völgyi Natúrpark megalapozó vizsgálatok [Baseline studies for the Central Tisza Valley Nature Park]. MATE Tájépítészeti, Településtervezési és Díszkertészeti Intézet.

Lempek, M. Z., & Tésits, R. (2021). A vidéki térségek turizmusalapú fejlesztési lehetőségei a Siklósi járás példáján. Modern Geográfia, 16(2), 87 – 112. https://doi.org/10.15170/MG.2021.16.02.05

Uusitalo, M. (2007). Landscape analysis: The first step in managing sustainable land use at tourist destinations. In J. Jokimäki, M. L. Kaisanlahti-Jokimäki, S. Tuulentie, K. Laine, & M. Uusitalo (Eds.), Environment, local society and sustainable tourism (pp. 42 – 51). Painatuskeskus Finland.

INT-01. (n.d.). Mik azok a zöldutak? http://zoldutak.hu/mik-azok-a-zoldutak/

INT-02. (n.d.). Eghajlat és éghajlatváltozás. https://met.hu/eghajlat/eghajlatvaltozas/

INT-03. (n.d.). Arcanum maps. https://maps.arcanum.com