



Interreg



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Experiences of pilot projects

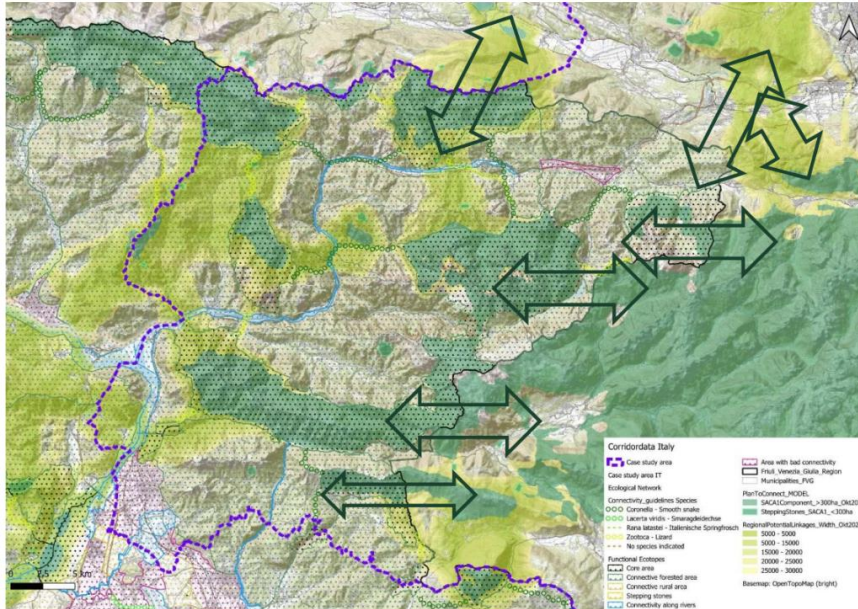
Towards an Alpine-wide protocol for ecological
connectivity

Regione Veneto, Eurac Research



Most common approaches

Structural to functional



Structural models

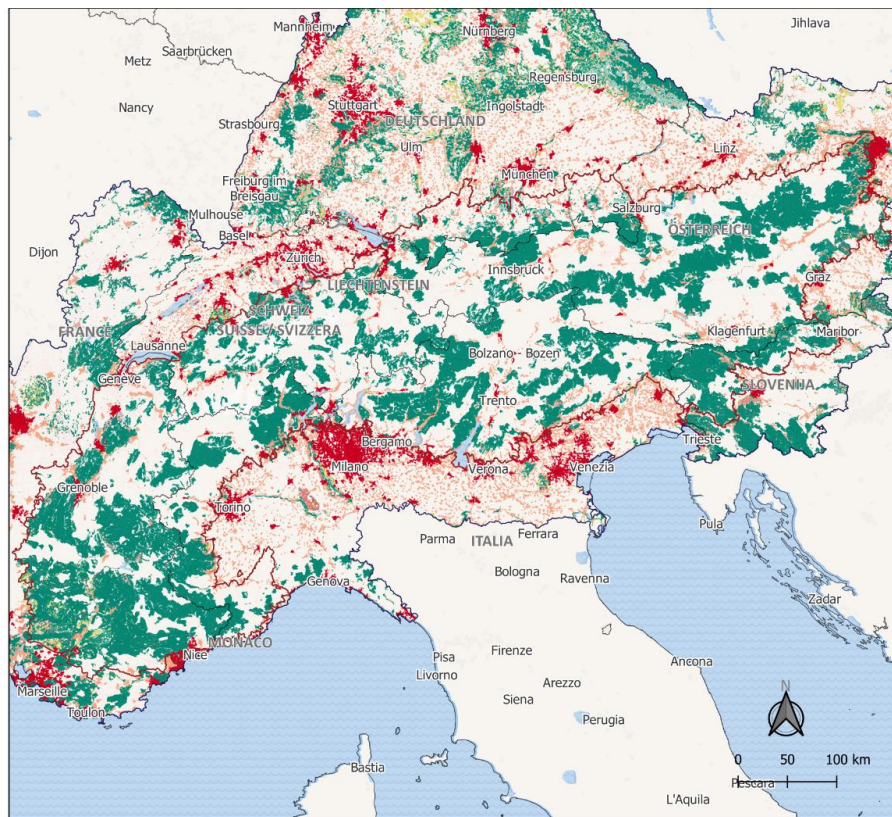
- Example: Transnational area between Austria, Italy and Slovenia
- Using structural analysis on alpine –wide level
- Working on known corridors

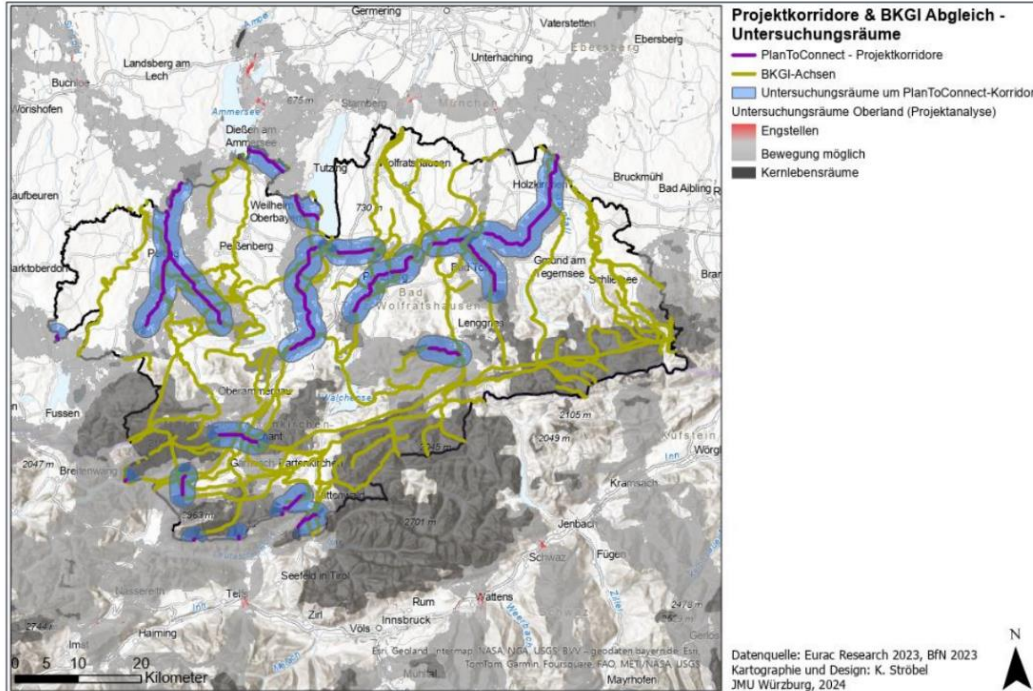


Structural models

Spatial Planning Areas for Biodiversity Protection

- Spatial planning proposal of protected areas, combining the criteria of low fragmentation, low spatial development, and a high level of ecologically favourable areas. This facilitates the identification of potential sites for the expansion of protected areas, highlighting areas within the Alpine region that could be prioritized for conservation and further ecological preservation efforts.





Structural models

- Oberland, Bavaria (JMU)

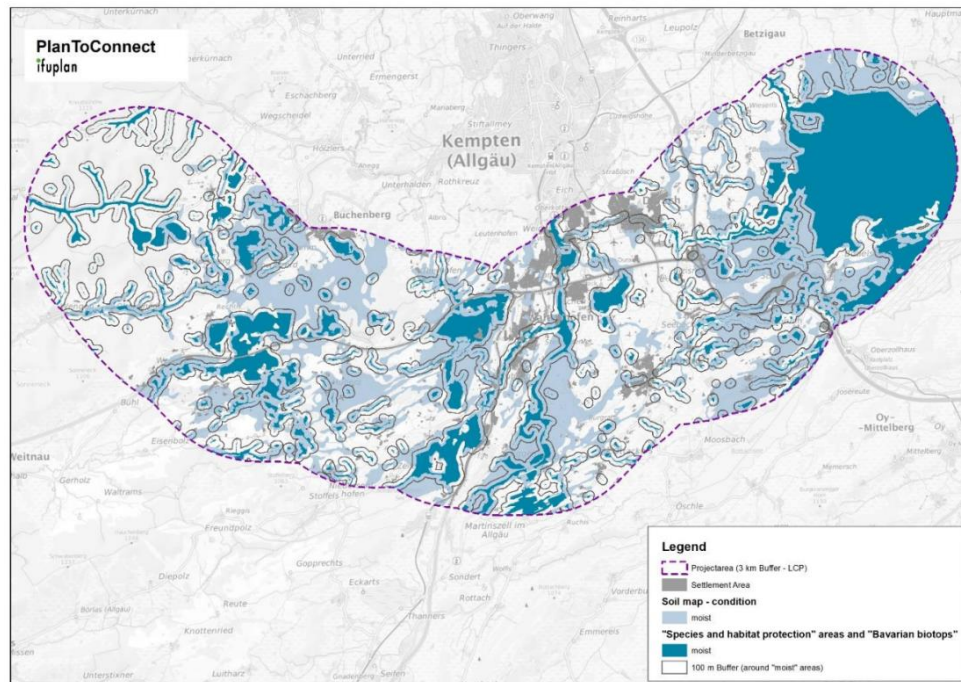


Figure 18: Core areas of wetland habitats (moist) buffered and dissolved with a distance of 100 m and moist soil conditions

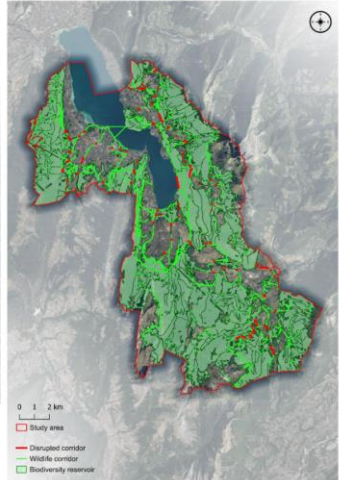
Habitat models

- Bavaria (ifuplan)
- Wetland habitats (moist)



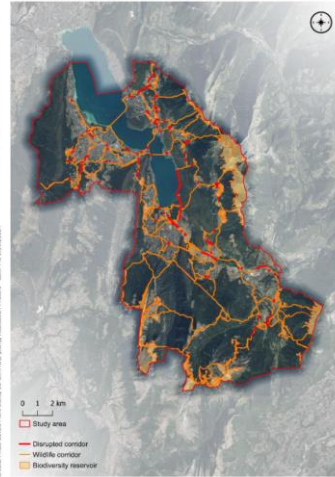
- Bavaria (ifuplan)

PlanToConnect Least cost path map



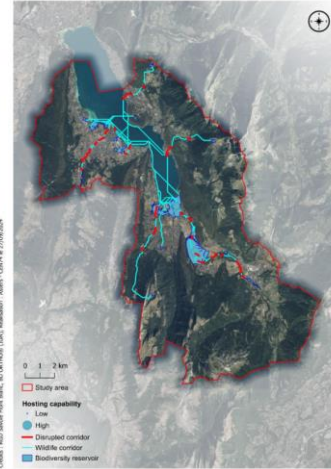
forests

PlanToConnect Least cost path map



open land

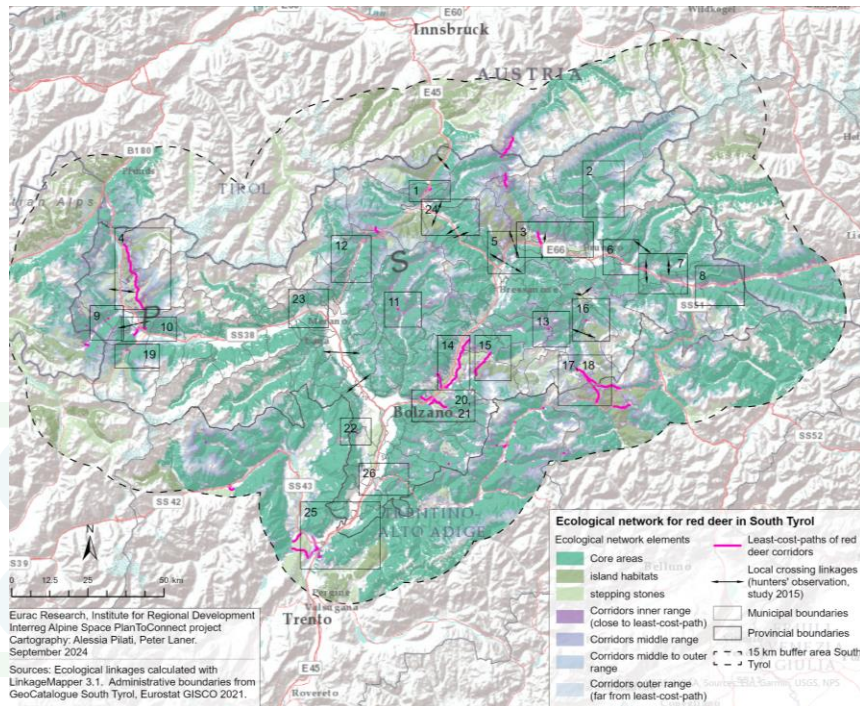
PlanToConnect Least cost path map



water and wetlands

Habitat models

- Annecy (ASTERS)
- “We will focus our approach on broad habitat protection of different types of habitats such as forests, hedgerows, wetlands, and grasslands in order to protect species passing through or living in it. We excluded a species approach analysis.”



Species model

- South Tyrol
- Red Deer model
- Identifying concrete passages in valley bottoms to be protected/ restored



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Innovative approaches: GBI networks

Working on multifunctionality (Veneto Region, Sondrio)



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity provision of priority Ecosystem Services)

Define Objectives and Scope

Key Objectives:

- ✓ Enhance ecological connectivity.
- ✓ Support the provision of ecosystem services (e.g., water regulation, carbon storage, recreation).

Scale and Extent:

- ✓ Determine the geographic scale (e.g., regional, national, transboundary) and the level of detail.

Focal Components:

- ✓ Identify priority ecosystems, species, or services (e.g., pollination, climate resilience).

Prioritize Areas for Conservation and Restoration

Critical Habitats and Corridors:

- ✓ Highlight core areas and priority corridors for connectivity.

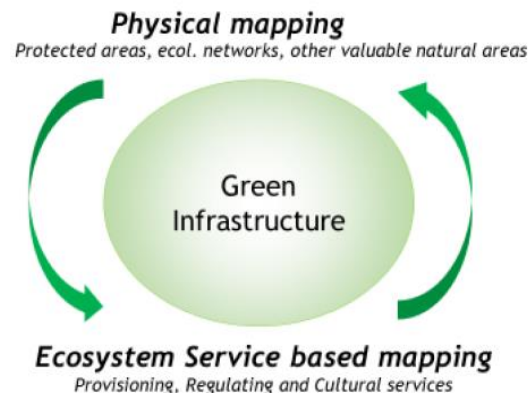
High-Value Ecosystem Service Areas:

- ✓ Prioritize areas providing key ecosystem services.

Degraded but Restorable Zones:

- ✓ Identify degraded areas where restoration would enhance connectivity and services

Approaches to map GI



2018 JRC EEA



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity provision of priority Ecosystem Services)

Integrate stakeholder input

Participatory mapping:

- ✓ Collaborate with local communities, governments and NGOs to validate maps refine priorities

Local Knowledge:

- ✓ Incorporate local knowledge of ecosystem functions and connectivity

Consensus building:

- ✓ Use workshops and stakeholders meetings to align on priorities and strategies.

Develop and action plan

Conservation and restoration plan:

- ✓ Design strategies for protecting core areas, enhancing corridors and restoring degraded zones

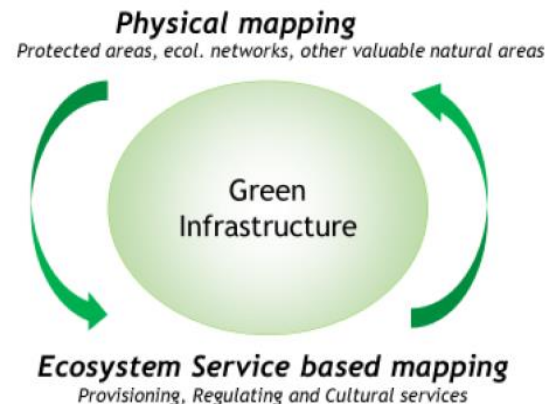
Policy Integration:

- ✓ Align GBI mapping outputs with policy frameworks (e.g spatial planning, climate adaptation plans, green plans etc.)

Ecosystem Service Markets:

- ✓ Explore opportunities for private-public partnerships, ESG (environmental social and governance), payments for ecosystem services (PES) or carbon credits

Approaches to map GI



2018 JRC EEA



Strategic Green Infrastructure and Ecosystem Restoration

(GBI networks for connectivity and provision of priority Ecosystem Services)

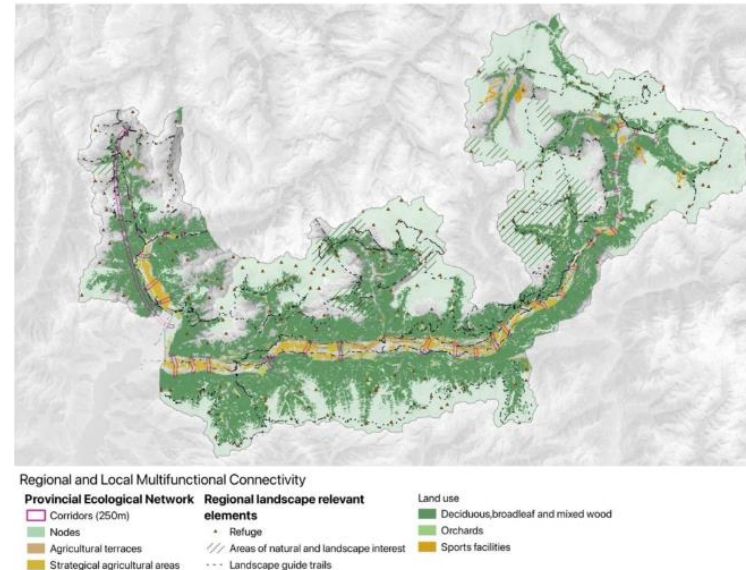
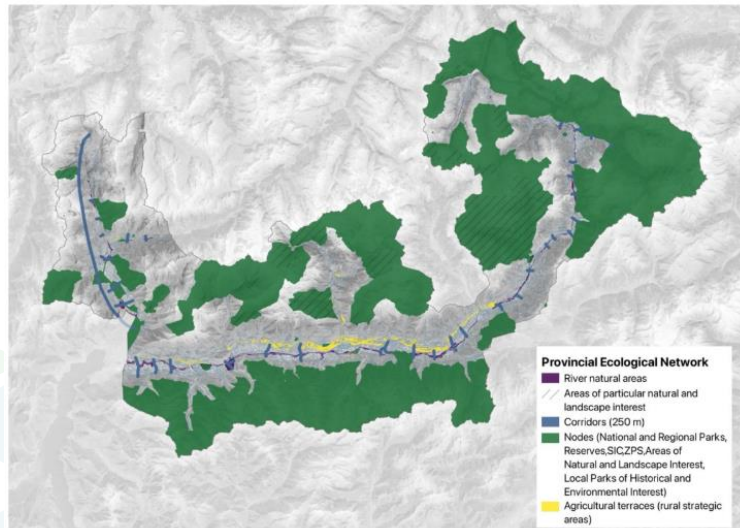


Case Study Province of Sondrio

WORKING STEPS

- 1 COMPILATION OF PROTECTED AREAS within the Sondrio province
- 2 COMPILATION AND ANALYSES OF MULTIFUNCTIONAL GBI ELEMENTS within the Sondrio province
- 3 DEFINITION/REFINEMENT OF OBJECTIVES FOR MULTIFUNCTIONAL GBI CONNECTIVITY
- 4 COMPILATION & ANALYSIS OF REGIONAL AND LOCAL DATA
- 5 BARRIER ANALYSES
- 6 ECOSYSTEM SERVICES MAPPING & ASSESSMENT
 - Habitat Quality
 - Stormwater Retention
 - Nutrient Retention
 - Crop Pollination
 - Agricultural Value
 - Sediment Retention
- 7 MULTISYSTEMIC COMPOSITE VALUE ASSESSMENT
- 8 OVERLAYING PROCESS AND INITIAL CLASSES' DEFINITION
- 9 MULTIFUNCTIONAL GBI CLASSES' CHARACTERIZATION

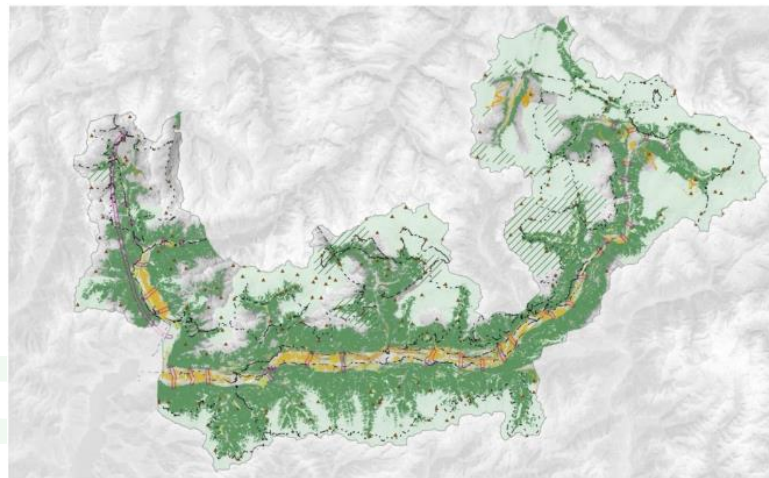
Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



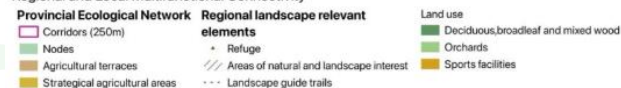
Provincial ecological network Vs Multifunctional connectivity



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



Regional and Local Multifunctional Connectivity



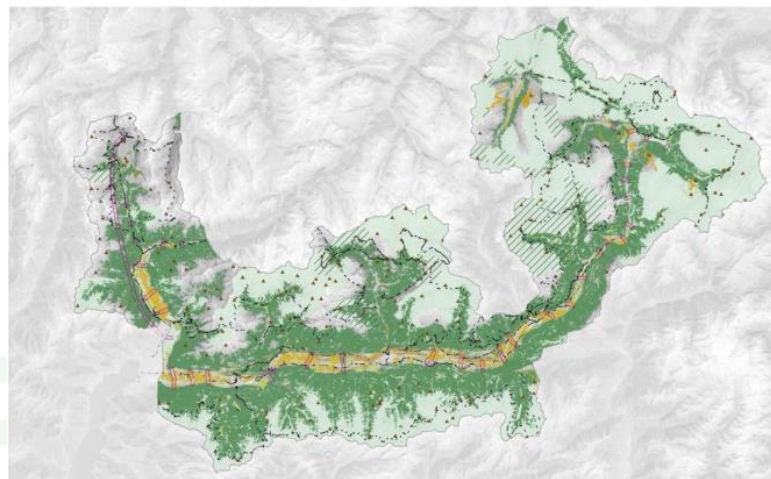
Threats

(as highlighted in “Soil Consumption, Territorial Dynamics, and Ecosystem Services,” ISPRA 2016)

- One of the primary threats to ecological connectivity is the progressive degradation of soil, along with the loss of its functions and associated ecosystem services.
- Increasing anthropization and soil sealing, in particular, heighten the risks of flooding, contribute to climate warming, threaten biodiversity, natural disaster such as landslides, and lead to the gradual loss of rural and natural landscapes



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



Regional and Local Multifunctional Connectivity

Provincial Ecological Network	Regional landscape relevant elements	Land use
Corridors (250m)	Refuge	Deciduous, broadleaf and mixed wood
Nodes	Areas of natural and landscape interest	Orchards
Agricultural terraces	Landscape guide trails	Sports facilities
Strategic agricultural areas		

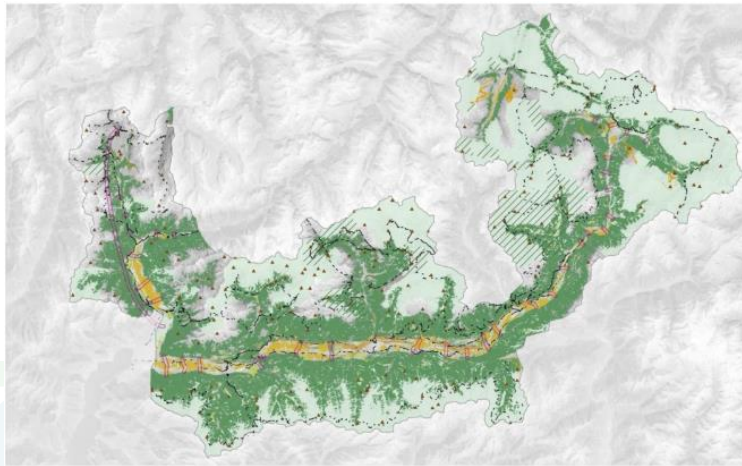
Ecosystem Services

The main structure of the green and blue infrastructure for the province of Sondrio is based on the analysis and assessment of a series of ecosystem services selected according to the area's specific characteristics:

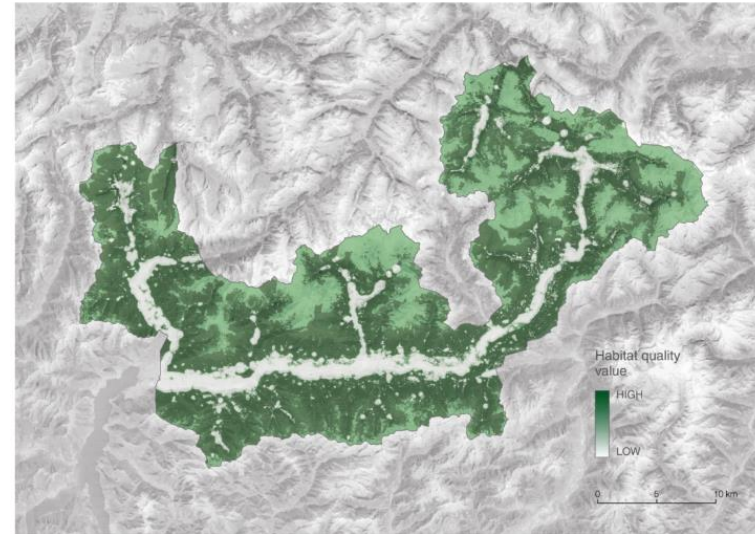
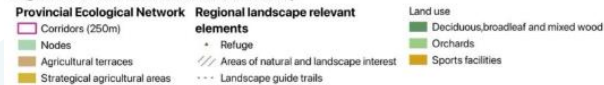
Habitat Quality,
Stormwater Management,
Crop Pollination,
Nutrient Retention,
Agricultural value,
Sediment Retention
Cultural value.



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



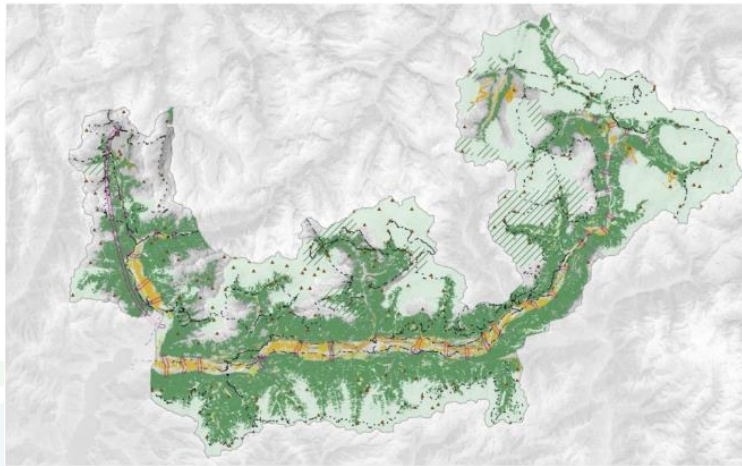
Regional and Local Multifunctional Connectivity



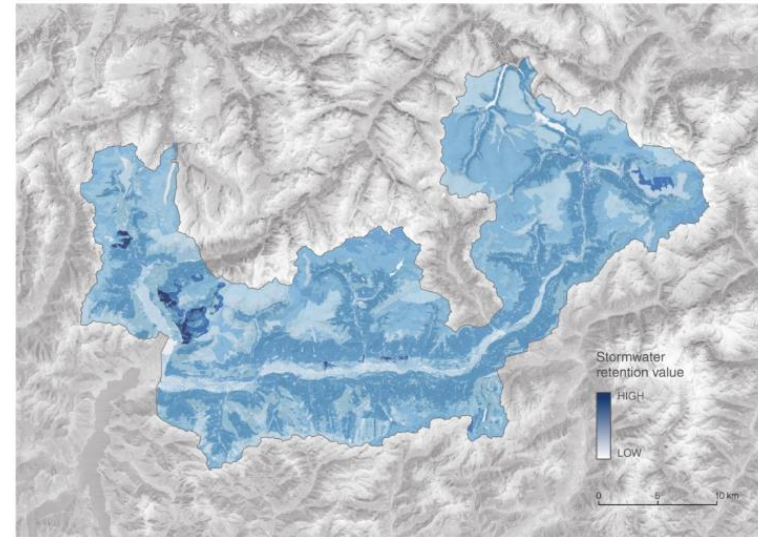
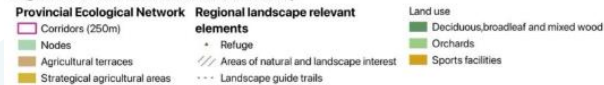
Multifunctional connectivity Vs Habitat quality



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



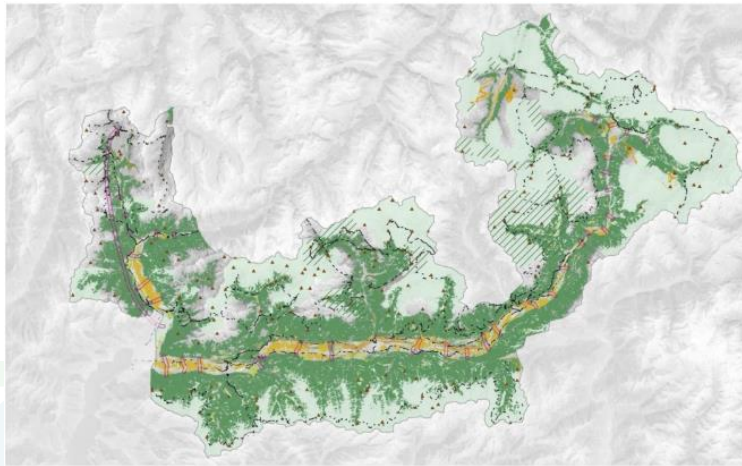
Regional and Local Multifunctional Connectivity



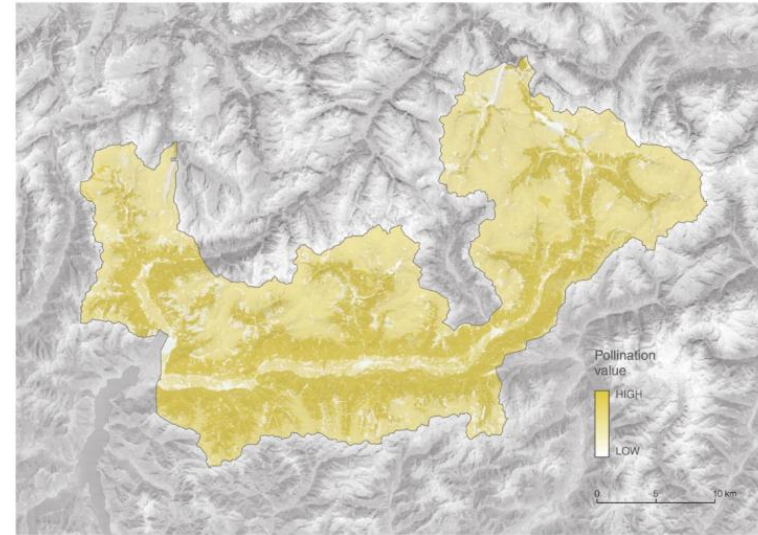
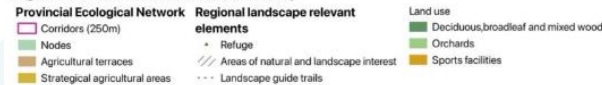
Multifunctional connectivity Vs Stormwater retention



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



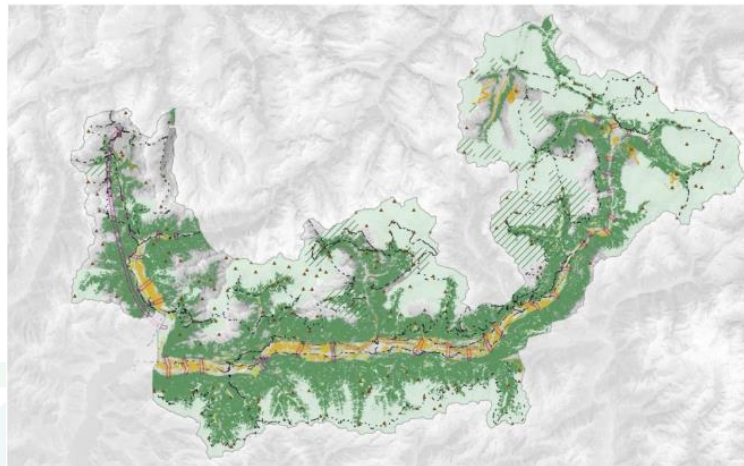
Regional and Local Multifunctional Connectivity



Multifunctional connectivity Vs Crop Pollination



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



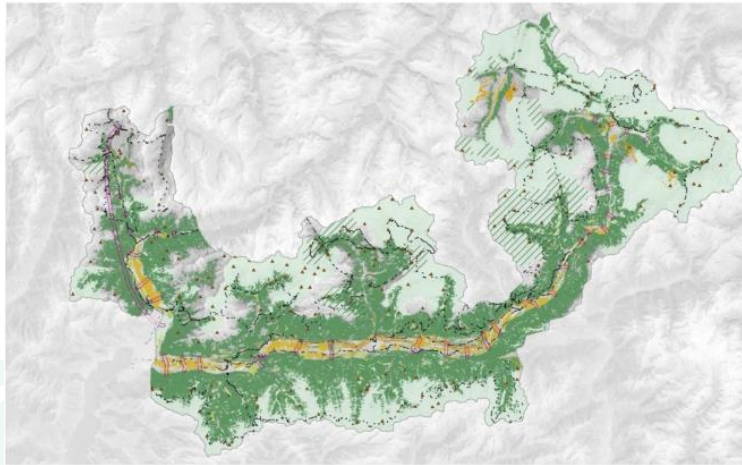
Regional and Local Multifunctional Connectivity



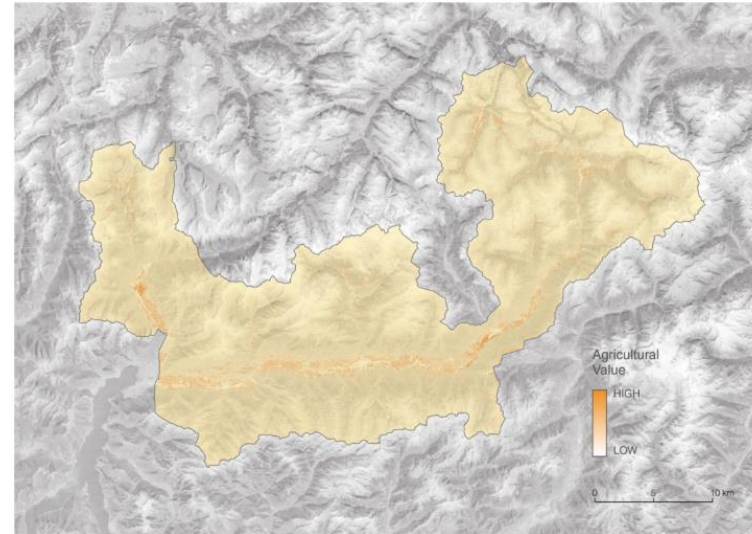
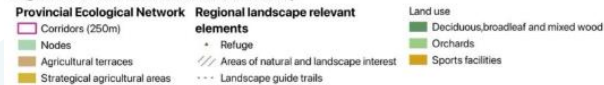
Multifunctional connectivity Vs Nutrient retention capacity



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



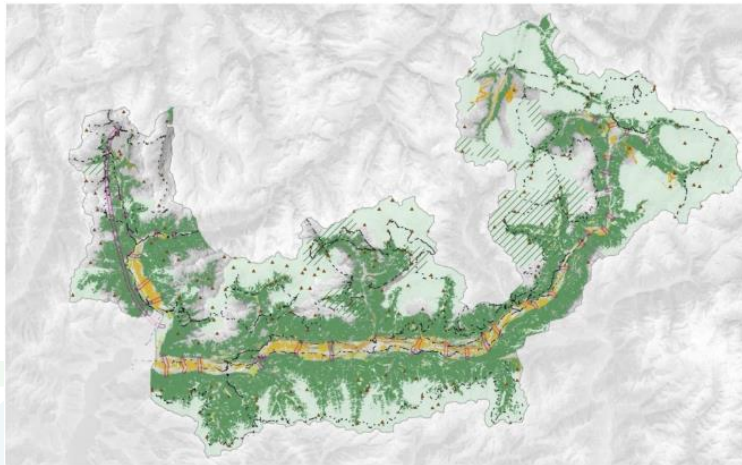
Regional and Local Multifunctional Connectivity



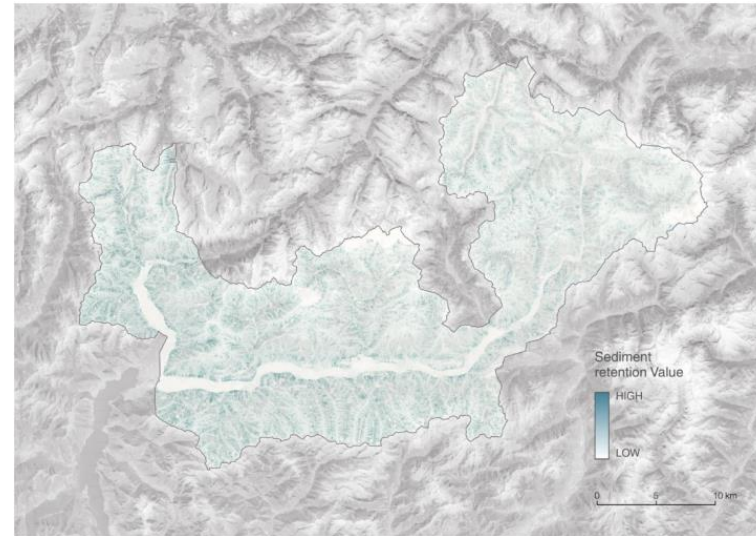
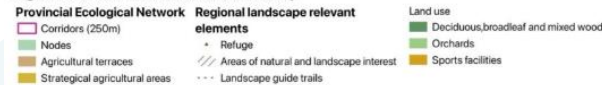
Multifunctional connectivity Vs Agricultural value



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



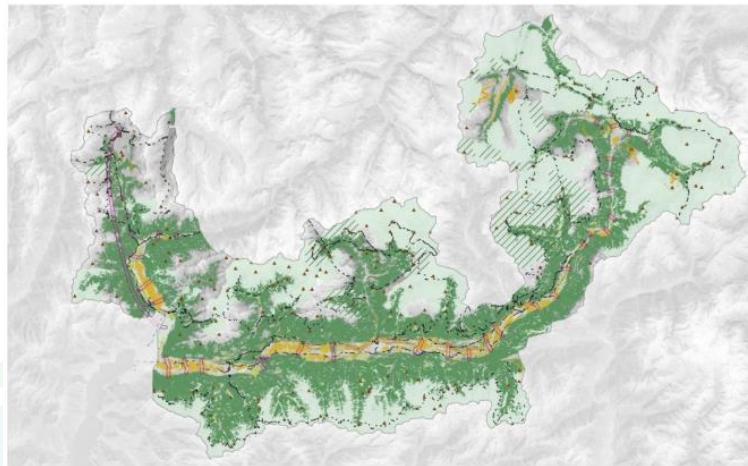
Regional and Local Multifunctional Connectivity



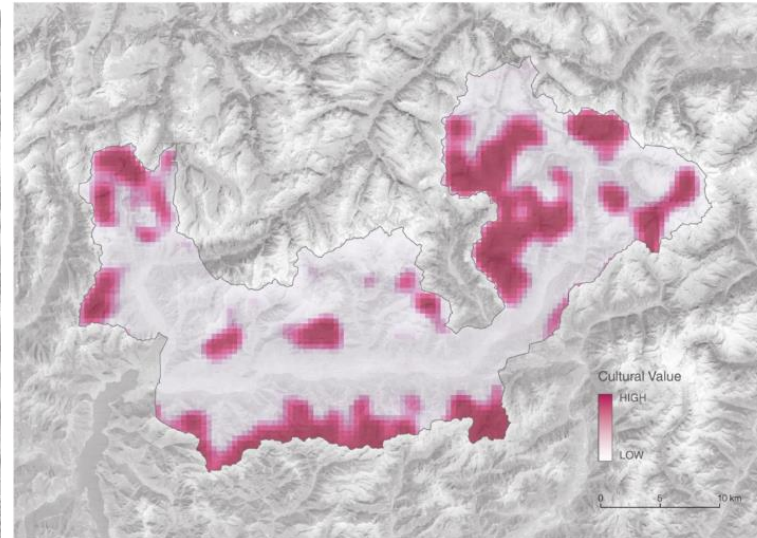
Multifunctional connectivity Vs Sediment retention capacity



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



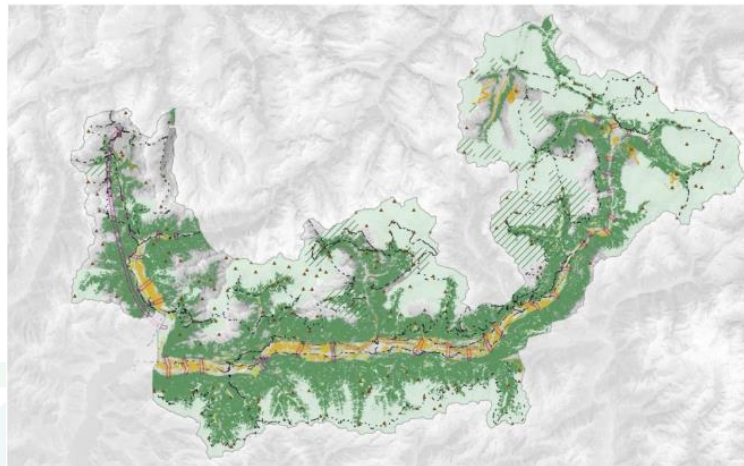
Regional and Local Multifunctional Connectivity



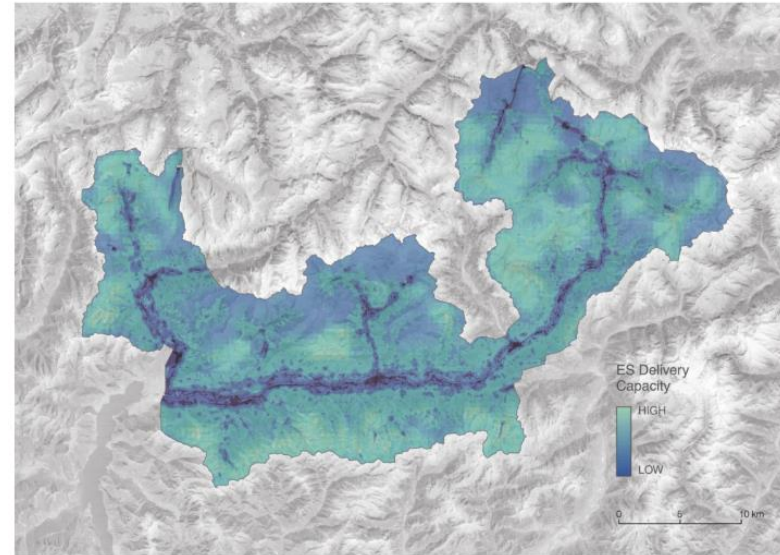
Multifunctional connectivity Vs Cultural value



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)



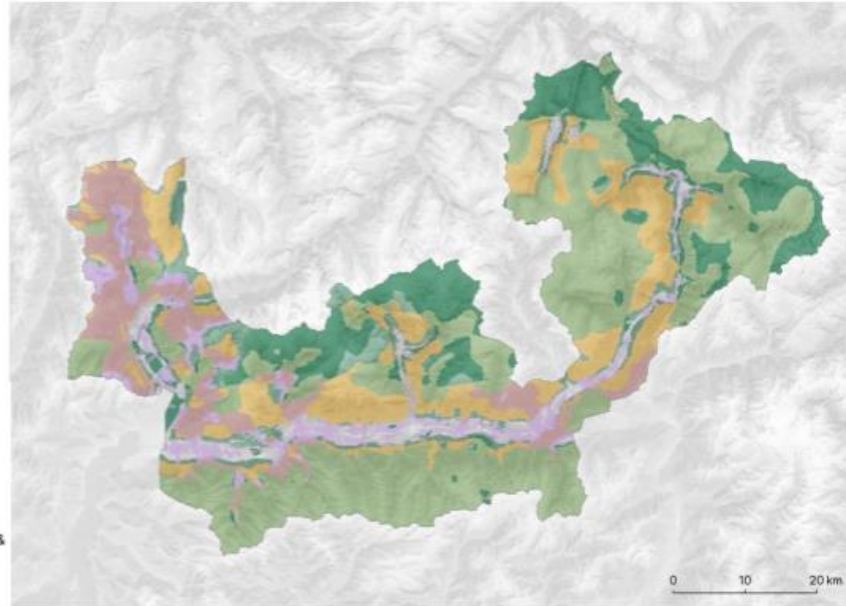
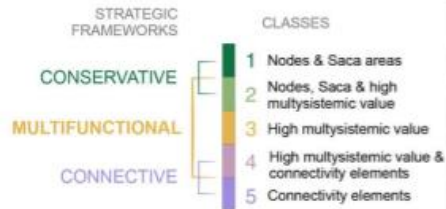
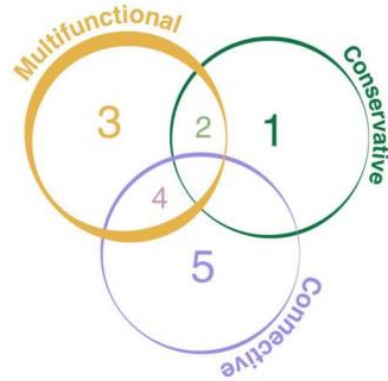
Regional and Local Multifunctional Connectivity

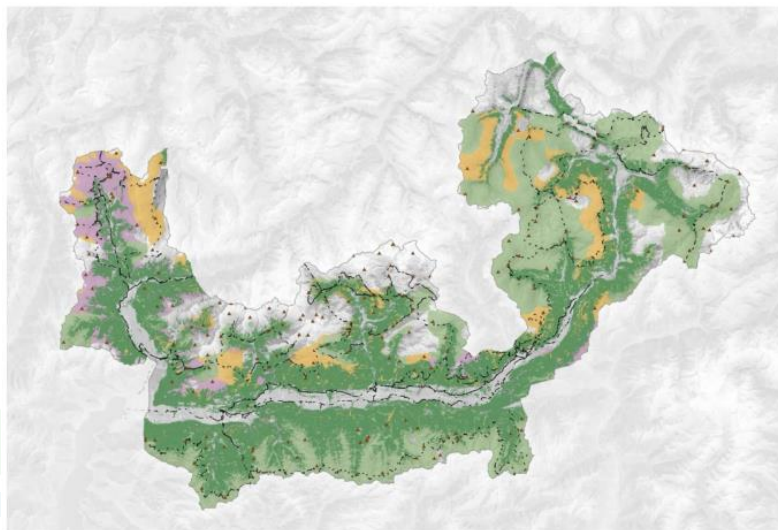


Multifunctional connectivity Vs Multisystemic composite value



Strategic Green Infrastructure and Ecosystem Restoration (GBI networks for connectivity and provision of priority Ecosystem Services)





Multifunctional GBI groundwork

GBI Multifunctional frameworks

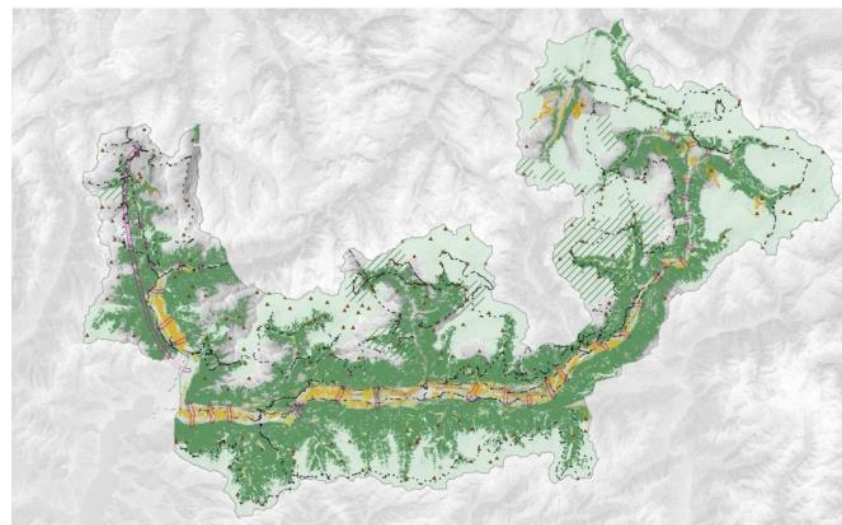
- 2. Nodes, SACA & High multisystemic value
- 3. High multisystemic value
- 4. Connectivity elements & high multisystemic value

Regional and local multifunctional connectivity

- Refuge
- Landscape guide trails

Land use

- Deciduous, broadleaf and mixed wood
- Orchards



Regional and Local Multifunctional Connectivity

Provincial Ecological Network

- Corridors (250m)
- Nodes
- Agricultural terraces
- Strategical agricultural areas

Regional landscape relevant elements

- Refuge
- /// Areas of natural and landscape interest
- Landscape guide trails

Land use

- Deciduous, broadleaf and mixed wood
- Orchards
- Sports facilities



Thank you for your attention!
Danke für Ihre Aufmerksamkeit!
Hvala za pozornost!
Merci pour votre attention!
Grazie per l'attenzione!