

# Green infrastructure



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Rivers are an important element of green infrastructure

- Europe's landscape has faced more habitat loss and fragmentation than any other continent. This is a major problem for biodiversity.
- Although core nature areas are now largely protected under the Natura 2000 Network, species still need to be able to move between these areas if they are to survive in the long term.
- A green infrastructure will help reconnect existing nature areas and improve the overall ecological quality of the broader countryside.
- A green infrastructure will also help maintain healthy ecosystems so that they can continue to deliver valuable services to society such as clean air and fresh water.
- Investing in a green infrastructure makes economic sense: maintaining nature's capacity, for instance in mitigating against the negative affects of climate change, is far more cost-effective than having to replace these lost services with much more costly man-made technological solutions.
- A green infrastructure is best achieved through an integrated approach to land management and careful strategic spatial planning.
- All land users and policy sectors should be engaged early on in the process of developing a green infrastructure and apportioned a share of the responsibility in its delivery.
- The European Commission is developing a strategy for an EU-wide Green Infrastructure as part of its post-2010 biodiversity policy.

*nature*



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## Fact 1: Europe's landscape is increasingly fragmented

Compared to other regions of the world, the EU is a relatively densely populated continent, and much of the land is in active use. As a result, many of the natural areas that remain are under pressure and at risk of becoming fragmented. This affects the functioning of our ecosystems, as they need space to thrive and deliver their services.

Healthy ecosystems are part of our life-support system and biodiversity is the basis for ecosystems' health and stability. Ecosystems made up of many different species are more likely to remain stable when there is some damage or loss than ecosystems comprising fewer species.

Habitat fragmentation is caused by a whole range of different factors linked to changes in land use including urban sprawl, transport infrastructures and intensifying farming or forestry practice.

Recent statistics from the European Environment Agency illustrate just how significant these trends are. Some 8,000 km<sup>2</sup> were concreted over during the 1990s, representing an increase in artificial areas of 5% in just 10 years. In addition, 15,000 kms of new motorways were constructed within the EU between 1990 and 2003.

## Fact 2: Wildlife needs to be able to exist outside protected areas

Core areas – important for rare and threatened species and habitat types – are now largely protected through the Natura 2000 Network which contains 26,000 sites and covers around 18% of the EU territory.

But action also needs to be taken within the remaining 82% of the territory if we are to stem the loss of biodiversity in Europe. This is because wild plants and animals need to be able to move, migrate, disperse and exchange populations between protected areas in order to secure their long term survival.

Urban sprawl, intensive farming or forestry practices and transportation routes all present significant and sometimes

insurmountable obstacles to species movement. They also render the wider environment more hostile and inaccessible to wildlife.

Building a green infrastructure will help to reconnect existing nature areas, for instance through wildlife corridors or stepping stones and eco-bridges, as well as improve the general ecological quality of the wider environment so that it is more friendly and permeable to wildlife.

## Fact 3: A green infrastructure helps maintain valuable ecosystem services

The loss of natural areas has repercussions well beyond the disappearance of rare species. Ecosystems, which are powered by the diversity of life within them, provide society with a stream of valuable, economically important goods and services such as water purification, soil fertilisation, carbon storage etc.

They also play a central role in fighting climate change by protecting us against floods and other negative effects of changing weather patterns. Intact floodplains, for instance, play an important role in helping to alleviate floods by storing water and releasing it back slowly into streams and rivers. Forests act as carbon sinks and prevent soil erosion. Wetlands absorb pollutants and improve the quality of our freshwater supply.

That is why investing in a green infrastructure also makes economic sense. Having to find man-made solutions to replace the services that nature offers for free is not only technically challenging but also very expensive.

The overall objectives of a European green infrastructure are therefore to:

- maintain Europe's biodiversity, for instance by ensuring the ecological coherence and connectivity of the Natura 2000 Network (cf article 10 of the Habitats Directive) and,
- safeguard and restore valuable natural ecosystems at a broader landscape level so that they can continue to deliver valuable services to mankind.



Making space for nature to provide valuable ecosystem services



Nature in peri-urban areas is important for landscape connectivity

## Fact 4: Making space for nature through a more integrated approach to land use

A European green infrastructure can be developed using a variety of techniques. They can include for instance:

- Improving **connectivity** between existing nature areas in order to counter fragmentation and increase their ecological coherence e.g. by safeguarding hedgerows, wildlife strips along field margins, small watercourses;
- Enhancing **landscape permeability** to aid species dispersal, migration and movement e.g. through the introduction of wildlife friendly land uses or agri/forest environment schemes that support extensive farming practices;
- Identifying **multifunctional zones**. In these areas, compatible land uses that support healthy biodiverse ecosystems are favoured over other more destructive practices. They may for instance be areas where farming, forestry, recreation and ecosystems conservation all operate together in the same space. Such 'win-win' or 'small loss, big gain' combinations can deliver multiple benefits not just to those using the land (farmers, foresters, tourism providers, etc..) but also to society at large through the provision of valuable ecosystem services such as water purification or soil improvement and the creation of attractive 'breathing spaces' for people to enjoy.

## Fact 5: Spatial planning helps create a green infrastructure

In practice, one of the most effective ways of building a green infrastructure is to adopt a more integrated approach to land management. This, in turn, is best achieved through strategic level spatial planning which enables spatial interactions between different land uses to be investigated over a large geographical area (eg region or municipality). Strategic planning is also a means of bringing different sectors together in order that they may decide together on local land use priorities in a transparent, integrated and cooperative way.

Spatial planning can guide infrastructure developments away from sensitive sites, thereby reducing the risk of further habitat fragmentation. It can also identify ways to spatially reconnect remaining natural areas, for instance by encouraging habitat restoration projects in strategically important places or by integrating elements of ecological connectivity (eg ecoducts or natural stepping stones) into new development schemes.

## Potential components of a green infrastructure:

- Protected areas, such as Natura 2000 sites;
- Healthy ecosystems and area of high nature value outside protected areas such as floodplain areas, wetlands, coastal areas, natural forests etc...;
- Natural landscape features such small water courses, forest patches, hedgerows which can act as eco-corridors or stepping stones for wildlife;
- Restored habitat patches that have been created with specific species in mind eg to help expand the size of a protected area, increase foraging areas, breeding or resting for these species and assist in their migration/dispersal;
- Artificial features such as eco-ducts or eco-bridges, that are designed to assist species movement across insurmountable landscape barriers;
- Multifunctional zones where land uses that help maintain or restore healthy biodiverse ecosystems are favoured over other incompatible activities;
- Areas where measures are implemented to improve the general ecological quality and permeability of the landscape;
- Urban elements such as green parks, green walls and green roofs, hosting biodiversity and allowing for ecosystems to function and deliver their services by connecting urban, peri-urban and rural areas;
- Features for climate change adaptation and mitigation, such as marshes, floodplain forests and bogs - for flood prevention, water storage and CO2 intake, giving space to species to react to changed climate conditions ...



Building an ecobridge  
over motorway

## More information:

### EU website:

[http://ec.europa.eu/environment/nature/ecosystems/index\\_en.htm](http://ec.europa.eu/environment/nature/ecosystems/index_en.htm)

### Natura 2000 Newsletter:

Issue 27, December 2009

[http://ec.europa.eu/environment/nature/info/pubs/natura2000nl\\_en.htm](http://ec.europa.eu/environment/nature/info/pubs/natura2000nl_en.htm)

### Workshop proceedings:

'EC workshop: towards a green infrastructure for Europe', March 2009  
<http://www.green-infrastructure-europe.org/> and [http://ec.europa.eu/environment/nature/ecosystems/index\\_en.htm](http://ec.europa.eu/environment/nature/ecosystems/index_en.htm)

### EC Guidance

Guidance on the maintenance of landscape connectivity features of major importance for wild flora and fauna (cf Article 3 of the Birds Directive (79/409/EEC) and Article 10 of the Habitats Directive (92/43/EEC) Aug 2007  
[http://ec.europa.eu/environment/nature/ecosystems/docs/adaptation\\_fragmentation\\_guidelines.pdf](http://ec.europa.eu/environment/nature/ecosystems/docs/adaptation_fragmentation_guidelines.pdf)

### LIFE funded projects

In focus publication on LIFE project supporting green infrastructure.  
<http://ec.europa.eu/environment/life>

### EU research projects

EU COST project N°341: Habitat fragmentation due to transportation infrastructure <http://cordis.europa.eu/cost-transport/src/cost-341.htm>

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## Fact 6: EU financial instruments can be used to support the development of a green infrastructure

Various EU Financial Instruments can be used to help build a green infrastructure. Regional Development Funds and the Rural Development Fund, for instance, provide a wide range of tools that can be used to enhance spatial connectivity and restore natural ecosystems across the wider countryside. They can also be used to support the economic diversification of land uses and the creation of multifunctional land use areas which are based on maintaining natural ecosystems.

Agri- or forest- environment schemes in particular can support measures to intensify production, limit pesticide or fertiliser use and encourage wildlife friendly practices aimed at restoring biodiversity and ecosystems functioning. They also assist in the maintenance of landscape features that are important for connectivity, such as hedgerows, unfarmed field margins, woodland patches or streams.

Under the EU LIFE-Biodiversity fund, projects can be co-financed that improve the functional connectivity of wildlife habitats and improve the movement of species between protected areas such as Natura 2000. LIFE-Environment also offers possibilities to fund green infrastructure elements in urban and peri-urban areas and support projects that establish linkages between forested areas. In addition it can co-finance projects that promote integrated planning initiatives which promote ecosystem based approaches to tackle fragmentation and support the multi-purpose use of land.

The private sector is also now applying biodiversity offsetting measures on development schemes as part of their corporate social responsibility programmes. If designed with ecology in mind, these measures have the potential to significantly enhance the biodiversity of areas that are severely impoverished in terms of nature.

## Fact 7: Developing an EU strategy on a green infrastructure across Europe.

The development of an EU strategy for a Green infrastructure figures prominently in the EU's new post 2010 biodiversity policy. This is because a Green infrastructure is viewed as being one of the main tools to tackle threats on biodiversity resulting from habitat fragmentation, land use change and loss of habitats.

Green Infrastructure will play a decisive role in integrating biodiversity into other policies, such as agriculture, forestry, water, marine and fisheries, regional and cohesion policy, climate change mitigation and adaptation, transport, energy and land use policy. It is also an important tool for existing Directives such as the Water Framework Directive, the Marine Framework Directive, Environmental Impact Assessment and Strategic Environment Assessment Directives.

In addition, particular attention will be given to strengthening the integration of green infrastructure aspects in the EU's various funding programmes (eg structural and cohesion funds, CAP, LIFE) over the current and future financial programming period starting in 2013 and to improving the ecological coherence of the Natura 2000 Network.

In March 2010 the European Council of Ministers set a new **EU target for the protection of biodiversity in 2020**: *'The EU intends to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, restore them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss'*.



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