GREEN INFRASTRUCTURE:
BETTER LIVING THROUGH NATURE-BASED SOLUTIONS

The European Commission Communication on Green Infrastructure describes it as a tool for providing ecological, economic and social benefits through nature based solutions, for helping to understand the advantages nature offers human society, and for mobilising investments that sustain and enhance these benefits. In other words, it's a network of nature, semi-natural areas and green space that delivers ecosystem services, which underpin human well-being and quality of life.

Green infrastructure can provide multiple functions and benefits on the same spatial area. These functions can be environmental (e.g. conserving biodiversity or adapting to climate change), social (e.g. providing water drainage or green space), and economic (e.g. supplying jobs and raising property prices). The contrast with grey infrastructure solutions, which typically fulfil single functions such as drainage or transport, makes green infrastructure appealing because it has the potential to tackle several problems simultaneously. Traditional grey infrastructure is still needed, but can often be reinforced with nature-based solutions.

For example, green infrastructure can be used to reduce the amount of storm water runoff entering sewer systems and ultimately lakes, rivers and streams, through the natural retention and absorption capabilities of vegetation and soils. Benefits of green infrastructure in such a case could include increased carbon sequestration, improved air quality, urban heat island mitigation, additional wildlife habitat and recreational space. Green areas also contribute to the cultural and historical landscape, giving identity to places, as well as to the scenery of urban and peri-urban areas where people live and work. Research shows that green infrastructure solutions are less expensive than grey infrastructure, and provide a wide array of co-benefits for local economies, social fabric and the broader environment.

Green infrastructure is relatively new and complex, and there is no widely recognised definition. There is also a lack of quantitative analysis and indicators. As a result, policy makers struggle to integrate green infrastructure into the policy landscape. However, some green infrastructure features go against this trend. For example, ecoducts and natural water management systems, such as green roofs, tend to have clear functions and measures exist to assess their performance.

The financial case for green infrastructure can also seem complicated, but, in addition to providing multiple benefits, as seen above, it is often cheaper, more robust and sustainable. So instead of defaulting to grey solutions like dikes and pipes for flooding, planners should first look at the benefits of restoring floodplains or wetlands.

Finally, green infrastructure is anchored in the EU's Biodiversity Strategy, but it's more than just a biodiversity conservation instrument. It can make a significant contribution to the implementation of EU policy objectives concerning regional and rural development, climate change, disaster risk management, agriculture and forestry, and the environment.

The EU's Green Infrastructure Strategy advocates the full integration of green infrastructure into EU policies so that it becomes a standard component of territorial development across the EU. The strategy also recognises that green infrastructure can contribute to a range of EU policies whose objectives can be achieved through nature-based solutions, and places the use of green infrastructure in the context of the Europe 2020 Growth Strategy.

In addition, the Biodiversity Strategy aims to ensure that 'by 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded

ecosystems'. It also calls on Member States to map and assess the state of ecosystems and their services nationally. This work will contribute to the assessment of the economic value of ecosystem services, and promote the integration of these values into EU and national accounting and reporting systems by 2020.

Green infrastructure is also recognised elsewhere in the EU policy domain, in particular in the Seventh Environment Action Programme (7EAP), the Regional Policy 2014–2020, the Water Framework Directive, the Nitrates Directive and the Floods Directive, and the EU Strategy on Adaptation to Climate Change.

All these initiatives will hopefully lead to improved use of green infrastructure as a policy tool and to practical solutions locally.

The EEA has engaged in green infrastructure research to support policymakers and the public. In 2011, we published the report, Green infrastructure and territorial cohesion, which underlined the importance of developing tools to detect and measure green infrastructure, and provided input to national and regional priority and target setting. It also fed into the EU's Communication on Green Infrastructure.

The EEA study, Spatial analysis of green infrastructure in Europe, evaluates green infrastructure as an ecological and spatial concept for promoting ecosystem health and resilience, contributing to biodiversity conservation, and benefiting humans by promoting the delivery of ecosystem services such as climate change mitigation, provision of key habitats to biota, and habitat connectivity.

A follow-up EEA report, Exploring nature-based solutions - the role of green infrastructure in mitigating the impacts of weather- and climate change-related natural hazards, is imminent. This builds on previous reports to demonstrate how green infrastructure contributes to mitigating adverse effects of extreme weather and climate-related events, which are among the costliest and deadliest natural hazards in Europe and globally. The report focuses on certain types of event that will very likely be amplified by ongoing climate change, i.e. landslides, avalanches, floods and storm surges. In addition, the report also touches upon the green infrastructure and ecosystem services contributing to global climate regulation.