



Nordregio #05

POLICY BRIEF

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GREEN INFRASTRUCTURE - strategic land use for well-being, business and biodiversity

The Nordic countries are known for their green cities, full of accessible green and blue spaces and surrounded by agricultural land, vast forests and lakes. These green and blue non-built up environments have the potential to offer a wide variety of supporting, regulating, provisioning ecosystem services and preserving cultural heritage. More precisely, Green Infrastructure is a multifunctional network that facilitates the adaptation to and mitigation of climate change, promotes human health and well-being, and enhances biodiversity. Strategic planning of land and water areas is necessary to ensure a coherent Green Infrastructure beyond the urban/rural divides. How do we achieve that?

 Nordregio has studied policy approaches and actions that facilitate Green Infrastructure (GI) in the ESPON countries as part of the GRETA project (www.espon.eu/green-infrastructure). The main findings for the Nordic countries are summarised in this Policy Brief. The aim is to support decision-making processes and political action towards a GI approach. We make recommendations on how to utilise the multifunctional concept of GI in planning processes and outline the kind of added value it could bring to the Nordic countries.

GREEN INFRASTRUCTURE IS A STRATEGIC NETWORK WITH MANY BENEFITS

The underlying GI principle is that the same piece of land can offer many benefits simultaneously, provided its ecosystems are in a healthy condition.

The spatial analysis of GI in Europe reveals particularly strong potential in the Nordic countries. To fulfil its potential, GI needs to be integrated even more closely into national strategies and territorial governance (i.e. spatial planning). The list 'Green Infrastructure's Multifunctional Benefits' explains why regional and local planning should adopt a GI approach.

POLICY OVERVIEW OF GREEN INFRASTRUCTURE IN THE NORDIC COUNTRIES

Denmark, Norway and Sweden either already have GI-specific policies in place or are in the process of drawing them up. Finland and Iceland do not have GI-specific national policies, but a certain amount of coordination does go on at regional level. All five Nordic countries do, however, apply GI principles to other policy sectors. Table 1 indicates which sectors.

During the period 2017–2020, **Denmark** is drawing up a national GI strategy. On both national and local government levels, work is underway to establish a Green Map of the whole of Denmark. This policy process is led by the Nature Agency under the Ministry of the Environment. Although the Green Map is new, GI has been integrated into spatial planning since the first Finger Plan for Copenhagen in 1947. Our study indicates that work on integrating private actors (farmers and land owners) more closely into the planning process for GI is needed in order to gain greater support and acceptance.

Finland does not have a national GI strategy of its own. The Ministry of the Environment states that GI should be implemented within the framework of existing regulations and policies. There are numerous regulatory instruments that could be used for implementing GI, such as the Environmental Impact Assessment Act, the Nature Conservation Act and Ecosystem-based Natural Resources Planning (ENRP). Our study indicates that the regulatory framework is in place but the political willingness to integrate the concept into strategic planning is somewhat limited.

GREEN INFRASTRUCTURE'S MULTIFUNCTIONAL BENEFITS

- **Social benefits:** coherent and accessible green areas provide opportunities for outdoor recreation, which is – important for wellbeing, health and stress relief.
- **Economic benefits:** green areas make the region more attractive and competitive and increase property values.
- **Business benefits:** green areas are a prerequisite for sustainable agriculture, forestry and tourism.
- **Environmental benefits:** green areas reduce the risk of flooding and erosion, lessen the effect of heatwaves, improve air quality and preserve biodiversity.
- **Cultural benefits:** green areas facilitate a sense of cultural affinity.

Strategies and policies for GI in **Iceland** are included in the National Planning Strategy and partly also in the National Action Plan for Climate Change. Based on the contents of the Icelandic Planning Act, the latest version of the National Planning Strategy (2015–2026) has a long-term perspective. The National Action Plan for Climate Change (2010) corresponds to GI as it includes 'Afforestation and revegetation' and 'Restoration of wetlands' as actions that transcend sectors and will help cut emissions. To ensure implementation, our study indicates that linking GI to the ongoing implementation of the 2030 Agenda could be fruitful.

Strategies and policies for GI have been in place in **Norway** since the early 1990s. In 1994, the Norwegian Environment Agency developed the first guidelines on how to integrate green structures into spatial planning. During the 2000s and 2010s, the concept of GI was integrated into spatial planning as 'blue and green structure'. Our study indicates that local and regional authorities might need some guidance and inspiration to make progress with the implementation of the GI approach, possibly through the governments' 'National expectations' for local and regional planning for sustainable development.

Sweden has been developing its national GI strategy since 2018. The Swedish Environmental Protection

Agency is coordinating the work to draw up regional action plans being done by each County Council along with local authorities and other actors. Legislation promoting sustainable land use and environmental protection is in place, for instance the Planning and Building Act and the Environmental Code. Our study indicates that progress could be made on the implementation of the GI approach by linking it more closely to the strategies for regional development and the local authorities' comprehensive plans.

LOCAL AND REGIONAL STORIES

Case study: Hämeenlinna: Commitment to GI management in National Urban Park

The case of Hämeenlinna in Finland's Kanta-Häme Region is an illustration of an ambitious local GI planning approach and explains the management practices in Hämeenlinna National Urban Park (NUP). NUP is a Finnish national land use planning instrument that pinpoints the value of multilevel governance practices in the GI implementation process. Despite there being no national GI strategy, this instrument entails national steering criteria and principles for sustainable urban planning. So far, NUPs have been established in the cities of Hämeenlinna, Pori, Heinola, Hanko, Porvoo, Turku, Kotka, Forssa and Kuopio.

Case study: Greater Copenhagen: GI integrated into regional spatial planning

With the Finger Plan on the Danish side, the case of Greater Copenhagen – which straddles the Danish/

Swedish border – is a classic example of how to integrate GI into regional spatial planning. Politicians and planners have ready access to georeferenced data, tools and plans and are highly aware of the importance of GI. Plans are used to forge agreement on future land and water management in both Sweden and Denmark. These plans include green structures (SE) and green wedges (DK).

CHALLENGES AND OPPORTUNITIES FOR GI IN THE NORDIC COUNTRIES

The main challenges to implementing a coherent green infrastructure beyond urban/rural divides in the Nordic countries are similar to those in other European countries. Urban sprawl is a threat to productive agriculture and forest areas, while densification is a threat to urban greening. Barriers such as technical infrastructure (i.e. motorways and railways) are also threats to GI since they fragment the landscape. The fact that agriculture and forestry are assuming more industrial forms also poses a challenge. Monocultures and food factories make the countryside less accessible to the public for outdoor recreation, seal productive soils and exacerbate the loss of biodiversity.

There are numerous opportunities when it comes to solving these territorial challenges. The GI concept can facilitate a cross-sectoral approach to collaborative spatial planning as a multitude of policy sectors benefit from it.

Sufficient investment, appropriate multilevel governance, proactive spatial planning and flexible con-

Table 1. Green Infrastructure in policy sectors. (Blue = 'Yes'; White = 'No')

	Denmark	Finland	Iceland	Norway	Sweden
GI specific policy					
Land use and spatial development planning					
Transportation					
Water management					
Agriculture, Forestry and Fisheries					
Climate change mitigation and adaptation					
Environmental protection					
Disaster prevention					
Finance					
Energy					
Cultural heritage					
Health					
Social services					
Rural development					

textual adaptation are the key elements for success. These are all in place in the Nordic Region. Now, it is time to use these regulatory frameworks to draw up strategic plans that will safeguard land for business, wellbeing and biodiversity.

Policy recommendations provide some inspiration to help ensure GI is implemented across sectors and to bring all private and public actors on board.

IN CONCLUSION: STRATEGIC GI PLANS IN THE NORDIC REGION

A narrow focus on environmental protection and biodiversity is not an appropriate approach to GI implementation in the Nordic regions and municipalities. They need to balance growth with the preservation of green areas, and to involve private and public actors in the planning and implementation processes.

To get private and public actors involved it is important to highlight that strategic GI planning does not necessarily mean that more land will be turned into protected areas. Instead, the plans for land use could be further coupled with subsidies and certification systems for bio-based products, to encourage land owners to transform their land-based business and building practices.

Through participatory planning dialogues, private and public landowners can ensure that land is used with common strategic interests in mind. These strategic interests are for regional and local politicians to decide, but the shared Nordic vision calls for a GI that ensures wellbeing, business and biodiversity. The results pursued in this research suggest a strategic focus on the social aspects of green areas, particularly ensuring people have access to recreational areas.

POLICY RECOMMENDATIONS

- **The agricultural sector can reduce the use** of pesticides and nutrients (e.g. by changing to organic farming) to increase water and soil quality.
- **By introducing more perennial crops,** agroforestry can decrease the amount of tilling and increase carbon sequestration.
- **The forest sector can switch to certified** forests that set aside 10% of the area or 10 trees/ha for nature conservation.
- **Business and service sectors can use less** resources by switching to recycled or bio-based raw materials and energy supplies.
- **The building and financial sectors can** offset green areas and/or green elements such as green roofs and pocket parks, in new housing, industry developments or green field investments.
- **The transport sector can establish and** enhance bridges for wildlife (i.e. ecoducts) and biodiversity on roadsides to reduce the risk of habitat fragmentation.

ABOUT THIS POLICY BRIEF

The results presented here are based on the ESPON project, 'Green infrastructure: Enhancing biodiversity and ecosystem services for territorial development' (GRETA). Nordregio would like to thank the whole GRETA team for their close collaboration and the ESPON 2020 Programme (2014TC16RFIR004) for funding.

Further reading

GRETA ESPON's homepage at www.espon.eu/green-infrastructure, Nordregio's homepage at www.nordregio.org, and the peer reviewed journal article "Implementing Green Infrastructure in Spatial Planning in Europe" written by Elin Slätmo, Kjell Nilsson and Eeva Turunen. Available at <https://www.mdpi.com/2073-445X/8/4/62>

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Cover photo: Amager Strandpark in Copenhagen, Denmark, is a good example of green blue infrastructure implementation. The state has bought private property to secure people's access to the sea. Photo: Elin Slätmo.