



A 2020 perspective on ecological connectivity in the Carpathians

HUNGARY



Hungary is home to an abundant biodiversity across its vast grasslands, caves, rivers, and wetlands. Still, while natural protected areas cover a significant portion of its territory, pressure from

development, agriculture, invasive species, pollution, and climate change continue to increase. A greater focus on the implementation of adequate policies and financing is needed to accelerate progress.

Intensification of agriculture: threat or opportunity?

An ever-increasing problem for human beings is how to feed our population. This can be done by increasing the agricultural area — namely, land use change or land use intensity. The greatest threat for hedges is intensive agriculture, which traditionally means losing these areas for an active cropping system, thus causing a great loss of the ecosystem services provided by the hedge network.

Pressure on biodiversity and eco-connectivity

Pressure on biodiversity	Legislative pressures	Socio-economic pressures
<p>Over 80% of habitats (EU Habitats Directive) and 62% species of community importance are in an unfavourable condition.</p> <p>47% of forests are plantations and semi-plantations of non-native species.</p> <p>Less than 10% of natural protected areas have binding management plans.</p> <p>Protected areas are underfinanced, e.g. National Park Directorates cover almost 60% of their budget with revenues from farming and eco-tourism</p> <p>Major threats</p> <ul style="list-style-type: none"> » draining of flooded areas » impacts from agriculture and forestry » land-use change » landscape fragmentation from development » municipal effluents » climate change » invasive species 	<p>Biodiversity is a minor —if not absent — topic in most sectoral policies.</p> <p>Shortage of capacity at the local authority level.</p> <p>Environmental responsibilities, especially related to the complex topic of ecological connectivity, are scattered among national authorities — hence, not integrated. For instance:</p> <ul style="list-style-type: none"> » land use planning and all activities related to EU financing belong to the Cabinet Office of the Prime Minister, » strategic spatial planning and spatial development, and rural development belong to the Ministry of Agriculture and the Ministry of Innovation and Technology. 	<p>Investment difficulties:</p> <ul style="list-style-type: none"> » companies lack resources to finance full product development processes (research-production-commercialization) » bank credits for innovation are difficult to obtain » high level of value added taxes » very limited venture capital investments for eco- and environmental innovations » Very low demand for eco-innovation, both among consumers and businesses. (Kollányi and Liska, 2009)

Eco-innovation in agriculture: a Magyar chance

As most green spots in Hungary belong to agricultural fields, eco-friendly agrarian practices are an opportunity for the next decades.

Even until the last decade, agricultural intensity allowed for the use of pesticides, fertilizers, and technical solutions. A novel way of intensification is **mixed farming combined with precision agriculture**.

» **Mixed farming:** "collective name for land use systems and technologies where woody perennials (e.g. trees, shrubs, palms, bamboos) are deliberately used on the same land management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence." (FAO)

» **Precision agriculture:** machine-made operations that mimic natural processes in order to have the least disturbances and interventions on biodiversity.

Ecological Connectivity in Spatial Planning

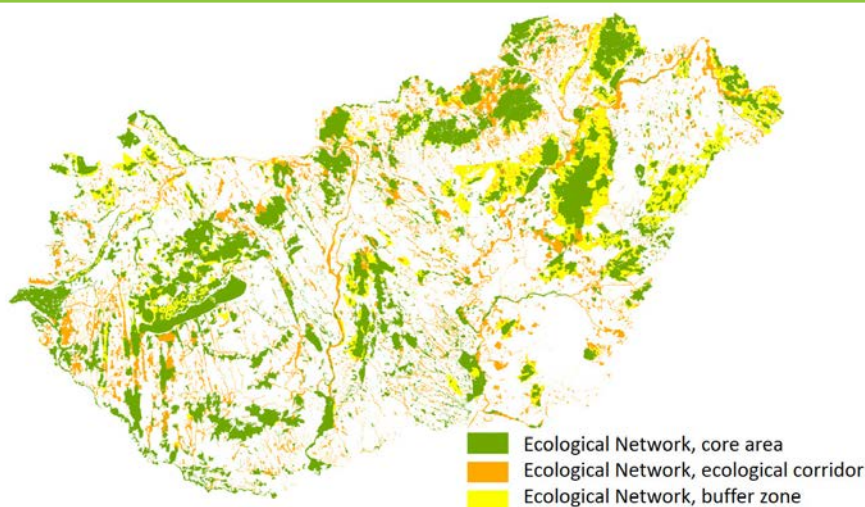
In Hungary, all municipal, county, and territorial plans apply the **Ecological Network** coverage — as provided by law — thus ensuring the protection and proper management of the areas, as well as the long-term survival of their pertaining habitats.

The ecological network is integrated into spatial plans. Spatial plans are organized in a hierarchical structure, with each plan having to be in concordance with the plan on the higher level:

- » National Land Use Plan
- » County Land Use Framework Plans
- » Land use plans for 'priority regions' (e.g. the Lake Balaton Recreational Area, the Budapest Metropolitan Region)
- » Regulation Plans (i.e. zoning of regulation packages on a map) of the spatial plans contain the exact zone of the National Ecological Network.

The **National Ecological Network** includes core areas, buffer zones and ecological corridors. In core areas and ecological corridors, regulations restrict the designation of areas for development and the placement of transport infrastructure and new surface mines, as well as the prescription that utility lines fit into the landscape.

In a core area and in an ecological corridor, new areas for building cannot be designated if the urban area is surrounded by said core area or ecological corridor. New built-up areas can be only designated within the frame of an official land use regulation procedure.



Types of hedges

From the land use perspective:

- » **following hedges:** following built infrastructure, such as linear green patches;
- » **inserting hedges:** the remaining green element between different land use types;
- » **independent hedges:** between crops; without connectivity to other land-use type.

According to their origin:

- » **Primary hedges:** a preserved fraction of the original ecosystem — or at least of the general habitat and populations of the area;
- » **Secondary hedges:** a planted or generally ruderal originated population, almost always mixed with the elements of the natural ecosystem. (Csathó, 2005; 2009)



A special type of green network: the hedge system

An ecological network consists of natural and close-to-natural areas, all of them protected by law. The connection between these separate protected areas is ensured by the existing Natura 2000 sites.

In Hungary, a - mainly - **non-protected green network, called the “hedge system,”** still exists, dominantly following the agricultural fields, separating them from each other. These usually narrow hedges (2-50 m) make a consistent network in the whole country.

Hedges. The green network connecting Hungarian nature

The original functions of hedges were to separate fields and protect them against erosion and deflation. Hedges are mainly extremely diverse habitats consisting of all levels of canopy.

The main importance of hedges is that they are a functioning ecological network — even one of the least researched habitats potentially reserving a wild series of protected species and giving a constant space to populations all over the country.

