

What is Green Infrastructure?

Green Infrastructure “is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings.” Linked together, these strategically planned networks of green elements are able to provide multiple benefits in the form of supporting a green economy, improving quality of life, protecting biodiversity and enhancing the ability of ecosystems to deliver services such as disaster risk reduction, water purification, air quality, space for recreation and climate change mitigation and adaptation.

The European Green Infrastructure Strategy

The Green Infrastructure Strategy proposed by the European Commission, promotes the development of Green Infrastructure across the EU delivering economic, social and ecological benefits and contributing to sustainable growth. It guides the implementation of Green Infrastructure at EU, regional, national and local levels. A main feature of the Green Infrastructure Strategy is its integration into relevant policies through: ecosystem-based adaptation into climate change policies; nature-based solutions into research and innovation policies; natural water retention measures into water policies; and through its focus on delivering multiple ecosystem services and their underlying factor – a rich biodiversity – into nature policies. The Natura 2000 network in particular plays a major role in protecting many of the core areas with healthy ecosystems.

The Green Infrastructure approach features also in regional and cohesion policies, disaster prevention and the greening of the Common Agriculture Policy.

As Green Infrastructure can make a significant contribution to many sectors and EU policy objectives, Green Infrastructure is being integrated into many funding streams including Structural Funds (the European Regional Development Fund (ERDF); European Social Fund (ESF)), the Cohesion Fund (CF), the European Maritime and Fisheries Fund (EMFF), the European Agricultural Fund for Rural Development (EAFRD), LIFE+ and Horizon 2020 project funds and the Natural Capital Financing Facility (NCFF) of the European Investment Bank (EIB).

Costs & benefits of Green Infrastructure

Green Infrastructure can often provide more benefits at less cost than single-purpose grey infrastructure. A growing body of research and experience demonstrates Green Infrastructure’s high potential due to its multifunctionality, i.e., its ability to perform several functions and to provide several benefits in the same spatial area. These functions can be social (providing healthy environment or green space for leisure and sports), environmental (conserving biodiversity or adapting to climate change and related water issues), and economic (supplying jobs, raising property prices and reducing damage recovery costs). These benefits will however only be fully delivered if Green Infrastructure elements are functional: they need to be big enough, at the right place and well connected. At the same time, these multiple benefits need to be weighed against the costs of establishing and maintaining Green Infrastructure, ideally over the expected life cycle.

Green Infrastructure and the European Semester

Green Infrastructure can play a role in the European Semester, for instance through natural flood prevention or job creation. Floods are among the most common and most costly natural disasters in Europe, and flooding events are likely to become more frequent with climate change. Benefiting from nature’s own capacity to absorb large quantities of excess water is cost-effective and can play a major role in sustainable flood risk management. Investing in Green Infrastructure for flood protection typically yields benefits 6-8 times the costs. Investments in Green Infrastructure can help boost new markets in services, such as planning, implementing and monitoring Green Infrastructure.

Green Infrastructure in Romania

With all five eco-regions present on its territory, Romania is extremely rich in biodiversity and about 20% of its surface belongs to the Natura 2000 Network. However, habitat fragmentation and excessive resource exploitation resulting from unsustainable economic development are major threats to many ecosystems, plants and animal species.

During the 2007-2013 EU programming period, Romania has allocated about EUR 172 million under the European Territorial Cooperation objective to implement adequate management systems for nature protection. In particular, the Sectoral Operational Programme Environment (Priority Axis 4) funded by European Regional Development Fund and Cohesion Fund, promoted spatial connectivity and restoration of natural ecosystems, allowed for developing management plans and visiting infrastructure, and raising the awareness of local communities and general public.



Policy setting & ongoing implementation

The 2014-2020, Partnership Agreement (PA) reiterates the need to promote Green Infrastructure giving ecological corridors, green bridges and eco-passages as examples to reconnect artificially fragmented natural areas. Similarly, corridors or other landscape features could be maintained to establish a functional protected areas network. Connectivity through Green Infrastructure is a priority action also under the European Strategy for the Danube region. The PA has identified the following funding sources in conformity with Thematic Objective 6 – Conservation and protection of the environment and promotion of efficient use of resources: National Rural Development Programme (EARDF, amounting overall to EUR 1.12 billion) for restoring, conserving and extending agriculture and forestry dependent ecosystems; and Large Infrastructure Operational Programme (ERDF, amounting overall to EUR 0.61 billion and CF amounting overall to EUR 1.7 billion) for protecting biodiversity by elaborating management plans and investments in renovation and conservation measures. In addition, the Hungary-Romania Cross-Border Cooperation Programme aims at identifying relations between landscape, habitats quality and ecosystem services as perceived by local communities.



Furthermore, the Master Plan for Transport in Romania 2030 mentions the need to respect conservation measures in future projects including integrating non-structural and Green Infrastructure measures, and avoiding negative impacts on protected areas, forested areas and non-protected areas where species of community interest are identified, by reconsidering planning of routes.

The Territorial Development Strategy of Romania 2035 clearly refers to Green Infrastructure as an efficient way to adapt to climate change and to diminish natural risks compared to physical or grey infrastructure. Specific measures include protecting natural habitats (by ensuring diversity of and interconnectivity between natural areas, particularly in the context of Natura 2000 management) and developing green spaces in urban areas and green belts around major cities.

Also relevant in the Romanian context are the European Environmental Agency (EEA) and Norwegian Grants (2009-2014, running until April 2016) which also encourage the implementation of Green Infrastructure, with four priority domains including one on biodiversity and ecosystem services, pollution reduction, energy efficiency, renewable energy and adaptation to climate change.

Action 5 of the EU Biodiversity Strategy to 2020 calls on Member States to work on the “Mapping and Assessment of Ecosystems and their Services” (MAES). A national assessment has started funded by the EEA, Norwegian Grants and EU through DG Environment’s service contract “Mapping of Ecosystems and their Services in the EU and its Member States” (MESEU).

Good practices in Romania

Corridors for wildlife and sustainable resources in Maramures County

WWF in partnership with the Ukrainian NGO RachivEcoTur implemented the “Open Borders for Bears between Romanian and Ukrainian Carpathians” project in the regions of Maramures, Romania, and Ivano-Frankivsk and Zakarpatska, Ukraine. The goal of the project was to reduce habitat fragmentation, identify the critical corridors and the related reconstruction needs and secure sustainable use of natural resources. The project was funded in 2012 by the EU under the 2007-2013 Joint Operational Programme Hungary-Slovakia-Romania-Ukraine. The critical habitats and wild life corridors are components of a Green Infrastructure delivering multiple benefits.

The Maramures region is home to 200-250 brown bears and there are 180-220 more bears across the border in Ukraine. To survive, bears need space to feed, shelter, rest and mate as well as large areas to move, including favourable corridors for habitat connectivity. Human activities and socio-economic development of the region increasingly affect these habitats, especially infrastructure development such as roads and other construction such as hotels and fences. So far, there is no methodology in the current legislation for designing and managing these areas.

The benefits from the project include:

- Identification of critical habitats and movement corridors for bears;
- Identification and implementation of tools to effectively manage natural resources that contribute to the conservation of the critical habitats and corridors for bears;
- Identification of management measures for conserving bears and their habitats and for sustainable development of the communities;
- Implementation of 22 joint planning activities involving key stakeholders;
- Enhanced capacity of protected areas staff: seven training sessions organised for local authorities / decision makers and forest management units' representatives;
- Development of information materials for disseminating toolkits among the local stakeholders; and
- Editing and distribution of information materials to the different target groups of the project.

The overall budget was EUR 937,834 with EU funding amounting to EUR 844,050.



Ecological restoration of Comana Wetland in Giurgiu County

The Comana Wetland Natura 2000 site is located along one of the main routes of migratory birds and considered to be an important wetland in Romania as it offers a nesting place for many rare bird species. Before 1990, water management projects in the basin of two Danube tributaries designed to increase the surface available for arable land resulted in a reduction of the levels of surface and ground water. The ecological and social consequences of these projects are shown in the modified structure of plant communities and in the reduced quality and thus economic value of grasslands for farmers. In 2009, the “Implementation of adequate management systems for nature protection” project was funded under the Sectoral Operational Programme Environment (Priority Axis 4). A key area of intervention was the “Development of infrastructure and management plans to protect biodiversity and Natura 2000”, in order to reconnect the floodplain and the rivers, thus reducing what had become a predominantly terrestrial environment.

The benefits from the project include:

- Improved quality of habitats and species richness;
- Avoided habitat fragmentation and disruption of the migration route of some fish species;
- Avoided biodiversity loss, in particular of important bird species;
- Temporary job creation related to implementation of Green Infrastructure measures;
- Local development opportunities for establishing recreational and / or scientific research activities for users from the nearby capital Bucharest and other cities;
- Increased climate change mitigation potential of the area; and
- Raised awareness of local people about the benefits of Green Infrastructure.

The Giurgiu County Council in partnership with the Comana Nature Park and Comana Local Council implemented the project; its overall cost was EUR 1.8 million.

Challenges and opportunities

Given that the Green Infrastructure approach in Romania is closely linked to protected areas, one of the main obstacles against its full uptake is the delayed elaboration and approval of management plans and rules due to the long and difficult approval process. Other obstacles include the need to reorganise and rationalise the decision-making process, the need to build the administrative capacity of the delegated ministry, the lack of resources for assessing the plans, the weak quality of some of the plans, and the fact that restrictive measures within the plans require compensating land owners.

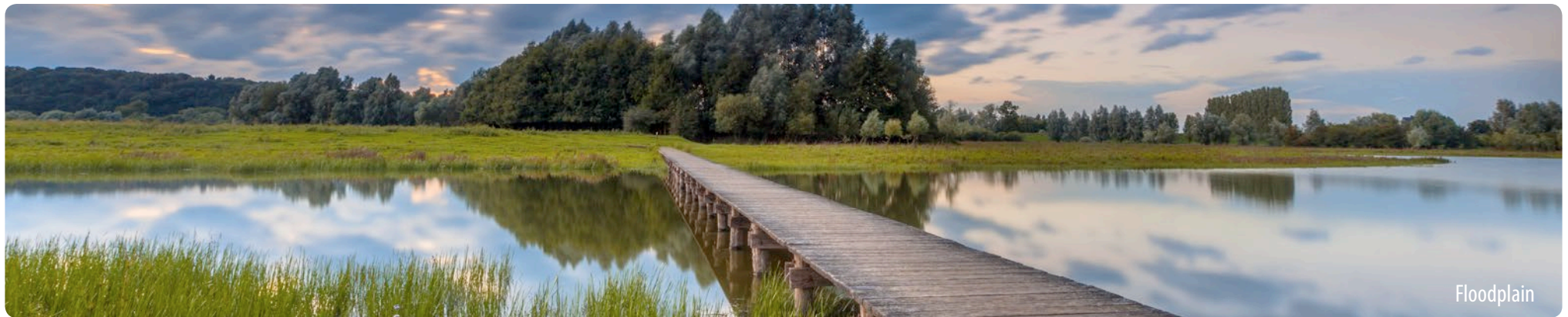
The Prioritised Action Framework for Natura 2000 in Romania for 2014–2020 identifies the following priorities to ensure the efficient implementation of management plans: finalisation of the process to designate Natura 2000 site administrators; implementation of the actions included in the plans with precedence to those that support the management process; ensuring resources necessary for the management process including infrastructure; and education and awareness raising of the large public.

More specific barriers include: limited understanding of the way natural ecosystems functions, which translates into limited capacity to conceive Green Infrastructure projects; lack of figures and examples on both socio-economic and environmental benefits to convince decision makers of the opportunities of investing in Green Infrastructure; lack of pre-planning mentality; and poor use of integrated spatial planning processes.

If the large investment in infrastructure (motorways, speedways, railways, water and sewage networks, waste management facilities, etc.) needed in the near future is not properly planned, integrated and assessed, it will threaten habitat connectivity. In this respect, a thorough development and implementation of Operational Programmes taking Green Infrastructure into account should be envisaged. For example, the new Regional Operation Programme for the Western Region is considering smart growth, but fails to take into account Green Infrastructure and the functionality and coherence of the Natura 2000 network.

An opportunity for further uptake of Green Infrastructure is LIFE Funding, in particular where improving the functional and spatial connectivity of ecosystems is concerned.

An opportunity to spur the uptake of Green Infrastructure in Romania is definitely the use of technical assistance to access available funded measures with innovative projects. In particular, the MAES process in Romania can provide spatially explicit prioritisation and problem identification in relation to Green Infrastructure implementation.



Floodplain

References

- European Commission, DG Environment (2013). Building a Green Infrastructure for Europe. Habitats and ecosystem goods and services evaluation in the Mures/Maros and Crisul Alb/Koros river valleys – HURO/0801/194/2.2.2. <http://expbio.bio.u-szeged.hu/ecology/tiscia/monograph/TISCIA-monograph9.pdf>
http://ec.europa.eu/environment/integration/green_semester/index_en.htm
http://ec.europa.eu/environment/water/flood_risk/better_options.htm
http://www.cceweb.org/wp-content/uploads/2011/12/enriching_society_through_natural_solutions_green_infrastructure.pdf
http://www.fonduri-ue.ro/res/filepicker_users/cd25a597fd-62/2014-2020/acord-parteneriat/AP-10.02.2014.RO.pdf
<http://www.huskroua-abc.net/en/project-database/166> (Bear corridors project)
<http://www.mdrap.ro/dezvoltare-teritoriala/-2979>
<http://www.mt.ro/web14/strategia-in-transporturi/master-plan-general-transport/documente-master-plan>
<http://www.surf-nature.eu/index.php?id=5> (Thematic booklet on Green Infrastructure with Comana wetland project)
Landscape scale connections between the land use, habitat quality and ecosystem goods and services in the Mures/Maros valley – HURO/0901/205/2.2.2. <http://expbio.bio.u-szeged.hu/ecology/tiscia/monograph/TISCIA-monograph10.pdf>

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