

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.

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 multi-functionality, 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 Latvia

Latvia has a relatively high density of Green Infrastructure natural areas compared to other EU Member States (except Scandinavia and a few others). The current Latvian Natura 2000 network has 333 sites (including seven marine areas); terrestrial Natura 2000 sites occupy 12% or 787,729 ha of the territory of Latvia. Nevertheless, data demonstrate that there is a decreasing connectivity between habitats.

Currently in Latvia there are few plans or activities directly relating to Green Infrastructure, e.g., flood management in cities and Natura 2000 development. However, several programmes and priority areas have high potential for Green Infrastructure development, either as a potential tool to reach the policy targets or promoting Green Infrastructure through stimulation in co-financing competitions or through supporting activities.



Policy setting & ongoing implementation

Ongoing activities in Green infrastructure development in Latvia can be broadly divided into five main groups:

1. Development of the Natura 2000 network;
2. Sustainable and integrated coastal zone management;
3. Management of inland waters (including integrated water basin management plans and flood protection measures);
4. Wetland management and creation of new wetlands (including reed filters to purify wastewater); and
5. Local Green Infrastructure elements, such as bicycle roads, street trees, green (water permeable) street covers and green elements of buildings, improving connectivity between natural Green Infrastructure elements.

According to recent studies, in Latvia the Green infrastructure priorities and the main environmental risks are the following:

1. General Green Infrastructure policy:

- Development of general strategic framework for Green Infrastructure policy development;
- Provision of multi-functionality and inter-sectoral integration;
- Evaluation and motivation system at national level; and
- Evaluation and motivation tools for decision makers.

2. Short term priorities for sectoral policies:

- Urban flood prevention Green Infrastructure solutions and pilot project;
- Rural flood prevention Green Infrastructure solutions;
- Coastal flood prevention Green Infrastructure solutions by the seacoast;
- Efficiency of specific urban Green Infrastructure elements (rainwater collection, multi-functionality of green zones, network of bicycle lanes, green roofs and walls, etc.);
- Efficiency of specific rural Green Infrastructure elements (two-stage drainage ditches, wetlands, buffer zones, etc.); and
- Improvement of habitat connectivity and integrated approach in agriculture and forestry.

3. Long term priorities for sectoral policies:

- Integration of Green Infrastructure approach in urban planning;
- Improvement of ecosystem service quality and accessibility in large protected areas; and
- Integration of Green Infrastructure approach in agriculture, forestry and transport systems to improve habitat connectivity.

Due to the main Green Infrastructure principles of multi-functionality, inter-disciplinarity and efficiency in full cost-benefit evaluation, the inter-sectoral co-ordination and division of roles are critical for effective Green Infrastructure policy implementation and integration in sectoral policies in Latvia.

Good practices in Latvia

LIFE Nature project “Protection and management of coastal habitats in Latvia” (LIFE02 NAT/LV/008498)

The Baltic Sea coast of Latvia is an area of outstanding biological diversity. The number of visitors to the coastal zone is steadily growing. To preserve vulnerable coastal habitats, while promoting the development of the local economy, efforts are made to maintain and restore endangered habitats, improve knowledge by mapping the priority natural habitats, manage human activities, and educate the public about the importance of protecting coastal habitats. The project aims at the integrated development of the Baltic Sea coast into a core area of high biodiversity value, which can act as a hub for Green Infrastructure and also provide recreational and tourism benefits.

The project: (1) developed a basic framework for sustainable management of the coastal protection belt of the Baltic Sea in Latvia; (2) promoted a network of protected nature areas and micro reserves of the Baltic Sea coast; and (3) raised public awareness of the need for protecting habitats of Community importance. The project area was the entire Baltic Sea coast in Latvia: a 300 metre wide coastal zone following the coastline, with a total surface area of 18,000 ha. The total cost of project was EUR 1.7 million.

Benefits of the project include:

- Implementation of sustainable coastal zone management;
- Integration of coastal tourism with nature conservation interests;
- Development of know-how and expertise on how to manage Green Infrastructure by developing the basic framework for sustainable management of the coastal protection belt of the Baltic Sea in Latvia;
- Improved appeal of the coastal zone which encourages people to spend their free time in the area; and
- Strengthened local economy through expanded tourism, increased income and job opportunities in the coastal area.

Protected Green Infrastructure and water bodies in Zemgale Region and North Lithuania

Nine municipalities in Latvia and Lithuania have come together in a joint effort to implement the motto “Let’s make our cities greener”, working with the green areas of their urban environment. City residents were encouraged

to clean-up the environment themselves. Project activities included reconstructing seven parks, improving one park and developing four technical projects, all of which resulted in a better functioning Green Infrastructure in these municipalities. Great emphasis was placed on the collaboration between the architects and city planners of both countries in trying to find the best way to balance the aesthetics, ecology and functionality of the green areas. There was also an environmental campaign inviting city residents to tidy-up their homes, gardens, and balconies and to keep track of the “green health” of nearby parks. The total cost of the project was EUR 1.2 million.

Benefits of the project include:

- Restoration and sustainable management of Green Infrastructure (city parks);
- Improved awareness and engagement of inhabitants in maintaining and managing the green areas in their neighbourhood;
- Improved awareness and know-how of city planners on the importance of Green Infrastructure in urban space;
- Higher quality and attractiveness of urban landscape leading to an improved well-being of inhabitants, by providing them with high quality environment; and
- Socio-economic development in the municipalities concerned.

Wetland pilot project under the framework of the Baltic Deal

In 2011, a pilot project was launched to develop a new wetland – a new and innovative measure in Latvia - in the framework of the Baltic Deal project, a flagship project of the EU Strategy for the Baltic Sea Region. The aim of the project was to create a demonstration farm with a constructed wetland, in cooperation with research on water quality. The project was funded by the 2007-2013 Baltic Sea Regional Programme and by the NEFCO/NIB Baltic Sea Action Plan Trust Fund. The total budget was around EUR 4 million and the project ran from 2010 to 2013.

A farm to serve as the demonstration site was initially selected in the autumn of 2011. Priority was given to a farm with intensive agriculture in crop production and with a catchment area covering more than 500 hectares. However, investment costs turned out to be too high (EUR 50,000) for the



constructed wetland in this farm. Lessons learnt were applied in the search for a new farm, this time with a smaller catchment area and lower investment costs. The experience and necessary knowledge has helped to develop a sound proposal for the next Rural Development Plan period in which constructed wetlands would be included as a measure. The project was developed with support from WWF Latvia. The project is a valuable preparatory project for the integrated planning of Green Infrastructure, combining farming with restored habitats – wetlands in this case - that help reconnect or enhance existing natural areas.

Benefits of the project include:

- Improved knowledge on potential application of Green Infrastructure (wetlands) in sustainable land management; and
- After realisation: improved environmental management and lowered non-point pollution (agricultural run-off), thus lowering pollution load in the Baltic Sea area.

Challenges and opportunities

- Lack of general strategic framework for Green Infrastructure policy development.
- Lack of know-how and awareness (especially at the municipal level) and public participation.
- Development of inter-sectoral coordination mechanism (involving different departments of Ministry of Environmental Protection and Regional Development of the Republic of Latvia, namely Environmental, Nature Conservation, Regional Development and Spatial Planning Departments and Nature Conservation Agency, as well as other stakeholders and line ministries, e.g., Ministry of Transports and Ministry of Agriculture).
- Development of assessment and motivation system and instruments for Green Infrastructure development.
- Progress required on the “Mapping and Assessment of Ecosystems and their Services” (MAES).
- Analysis of available funding opportunities, development of programming for the next periods including opportunities for developing Green Infrastructure (not only environmental, but also rural development programmes, development of new local funding instruments for Green Infrastructure development, etc.).
- Promotion efforts emphasising socio-economic growth benefits of Green Infrastructure.
- Capacity building and training of relevant stakeholders to improve interaction across and between disciplines and sectors relevant for ‘mainstreaming’ Green Infrastructure.
- Integrated constructed wetlands have not been taken up adequately in the Rural Development Plan for Latvia.
- Capitalisation of the good potential for climate change adaptation integration in Green Infrastructure projects.



Wetlands

References

Assessment of inclusion of necessary Green Infrastructure measures in planning of environmental and regional development policies; Final Report (In Latvian: Izvērtējums par nepieciešamo zaļo infrastruktūru pasākumu iekļaušanu vides un reģionālās attīstības politikā plānošanā; Gala ziņojums) Procurement identification number: VARAM 2014/37, 21.08.2014. Mārtiņš Knite, Jānis Brizga, Union “Zaļā brīvība”, 2014.
http://ec.europa.eu/environment/integration/green_semester/index_en.htm
<http://piekraste.daba.lv/>
<http://www.balticdeal.eu/advisory/latvian-wetland-case/>
<http://www.varam.gov.lv/lat/pol/>
http://www.zemgale.lv/images/stories/File/Projektiem/kopsavilkums_ug1.pdf (in Latvian)

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