

Land use and Green Infrastructure



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Fragmentation

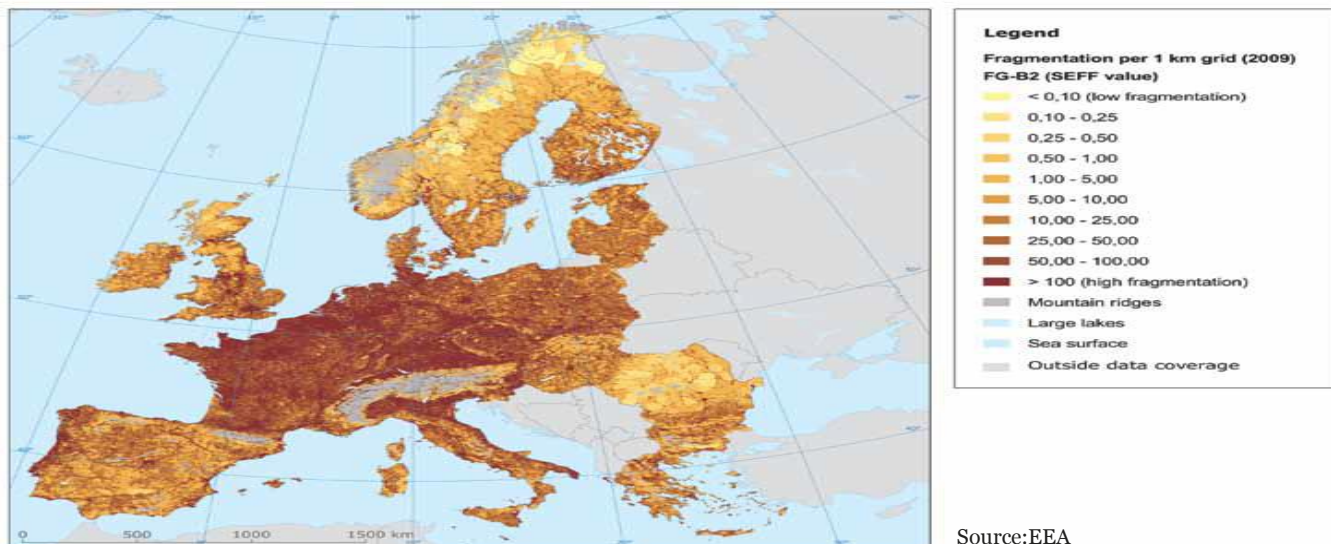


Biodiversity loss and habitat fragmentation

30% of highly and moderately fragmented area, 25% of European species in the danger of extinction and only 17% of favourable conservation status of habitats and species within the Natura 2000 network - some of the sheer numbers that show that EU's biodiversity is in danger ([EC 2012](#)). One of the number one causes of biodiversity and ecosystem services loss at the European level is fragmentation and habitat loss. Fragmentation is related to the break-up of natural areas into smaller and more isolated units known as 'patches'. This process leads to a reduction of the total area the habitat occupies and detrimentally changes the characteristics of the newly formed patches. A main cause for habitat fragmentation has been identified as the construction of linear infrastructure. For instance in the CEE region, it is expected that road construction market will increase at an average nominal rate of 5% in the coming years. 1700 km of new highways are to be built by 2013 only in Bulgaria, the Czech Republic, Hungary, Romania and Slovakia ([EEA, 2011](#)). Urban sprawl is another major factor of habitat loss: 80% of EU citizens are expected to live in cities by 2020, with Europe having witnessed a 20% increase in the built up urban area in 1980-2000 ([EEA, 2006](#)). With an increasing urban sprawl, a predominant intensive agriculture and a fast rate in the construction of new transportation infrastructure, fragmentation is also rising, causing further habitat and biodiversity loss.

Extent of Fragmentation in Europe

In Europe, the degree of fragmentation varies greatly. The most fragmented regions are those where urbanization is at its highest and where transport infrastructure is well developed. At a country level, Benelux countries are most fragmented, followed by Germany, France, the Czech Republic and Poland while other Central and Eastern European countries have some of the lowest fragmentation rates. With vast areas of uninhabited land and small populations, countries of the Northern Europe have the lowest fragmentation rates in Europe. Mediterranean countries exhibit a relatively low degree of fragmentation as a whole, but fragmentation itself is unequally distributed. Coastal regions are intensively inhabited and most of the infrastructure is concentrated here, therefore fragmentation rates are very high. In contrast, interior regions are far less fragmented. At a regional and local scale, unequal distribution of fragmentation is also met throughout Europe and is best seen on fragmentation maps with a higher resolution – at a NUTS-X (Nomenclature of Territorial Units for Statistics) level for the EU countries or 1km² for EEA (see Fig. below, where colour varies with fragmentation: the darker the colour, the higher degree of fragmentation).



Source:EEA

Current topics >>>

The Green Infrastructure Strategy

An EU initiative to combat biodiversity loss resulting from fragmentation



Green Infrastructure

In May 2011, the European Commission adopted an ambitious [Biodiversity Strategy](#) which aims to halt the loss of biodiversity in the EU by 2020. Target 2 of this Strategy states that 'by 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems'.

Action 6 of the Biodiversity Strategy in particular foresees that the Commission will: 'develop a Green Infrastructure Strategy by 2012 to promote the deployment of green infrastructure in the EU in urban and rural areas, including through incentives to encourage up-front investments in green infrastructure projects and the maintenance of ecosystem services, for example through better targeted use of EU funding streams and Public Private Partnerships'.

Green Infrastructure (GI) serves the interests of both people and nature. It can be defined as a strategically planned and delivered network of high quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering a wide range of benefits and services. Green Infrastructure includes natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas. Areas protected as [Natura 2000](#) sites are at the core of Green Infrastructure.

The underlying principle of Green Infrastructure is that the same area of land can frequently offer multiple benefits. By enhancing Green Infrastructure, valuable landscape features can be maintained or created, which are not only valuable for biodiversity but also contribute to the delivery of ecosystem services such as the provision of clean water, productive soil, attractive recreational areas as well as [climate change](#) mitigation and adaptation.

([EU Commission, 2012](#))

“The underlying principle of Green Infrastructure is that the same area of land can frequently offer multiple benefits”

Case studies >>>

Germany

In Germany, the Nature Conservation Act was amended in 2002 to enable the establishment of an ecologic network on at least 10% of the country's territory. It requires transboundary cooperation between the German Federal States and international cooperation for ecological connectivity with Germany's neighbours. Schaalsee-Landschaft was the first of such projects, carried out between 1992 and 2009 and involving a total area of 300km². ([Read more](#))

Estonia

Estonia has already made impressive efforts in the implementation of GI at a national level. Through the 1983 enforcement of a 'Network of Ecologically Compensating Areas', the 1995 Sustainable Development Act and the 2002 Act on Planning, a green network was established, which at present covers 50% of the country's territory (EEA, 2011). Estonian legislation on spatial planning also includes public involvement in the Green Network, through public consultations and public discussions. ([Read more](#))

France

France has also established a 'Green and Blue Infrastructure' (Trame bleue et verte) in 2009, defined as a 'landscaping tool that aims at (re)-establishing a coherent ecological network at a national level in order to allow the flora and fauna species to move freely, feed, reproduce and rest...in other words to ensure their survival and allow ecosystems to deliver their services to people'. This is very similar to the EU definition of green infrastructure and it stresses the importance of addressing the fragmentation problem. Nevertheless, the recently adopted legislation is being tested in a series of regional and national parks across the country as well as in several urban areas such as Nantes, which has been declared the 2013 European Green Capital. ([Read more](#))

Switzerland

Switzerland is a case where public concern resulted in the amendment of the Swiss Constitution with an article aimed at lowering fragmentation in the Alps. In 1994, the Alpine Initiative (article 84 of the Constitution) was established, stipulating that 'transalpine traffic involving transportation of goods through Switzerland is to take place by rail. This was seen as necessary in order to halt the construction of new road infrastructure which would have resulted in higher degrees of fragmentation of the Swiss Alps. Nevertheless, rail freight traffic declined from 68.7% in 1999 to 62.6% in 2010, while road traffic increased from 31.3% to 37.4% for the same period. This is mainly due to road travel being considerably faster and allowing time-flexibility while at the same time there are goods not suitable for rail travel. The inauguration of the new 57km long Gotthard Tunnel in 2016 is expected to increase the rail capacity while making railway travel faster and thus contributing to the protection of the Alps environment and the reduction of road traffic. ([Read more](#))

Existing and potential tools to address fragmentation and biodiversity loss >>>

There is a number of policy tools, which has been identified as potential facilitators of conservation of biodiversity against increasing fragmentation at a European, particularly at EU level. Perhaps the most relevant one is the emerging Green Infrastructure Strategy, which is supposed 'to address the connectivity of ecosystems, their protection and the provision of ecosystem services while also addressing mitigation and adaptation to climate change' ([EU Commission, 2012](#)).

This is considered to be an important step in the struggle to fulfill the 2020 EU Biodiversity Strategy ([EU Commission, 2012](#)). There are already several important EU policies that could form a basic implementation framework for Green Infrastructure and the most relevant have been identified as the 92/43/[EEC Habitat Directive](#), the 2009/147/[EC Birds Directive](#), the 2000/60/[EC Water Framework Directive](#), the 2007/60/[EC Floods Directive](#), the 2008/56/[EC Marine Strategy Framework Directive](#) and the [EIA and SEA Directives](#).

[Cohesion Funds](#) will be fundamental to the financing of GI. Cohesion Funds are addressed to Member States (MSs), whose Gross National Income/capita is less than 90% of the Community average in order to reduce their economic and social shortfall. In order to use the upcoming Cohesion Fund 2014-2020 more effectively, MSs should live with the opportunity to use the climate change adaptation and environmental protection and resource efficiency thematic objectives for establishing GI projects and accent these in the Operational Programmes and Partnership Agreements.

An essential role will also be played by the [post-2013 Common Agricultural Policy](#) (CAP), whose objectives are to promote a 'viable food production system, sustainable management of natural resources and climate action and a balanced territorial development'. At the moment, CAP is accounting for over 40% of EU budget expenditure and the fast coming reform is not likely to freeze this budget, but rather to make a much more efficient use of it and develop synergies with other EU policies. The EU Commissioner promised 30% of the direct financial aid from the CAP to farmers who have turned to environmentally friendly agriculture.

There are other mechanisms through which direct payments for GI could be provided and this includes the [LIFE and LIFE+](#), the [European Regional Development Fund](#) (ERDF), the [Rural Development Fund](#), the [European Social Fund](#) (ESF). Moreover, stakeholders cooperation and the inclusion of the private sector in GI projects should yield more effective GI projects.

For a more effective policy tool >>>

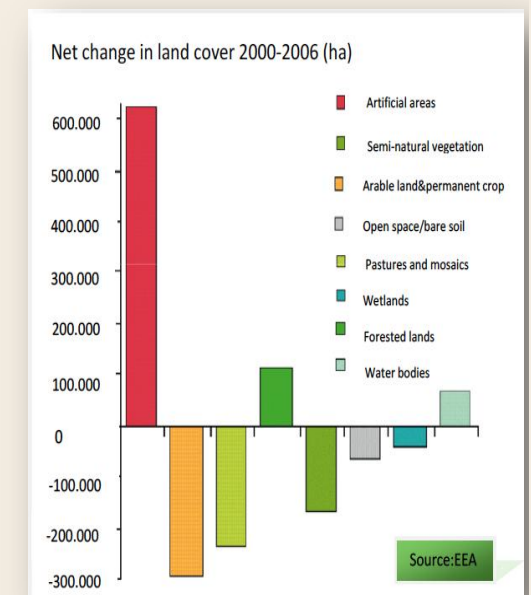
Although there are many policy tools and initiatives already in place to address unsustainable land use and fragmentation both at national and EU levels, the tendency of habitats loss and artificial area sprawl continues to grow. If we are to reach efficient and effective biodiversity conservation through Green Infrastructure policies, where all elements are adequately covered by EU and nation-wide legislation and strategies, it may be beneficial to integrate the various related concepts into a common framework with the following requirements:

- The **integration of GI concept** into the EIA/SEA, CAP, and Cohesion Policies and their financial mechanisms would be essential.
- **Awareness should be raised among MSs** to use the opportunities of the new MFF for GI project development.
- **Financial mechanisms and earmarking of sectoral investment shall be developed** dedicated for the GI.
- For an effective GI, an integrated **mapping and monitoring should be developed** taking into account CAP, the nature directives and the Water Framework Directive obligations and reporting.
- **Cross-border cooperation and connectivity** of habitats shall be significantly improved by common databases and methods for monitoring.
- The **GI shall not be separated from grey and black infrastructures**, but shall be regulated through an **integrated policy tool** aiming at **the reduction of total environmental pressures**. This shall stop the current practice that pressures from unregulated use to cancel conservation efforts in other areas.

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CEEweb for Biodiversity is an umbrella organization of NGOs in the Central and Eastern European region. Our mission is the conservation of biodiversity through the promotion of sustainable development. Further information is on www.cceweb.org

