

Proceedings of the Fábos Conference on Landscape and Greenway Planning

Volume 3

Issue 1 *Proceedings of the Fabos Conference on Landscape and Greenway Planning 2010*

Article 66

2010

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Recommended Citation

Csemez, Attila (2010) "Greenway development possibilities in Hungary; Flood protection banks and abandoned railway lines in greenway development," *Proceedings of the Fábos Conference on Landscape and Greenway Planning*: Vol. 3 : Iss. 1 , Article 66.
Available at: <https://scholarworks.umass.edu/fabos/vol3/iss1/66>

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Greenway development possibilities in Hungary; Flood protection banks and abandoned railway lines in greenway development

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Introduction

Greenways, as their name suggests, are linear elements. The essence of a greenway is that it connects and separates. A greenway system means a continuous, unbroken connection of green spaces. In Hungary the greenway system could become complete if existing and proposed greenways could be connected at the following locations:

- Along the Danube and Tisza flood prevention banks
- Along main routes
- On both sides of the rivers and smaller streams
- On the edges of settlements and the environs of cities
- On the edges of lakes

A greenway system would provide ecological harmony and a determining landscape structure for the Carpathian basin, as well as strengthen its visual and landscape aesthetic (picturesque) character. Greenways in Hungary have special significance in the less-forested, mainly flat areas.

A greenway system of appropriate density could be created by protecting and enhancing the existing green surface elements of our landscape. Realizing this can happen if we can gain acceptance of the concept and its basic principles. The complicated state of land ownership as well as conflicts regarding land use in Hungary suggest the need for creating a variety of types of green corridors of differing levels of realization and facilities.

In Hungary the potential for a greenway network includes routes significant on the continental, regional and local levels. On the primary level we can distinguish ecological, environmental protection and leisure-cultural greenways. Henceforth I would like to introduce the connection points for the greenway system with an emphasis on their leisure-cultural significance. It may well seem that asserting a so-called primary level is an artificial distinction, because leisure-cultural greenways could not exist if they did not also have ecological and/or environmental protection significance or effect as well.

Opportunities for creation of the network

From the standpoint of leisure and culture the ideal green corridor is one that:

- is usable by foot or bicycle,
- is created completely separate from the road system
- can be used without restriction and in any weather or season,
- includes shady spots suitable for rest or refreshment

If we consider the linear elements of infrastructure, we can see that the spine of the greenway system could be created from flood prevention banks and abandoned rail lines (rails-to-trails initiatives).

Flood prevention banks

In Hungary, it was already in the time of the Romans that flood prevention banks were first built with the purpose of preventing floods, making ship transport safer and increasing available agricultural land. On the Danube it was in the middle of the 18th century that flood prevention bank construction started. On the Tisza river a system was, for all practical purposes, finished by the end of the 19th century. Along some of the more significant rivers (Rába, Kőrös, Dráva, Sárvíz, Kapos, Sió) the construction of dykes started at the beginning of the 19th century. (In the hillier or steeper areas the rapid streams required different measures – specifically, deepening the basins or beds – rather than constructing dykes, which could not be protected from rupture under those circumstances.)

In the 18th century water management focused primarily on draining swamps, creating plans for a national canal system and construction of dykes along rivers. Work began with the mapping of the Danube, Tisza, Sárvíz, Kapos and Sió rivers as well as the Balaton and Fertő lakes.

River regulation means two, interrelated tasks:

- cutting through and straightening the river bends
- constructing levees parallel to the direction of flow

Government administration for water management began in 1788, with the establishment of the Resident Council as well as the Directorate General for Water and Architecture. In the area around the Lower Danube, between Dunaföldvár and Bács, the Resident Council ordered in 1774 that 217 branches should be filled in order to ensure the securing of the river's shores.

The regulation of the Tisza began with the closing off of the Mirho branch in 1754. The length of flood protection banks along the Tisza totals 3,168 kilometers. The length of the Tisza in present-day Hungary's borders was reduced from 1,419 kilometers to 962. In order to give a sense of the scale and significance of this, we

can cite the example of the Netherlands, where 1,500 linear kilometers of dykes were constructed. In the Po River Valley the total was 1,400 kilometers, the Loire valley 480 kilometers. The length of flood protection banks in Hungary today totals 4,220 kilometers, and of these the vast majority are earthen constructions. (Figure 1).

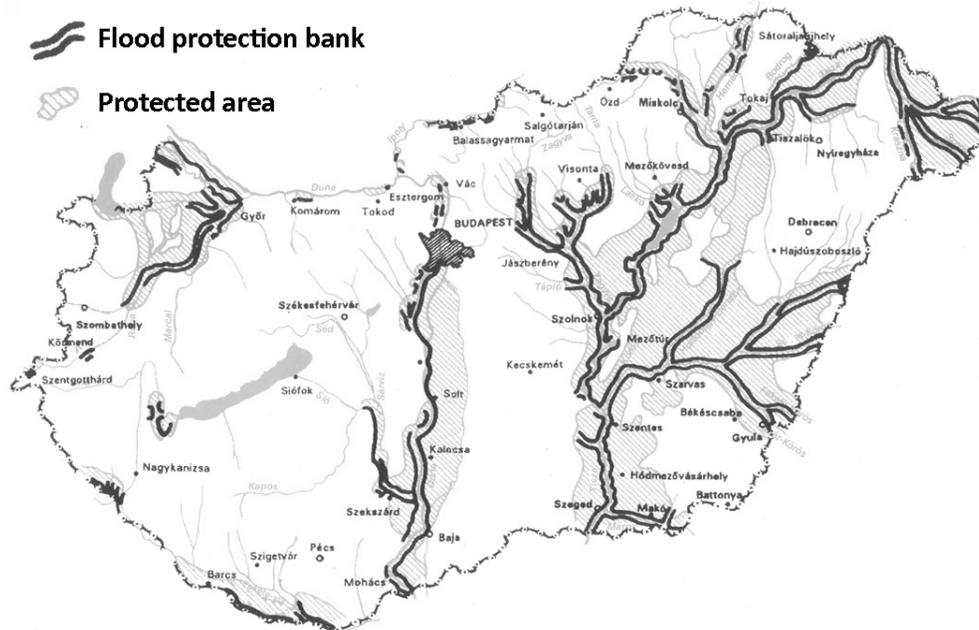


Figure 1: Flood protection banks (Source: Collection of the Museum of the Hungarian Ministry of Environment and Water)

Disused rail lines

In addition to the flood protection banks, disused rail lines are also very well suited for the creation of pedestrian and cycling greenways, using the approach now well known as rails-to-trails initiatives. The world's first rail lines for passenger and freight transport were built in England, between Stockton and Darlington. In Hungary the first line ran from Budapest to the countryside town of Vác and was completed in 1846. The main lines were completed by 1880. The golden age for construction of primary and secondary rail lines lasted until the First World War. After the Treaty of Trianon the network was modified significantly. Traffic diminished or stopped in many areas along the new national boundaries. No new lines were built between the two world wars. The monarchical role the railroads enjoyed began to diminish from the 1960s with the closing of individual rail lines. The 1968 transportation policy concept also called for lines of the HÉV suburban railway to be closed.

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The national railway system’s length was reduced from 10,026 kilometers in 1960 to 7,873 kilometers in 2000 – a loss of 2,153 kilometers. A further 38 lines are threatened with closure, totalling 1,560 kilometers. Following the changes of 1989 rail shipping further decreased, larger industrial operations were closed down, and smaller industries switched their cargo to highway transport. Rail lines frequently were closed down due to the poor condition of the tracks, and their public transport role was taken over by buses. Line closings started again in April 2007 with 14 lines, and then again in 2008 with 12 more. In December 2009 another wave of closings hit, shutting down 24 more lines. (Figure 2).

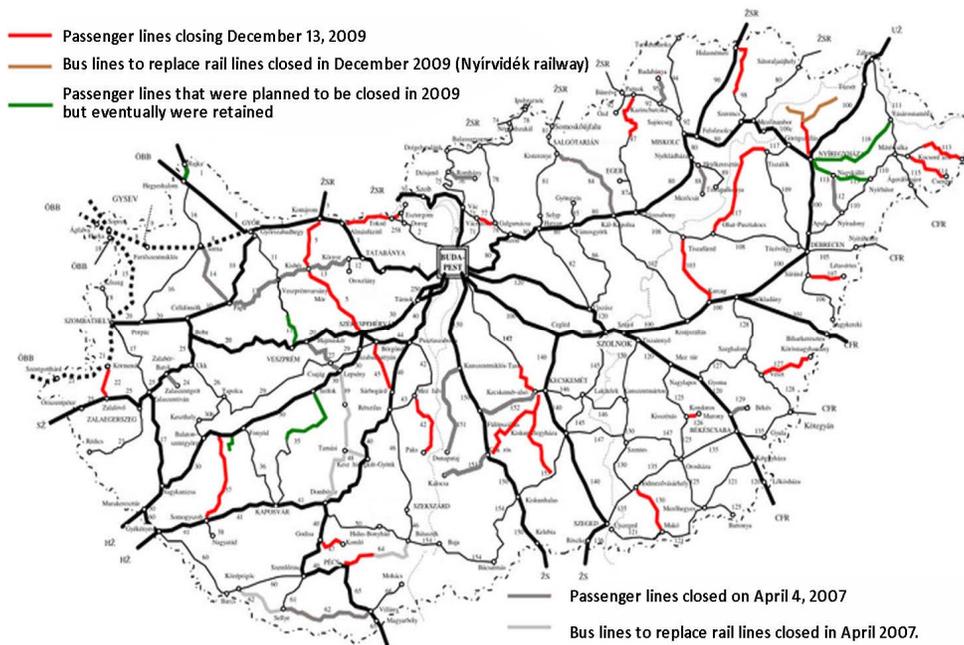


Figure 2: Railway lines closed in 2009 (Source: Wikipedia)

In many places the secondary lines were „built up,” for example, in Kehid they were turned into a sunbathing and swimming area. In certain areas paved roads or tourist routes were created on the old rail lines, for example in Zselic and Cserehát.

Of great significance, too, were the industrial and forestry narrow-gauge railways. While secondary and suburban rail lines connected various settlements, the narrow-gauge railways ran from settlements to the site of the harvested resource (forest, quarries, etc). On these abandoned lines forest routes (Pilis, Apátkuti-völgy), and marked tourist paths (Börzsöny, Mátra) were created. In many places the tracks were simply reclaimed by the forest (Gerecse, Bánya-hegy).

Conflicts

Use of the landscape for leisure and holidaymaking is a secondary use that is, so to speak, built onto the primary land use of forestry, agriculture, nature protection, or water management. The simultaneous use of land for multiple functions, though, can become the source of conflicts.

Flood protection banks

The paths along the top of the banks were created primarily with the purpose of protection and maintenance. Conflicts or problems in their use can come primarily from:

- Use of motorized vehicles on the banks (dust and noise)
- Nature protection efforts in the flood plain (damaging effects to the habitat)
- Effects on the floodplain's forestry or agricultural use
- Use of dead or secondary branches of the river for fishing,
- Lack of shelters from strong winds or direct sun
- Littering by visitors

Water management professionals, foresters, anglers, nature protectionists and others can find that their work is disturbed by tree thieves, poachers, campers, amateur birdwatchers, and mushroom collectors. Vegetation systems along the flood plains of the rivers have retained more or less the conditions they had before regulations. The richness of the flora and fauna in the flood plain makes these areas valuable from a nature protection perspective. Protected areas along the Danube include Szigetköz, Szentendre Island, Háros Island and Gemenc Forest. The greatest conflict, therefore, come from those who engage in willful habitat destruction as well as those simply looking for a place for leisure and recreation. Motorized fishing boats are a source of noise, air and water pollution. Litter left everywhere also signifies where visitors have been.

Abandoned rail lines

In the years following the abandonment of a rail line its wooden ties as well as its reinforced concrete base disappear. Standard rail lines are quite wide but without considerable intervention their uneven, swaybacked surface makes them unsuitable for bicycling and unpleasant for walking as well. The greatest conflict arises from the railroad system's most valuable elements, primarily bridges, deteriorating. The metal parts' corrosion, the rotting of the wood elements, and the regular flooding of the water they cross can contribute to the bridges' total ruin. This loss in the continuity of the rail lines – if not remedies – can make any recreational use (cycling or walking) impossible.

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The recreational use of flood protection banks has, in some areas, spontaneously come into being. Local fishing, bathing and camping use all take place without any kind of central coordination. Water tours (canoe or other) regularly take place on the Danube, the Tisza, the Dráva, the Rába and other rivers. These are mainly the result of good intentions and individual initiative, and reach to nearly every part of these rivers. There is, however, conflict arising from a lack of a unified or harmonized approach and from good intentions paired with strictly locally-based improvements and developments.

Recommendations

Municipalities, development councils and NGOs alike have for decades been making an effort to develop recreational opportunities from the flood protection banks on the Danube and Tisza as well as other rivers.

There is a need for a harmonized, unified stakeholder approach in the communities where there are abandoned rail lines and flood protection banks. The affected communities' municipal authorities, the area and regional development councils, the water, health and nature protection authorities, and the NGOs should all negotiate and agree on a vision from the very beginning of the concept through its planning and realization.

- An organization should be created to be in charge of the green corridor network's local and regional timeline, as well as the maintenance and upkeep of the leisure-cultural green corridor network.
- There is a definite need to develop and gain acceptance for a concept for the creation of a national green corridor system – similar to that for the ecological network.
- An implementation plan should be created, based on the adopted concept.
- The financial resources for the realization should be secured, just as they were for the domestic segment of the international European bicycling route network.

The creation of such a leisure-cultural green corridor system comes not only with organizational and financial tasks, but also requires very specific landscape conditions. This primarily includes but is not limited to:

- The widening of some of these linear elements to create facilities for rest and refreshment
- Woody planting on the steep grades

Banning cars from these areas, improving the quality of the paving of the trails, and mowing the turf on the slopes are all important tasks regardless of whether a greenway system is brought into existence, and in some places this has already been done. The abandoned rail lines also have the aforementioned problems to be solved of uneven, swaybacked surfaces currently unsuitable for cycle or pedestrian tourism, and the maintenance of their deteriorating bridges.

Widening of the flood control banks

The regulation-built, trapezoid-shaped monotone banks should be widened in order to appropriately suit the needs of recreational tourism and also to fit better into the existing landscape. On the widened banks it would be easier to create rest stops as well as plant trees. Realization of this goal is made somewhat difficult by the following:

- Realization requires a significant amount of soil, the cost of which (sourcing, transporting and grading) would be enormous.
- Realization would also require a significant amount of space, on either side of the bank.

Planting of shade trees

It is not permitted in Hungary to plant trees on a flood prevention bank. We would therefore recommend that trees should be planted on the widened areas where rest areas have been established, as well as on the lower third of the grading on the outside of the bank – following a separate permits process.

Conclusions, Summary

In Hungary the total length of flood protection banks are 4,220 km, which means an average of 45.3 meters per square kilometer. The total length of disused and soon-to-be-disused rail lines in the country totals 3,713 kilometers. In summary, then, it can be asserted that these two entities represent a total of 7,933 kilometers, an equivalent of one third of the existing road system (34.29%). While it may well be that the flood protection banks and the rail lines do not constitute a nationally-connecting network, in sum total they should play a significant part in the country's greenway system.

The disused rail lines and flood protection banks constitute an outstanding resource for Hungary's greenway network, because

- They are already in state ownership (state railways or water management authorities)
- They are suited for immediate development
- They connect destinations that are of great significance to tourism
- They cover the most diverse and far-reaching points of the country.

Table 1. A comparison of flood protection banks and disused rail lines

| Flood protection banks | Disused rail lines |
|-------------------------------|---|
| Suited for transit | Can be made suitable for transit (bicycling or walking) |
| Nearly horizontal | Horizontal with some elevation |
| Far from settlements | Connect settlements |
| Parallel to rivers or streams | Run along elevations or in valleys |
| Bordering flood plain | Could have been built nearly anywhere |

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On the regional scale, the edgelands can be viewed as greenways. By definition the edgelands are a narrow green graded strip that run between the hilly agricultural lands and the vineyard slopes, usually bridging a height difference of 1-2 meters. We primarily encounter edgelands in the cultivated landscape – that is, primarily where there are agricultural lands and grazing lands, as well as terraced fruit orchards and vineyards. The edgelands both connect and divide, providing also a place for native trees, shrubs and herbaceous plants to thrive. They are a diminishing resource: in the historic wine regions, the proportion of drylaid stone retaining walls has decreased drastically in the last 50-60 years. The dual role of the edgeland is enshrined in verse in a memorial monument to the poet Laszlo Nagy in the Danube Bend town of Visegrad:

*„Here over centuries, from stones thrown together
was built the one-time peasantry's edgeland.*

*Which in this world
Is impassable and opaque
Like this, the old edgeland too*

That in your world is a well-lit staircase.

What is here a dividing line, there it connects and is lit and belongs to everybody!“

Our objective with this research is to bring attention to the dual role of the greenways. Like the edgelands, greenways of necessity, divide – but they also connect, and it is this latter function that we wish to bring much-deserved attention.

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