ID 1369 | GREEN INFRASTRUCTURES: A FRAMEWORK TO APPLY A MULTISCALAR AND TRANSECTORAL APPROACH IN PLANNING

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1 TAILORING THE EU GREEN INFRASTRUCTURE STRATEGY

According to EU strategy 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. […]. On land, GI is present in rural and urban settings” (EC, 2013b:3) therefore, it is recognised and referred to a multifunctional network of healthy ecosystems, serving the interests of both people and nature (Figure1).

Referring to planning instruments this drives to assume that a green infrastructure (GI) strategy should favour a better integration between territorial/urban planning and design with sectorial planning and other instruments and policies with spatial impact by the mean of the multifunctional nature of GI.

Figure 1 – Components of a Green Infrastructure (EC 2013b:8)

In order to foster the improvement of approaches and tools towards its implementation, the planning experience currently under way in Lombardy Region (IT) related to the new Regional Landscape Plan (RLP) is a good example that assumes concretely the role and potential of green infrastructures in spatial planning with a multi-scalar approach. The RLP fully undertakes the principles of the European Landscape Convention (ELC), where: ”Landscape” means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors” (COE, 2000), recognizing the importance of environmental and ecological components in landscape planning, and improving the integration between cultural and environmental aspects. Moreover, according to the ELC, the plan pays great attention to “landscapes that might be considered outstanding as well as every day or degraded landscapes” (COE, 2000) considering that this typology of landscape covers a large part of Lombardy, corresponding to the metropolitan region of Milan.

The new plan proposes a strong integration between cultural asset (historical), natural (ecological, environmental) and agricultural components, adapting different protection or enhancement rules according to the wide range of diversity characterizing the regional landscape (Regione Lombardia, 2015; Pedrazzini, 2016). A very wide ranking of landscapes and environmental mosaic composes this ten million inhabitants region: from the metropolitan region of Milan, characterized by high anthropic and environmental pressure (up to 7,000 inhabitants/km2 in Milan), to the southern valuable agriculture plain and to the northern alpine region with its wilderness and high ecological value. According to this diversity and complexity in term of natural and cultural asset, antrophic pressure and environmental risks, the RLP sketches the main regional strategy and targets that should be further developed and applied at different level of governmental competence, with specific and tailored aims and operative solutions according to the local specificity and by favouring a citizens’ participative approach.

2 A MULTI-SCALAR NETWORK FOR AN INTEGRATED AND EMPOWERED PLANNING

In order to give concreteness to the integration between environmental, ecological, agricultural and cultural aspects the main RLP project consists in designing and implementing the Regional Green Network (RGN) as the fundamental green infrastructure for a balanced regional development (figure 2). This is coherent and fully assumes the concept of multi-functionality of a Green Infrastructure, particularly important in a region with a very intense anthropic feature as in Lombardy. Due to the comprehensive character of the regional Landscape plan, the RNG represents a strategic project, in accordance with the cross-sectoral and cross-scale application as defined by the European Green Infrastructure strategy, particularly considering that "the implementation of green infrastructure would benefit from integrated spatial planning early in the planning process" (EC, 2016:150).

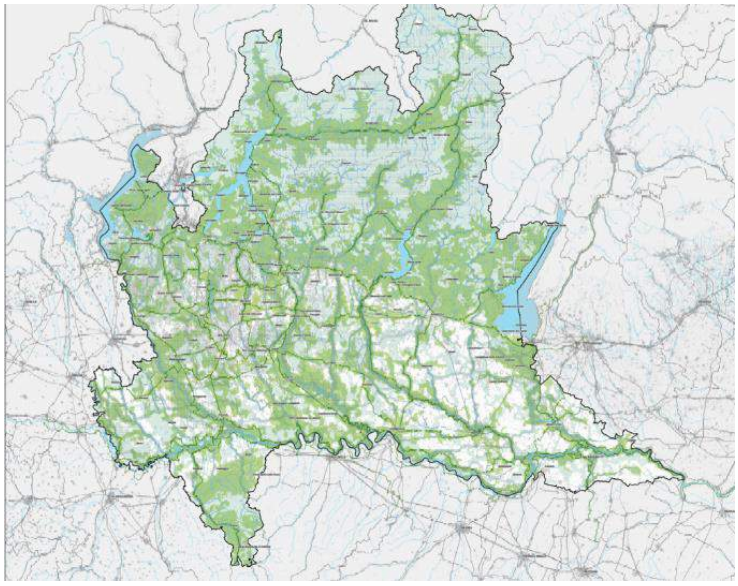


Figure 2 – Regional Landscape Plan: proposal of the RGI (RL and DASTU)

The proposed RGN is founded on the existing Regional Ecological Network (REN), composed of sites and networks of ecological importance and characterised by biodiversity (Natura 2000 sites, Sites of Community importance, Ramsar Sites, regional and national parks, etc.).

To the REN other components such as agricultural, cultural, historical and places of leisure are added providing and ensuring the accessibility to the regional green infrastructure by citizens. The added value of the RGN system is to allow a real comprehensive and integrated planning approach to the diverse elements of the natural, cultural and rural systems favouring the access and use of RGN by soft mobility and transport network such as pedestrian, cycle paths and public transport.

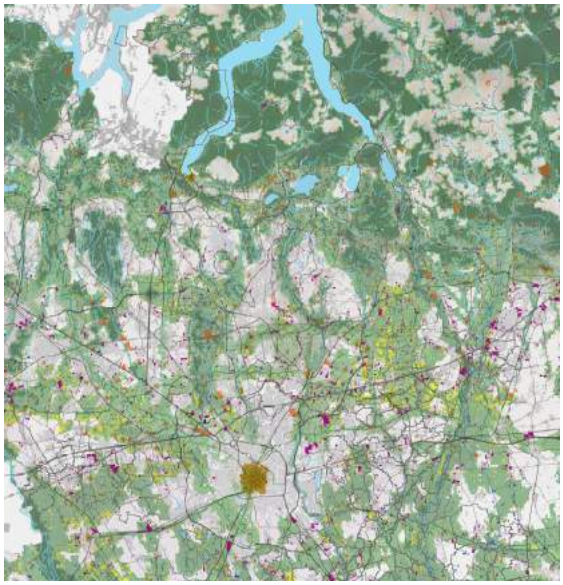
About the spatial planning dimension of the RGN, it works at different levels in term of contents, targets and governmental relationships. The network is designed by the RLP, appointing the main objectives at regional level as a multifunctional infrastructure; later are delivered to the different levels of administrative and spatial competences the task to improve and develop specific contents, subsequently the related Green infrastructure by the mean of the provincial and urban planning instruments will be planned.

Referring to the contents, the RGN is designed assuming the main landscape and environmental asset characterising the region (eg.: agriculture, lakeshores, peri-urban agriculture, forests, historical and irrigation canals, historical paths, green tranquil areas, spring water, etc.), finding out the main focal points where the environmental network and the landscape cornerstone elements converge (Figure 3).

According to the diverse territorial specificities, these elements could be open areas where the presence of ancient monasteries or historical rural settlements is combined with precious agricultural areas and wetlands, rural historical paths and irrigation canals, and where the RGN provides the integration of green and blue networks. This allows combining in a durable e strategic perspective the diversity and richness of a territory where the natural characterization was enriched during the time by the humankind, carrying out a spatial structure where natural and anthropic elements established a good integrated and working well system, identified in a typical landscape feature.

The RGN works proactively orienting its construction with linking sites of environmental importance to other elements of landscape and cultural importance in a unique network.

The RLP establishes by the RGN the main regional priorities in the environmental context and the focal points of the network. Strategic regional knots, cornerstones and areas (e.g.: main rivers, lakes, paths, eco-museums, etc.) are planned, giving to other administrative levels specific competencies and tasks to improve the system based in the regional ecological backbone network. Startig from the RGN network, provinces and municipalities will improve secondary networks and implement territoral development according to the RGN structure by the mean of their planning instruments.



To complement this approach the RGN works on areas, knots and part of the network under risk for anthropic pressure or intercepting derelict areas needing to be recovered as recognised of priority importance by the RLP.

Figure 3 – Regional Landscape Plan: proposal of the RGI – Detail (RL and DASTU)

As an example, in the metropolitan region of Milan, these sites are along the rivers or in the southern periurban fringe of the city that is particularly subject to settlement pressure but where is still present an important agricultural and environmental asset. Infact the metropolitan region is characterized by dense and sprawled urban settlements, residual open space, marginal agriculture, but also by valuable ancient rural settlements, ancient monasteries and the lasting countryside.

Further, residual spaces with important biodiversity, a valuable agriculture production and a tradition of rural activities still exist in this area. The RGN can help to put in value and give a specific perspective to urban agriculture, attention to the periurban landscape and revaluate derelict peripheral areas within an integrated green network strategy.

This way the RGN responds to both the principles of conservation (with protection) and restoration (with recovering), allowing to enhanche the territorial capital of a rich despite unbalanced region. The RGN acts in a more extended way compared to that proposed by the European Environmental Agency (EEA, 2014:19) where the RGN works mainly on the habitats and ecosystems.

Starting from the general objective of the landscape improvement as main target of the regional plan, the related aim is to recognize the RGN as a natural and semi-natural structure characterized by multifunctional functions.

It is designed and recognised as a multifunctional resource, capable of delivering a wide range of benefits to citizens and nature. It can contribute to climate mitigation, providing ecosystem services, biodiversity protection, renewable energy, enhancing identity, cultural values and resilience.

The plan of the RGN should establish at regional scale the governance rules and the main contents, aims and strategy for its implementation, giving to the decision makers at different scale of planning the responsibility (town and country planning) to develop and implement contents of the RGN at the different territorial scales. This is by the application of the principle of subsidiarity, in order to improve the role and responsibility of decision makers more close to citizens, with a multi-scalar and learning process and for improving active citizens' participation to the decision making process.

Further, in the plan it is very important to improve the role of a RGN in order to provide a framework useful to connect and coordinate at regional scale different policy domains such as agriculture, forestry, nature, energy, culture, tourism, and disaster prevention. In planning policies, the RGN should be useful to promote concrete and fruitful relationships between built up, periurban and rural areas, giving a framework in which connections and relationships include proactive protection and carefully transformation policies.

3 A LEARNING BASED PROCESS

The importance of this project is that RLP intends to develop the RGN as a green infrastructure with the contents of a GI strategy as a fundamental element in a comprehensive planning instrument. This can improve a strategy directly influencing sectorial planning/policies and territorial planning, in fact in Italy landscape planning is directly referred to a constitutional competence and then it is hierarchically higher and more powerful compared to other planning instruments. Then the Regional Landscape Plan can assume the role of a meta-coordinator of diverse but convergent strategies environmentally oriented (climate adaptation, sustainable energy, biodiversity, land taking, etc.).

A second issue that gives relevance to RGN project is because it allows a sort of extension to the concept of Green Infrastructure strategy, being the RGN tailored and adapted according to specific contents and feature of the diverse territories, and then giving a comprehensive value to the concept of multi-functionality of the RGN.

A third point of interest is referred to the structure of the RGN that implies a strong awareness of the diverse governmental competencies involved in its planning and management. It is created at regional level and contains the main strategic objectives but it is strictly linked to the further level of planning for its successfully implementation, then part of the contents and design have to be completed for its further improvement by other level of planning and management in a sort of vertical horizontal cross-disciplinary coordination.

As in the case of GI, they can work at different level: from the EU (with the GI strategy) to national and regional level with building up the main backbone network structure sketching the principal feature of a more extensive physical structure.

Local or town/city scale	Regional and national scale	EU level	Descriptor
Natural and semi-natural ecosystems, such as pastures, woodland, forest (no intensive plantations), ponds, bogs, rivers and floodplains, coastal wetlands, lagoons, beaches, marine habitats	Extensive agricultural and forest landscapes, large marsh and bog areas, rivers and floodplains, shorelines/coastal zones	Freshwater systems, major river basins, mountain ranges, regional sea basins	Core areas – outside protected areas
Local nature reserves, water protection areas, landscape protection areas, Natura 2000 sites	Regional and National Parks and wilderness zones (includes Natura 2000 sites)	Ecological Networks with cross-border areas, incl. Natura 2000 network	Core areas/protected areas
Restored areas which were before fragmented or degraded natural areas, brownfield land or disused quarries, transitional ecosystems due to land abandonment or regeneration processes	Restored ecosystem types	Restored Landscape systems covering a substantial part of agricultural/forestry areas and industrialised sites, including cross-border areas	Restoration zones
High nature value farmland and multi-use forests (such as watershed forests); protection forests (against avalanches, mudslides, stonefall, forest fires); natural buffers such as protection shorelines with barrier beaches and salt marshes	Extensive agricultural landscapes, sustainable forest management on regional and national level, functional riparian systems	Transboundary landscape features on river basin or mountain range level, sustainable coastal and marine management zones related to the respective sea basin	Sustainable use zones
Street trees and avenues, city forests/woodlands, high-quality green public spaces and business parks/premises, green roofs and vertical gardens, allotments and orchards, storm ponds and sustainable urban drainage systems, city reserves incl. Natura 2000	Greenways, green belts, metropolitan park systems	Metropolitan areas with substantial share of high quality green areas in Europe, including coherent approaches in cross-border urban zones.	Green urban and peri-urban areas
Hedgerows, stone walls, small woodlands, ponds, wildlife strips, riparian river vegetation, transitional ecosystems between cropland, grassland and forests	Multi-functional, sustainably managed agricultural landscapes, riparian systems	Supra-regional corridors, substantial share of structure-rich agricultural, forestry or natural landscapes	Natural connectivity features
Eco-ducts, green bridges, animal tunnels (e.g. for amphibians), fish passes, road verges, ecological powerline corridor management	De-fragmentated landscapes, improved areas along transport and energy networks, migration corridors, river continuum	European-wide or transnational defragmentation actions	Artificial connectivity features

Figure 4 – Physical features of Green Infrastructure in relation to scale and function (EC, 2016:156)

Particularly, at regional level have to be fixed the main strategic green hubs and linear elements of the network, constituting the cornerstones of the strategy in order to further improve a coherent network of GI at local level and further carry out operative measures (projects) springing up a virtuous circle (Figure 4).

In the case of a strong anthropic region like Lombardy a GI have to be tailored according to the specific territorial feature, taking in account and valorizing specificities of the complex mosaic composing it. The RGN and the subsequent Provincial Green Network and Local Green Network have to interact positively to work out efficient solutions against the risk of further fragmentation of the territory and ecosystems. In

positive, the diverse green networks can to improve relationships between the natural and antrophic systems in order to ensure efficient ecosystem services.

In the European Commission communication Green Infrastructure – Enhancing Europe's Natural Capital (EC, 2013a), GI is defined as a tool for providing ecological, economic and social benefits through natural solutions, helping people to understand the advantages nature offers human society and to mobilise investments that sustain and enhance these benefits (Figure 5).

Being the GI a spatial concept providing services at different scales it could assume the character of a governance instrument that allows coordination and integration of policies. In a very antropized region like Lombardy the most important resource will be even more an efficient and reliable territorial system and the RGN can help to go behind the typical conflict between grey and green infrastructures, focusing on the quality of landscape and environment as a key issue for the durable economic attractiveness of a region.

Figure 5 – GI provides multiple functions (EEA, 2014)

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