Strengthening Ecological Connectivity in the Caorle Lagoon Wetland System:

Restoring Nature and Landscape through Shared Governance in the Caorle Wetlands

Interreg Co-funded by the European Union

Alpine Space

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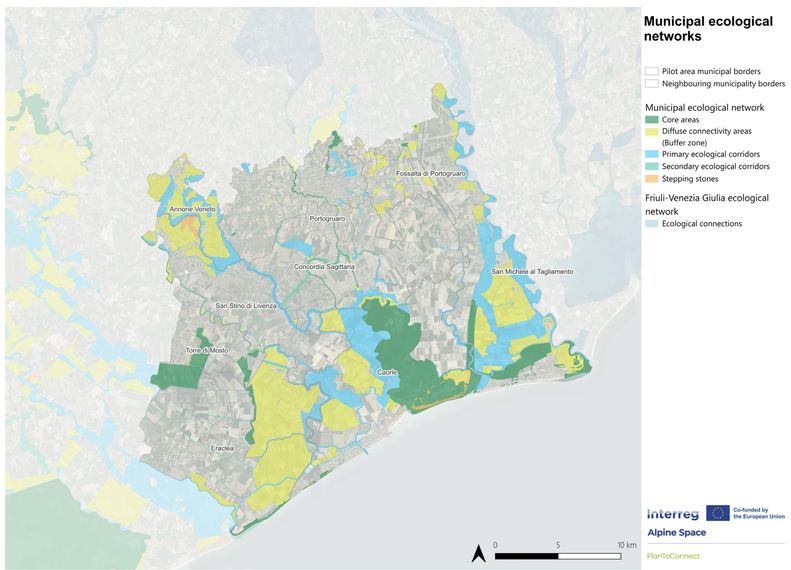

1 Why act here? — "Ecological connectivity in Veneto Orientale"

The pilot area lies in the eastern Veneto Region, within the Metropolitan City of Venice and the lower Livenza and Lemene river basins. It extends from the Adriatic coastline and lagoon systems (Vallevecchia, Caorle Lagoon) to inland agricultural plains, with altitudes from sea level to 20 m. The zone is a strategic hinge between coastal wetlands, river corridors and agricultural mosaics. Main pressures include sprawling seaside urbanization, linear infrastructures, intensive monocultures, mass tourism and growing climate risks (floods, salinization, heat waves). Strengthening ecological connectivity is vital to secure biodiversity, reduce hydrogeological risk and safeguard ecosystem services. A window of opportunity is offered by the revision of the regional planning law, the ongoing Wetland Contract of the Caorle Lagoon system for the preservation of the natural capital, and forthcoming updates of landscape, metropolitan and municipal plans.

2 Case study objectives

The pilot seeks to restore continuity between coastal wetlands and inland river corridors, reinforcing the role of agricultural land and the hydrographic network as ecological connectors. Its goal is to reduce fragmentation, strengthen core-to-core links and secure ecosystem services such as flood retention, microclimate regulation and biodiversity support. The tangible output is a shared Green and Blue Infrastructure (GBI) network design, integrated into statutory plans and supported by planning guidelines and an updated Wetland Contract action plan with operational measures for implementation.

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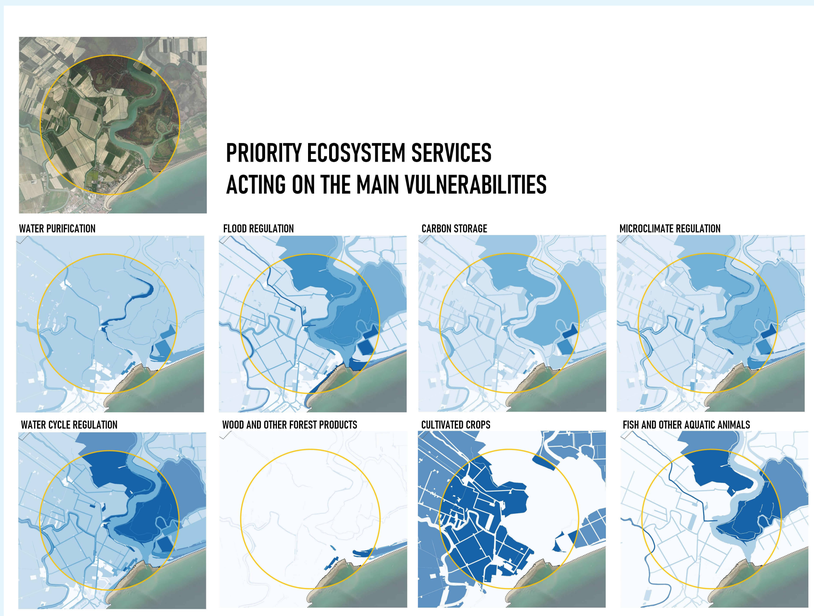
3 Methodological approach

Connectivity analysis combined land-use and habitat quality maps with existing ecological network plans, overlaid with priority ecosystem service layers such as provisioning services, carbon storage, flood regulation, microclimate regulation, water purification, water cycle regulation and sediment retention. This integrated approach enabled the identification of multifunctional corridors where biodiversity and ecosystem services converge. Three scales of connection were mapped: (i) regional corridors linking Natura 2000 coastal sites with each other and with the transnational Alpine network, (ii) inter-municipal corridors along the Livenza and Lemene rivers, and (iii) local ecological buffer strips within farmland. The outcome is a coherent vision of nodes and links, usable both for statutory planning amendments and for site-level restoration projects.



4 Pilot design

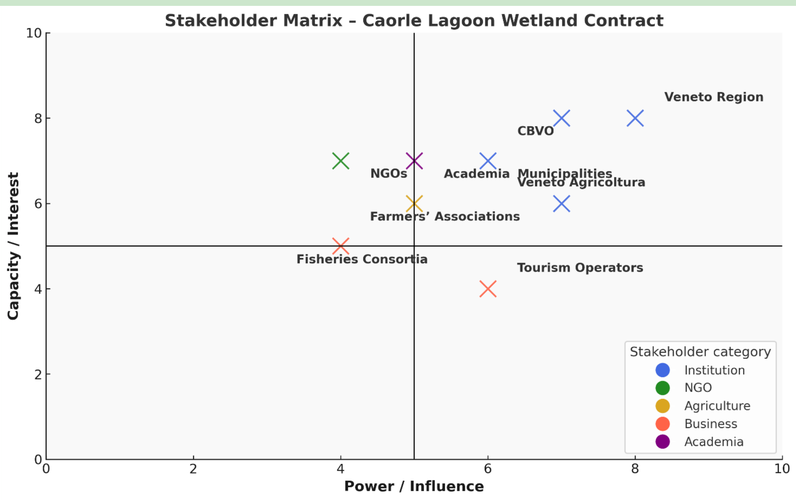
The pilot zone connects Vallevecchia, the Caorle Lagoon and the Livenza–Lemene corridors. The rationale is to re-establish inland–coastal permeability and ensure the resilience of wetland habitats under climate change. Key measures include restoration of riparian belts, planting of hedgerows and tree rows in farmland, re-naturalization of canal banks, creation of small wetlands and buffer strips, and ecological passages across infrastructures. The pilot builds on synergies with the LIFE REDUNE and GREVISLIN projects, current Ecological Network plans, and the Wetland Contract of the Caorle Lagoon system. It also aligns with the initiatives of the Veneto Orientale Reclamation Consortium (CBVO) on sustainable water management. These converging efforts turn the area into a living laboratory for integrating ecological connectivity into ordinary land-use and territorial governance.

5 From concept to statutory plans

Planning tier	GBI integration measures
Regional / provincial	Integration of the pilot connectivity network into current Ecological Network plans; consistency with the Climate Adaptation Strategy, and forthcoming Nature Restoration plans.
Sub-regional	Embedding GBI into River Basin Management Plans and land reclamation schemes, with coordination across irrigation and flood-control programmes.
Municipal	Updates of land-use plans and building codes, as well as the drafting of Green Plans, to designate ecological strips and buffer zones, while promoting de-sealing measures, GBI and NBS for climate adaptation and biodiversity.

6 Governance & stakeholder engagement

Governance of the pilot is centred on the Wetland Contract of the Caorle Lagoon system, a voluntary agreement that brings together regional and local authorities, the Veneto Orientale Reclamation Consortium (CBVO), municipalities, the Regional Agency for Innovation in Agriculture (Veneto Agricoltura), environmental NGOs, farmers' associations, fisheries consortia, and tourism operators. The Contract provides a shared framework to coordinate ecological restoration, water management and biodiversity actions, ensuring continuity beyond project boundaries. Stakeholder engagement is implemented through working groups, thematic workshops and participatory consultations, fostering co-design of measures. This inclusive structure strengthens legitimacy, mobilises local knowledge and integrates ecological connectivity goals into existing territorial governance.



7 Funding toolbox

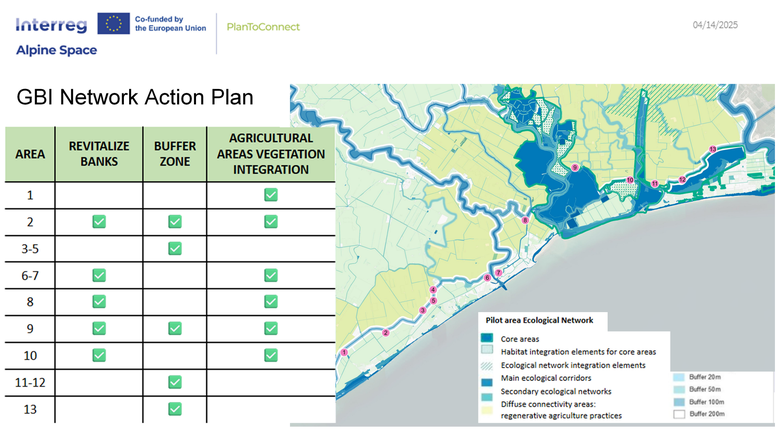
Financing options include a mix of EU, national–regional and innovative instruments. EU programmes (LIFE, Horizon Europe, Interreg, ERDF, CAP/EAFRD) support ecological connectivity, habitat restoration and cross-border cooperation. National and regional schemes provide funds for afforestation, land management, biodiversity and climate programmes, complemented by provincial and municipal initiatives. Innovative sources add flexibility: Payments for Ecosystem Services (PES), carbon farming schemes, crowdfunding platforms, and corporate ESG policies (e.g. WoW Nature) mobilise private resources, diversify farmer income and strengthen long-term support for Green and Blue Infrastructure.

8 Key messages for planners

The pilot demonstrates that combining ecosystem service mapping with habitat analysis makes the multifunctionality of landscapes explicit and measurable. Embedding Green and Blue Infrastructure and ecosystem services mapping across all tiers of planning, from regional strategies to municipal land-use plans, ensures ecological continuity and spatial coherence. Agricultural land and the hydrographic network can act as effective ecological corridors when supported by targeted incentives and agri-environmental measures. Integrated planning and synergies with innovative governance tools—such as the Wetland Contract of the Caorle Lagoon System and similar voluntary agreements—enhance impact, facilitate implementation and secure long-term resilience.

9 Next steps / expected impact

Pilot measures (hedgerow planting, wetland restoration, riparian works) will be integrated into the action plan of the Caorle Lagoon Wetland Contract by 2025. The GBI network plan will serve as reference for updating municipal ecological networks. The expected impact is a replicable model for embedding ecological connectivity into statutory planning in Veneto and other Alpine Space regions. Guidelines developed from this experience will be promoted to planning authorities, while ecosystem service mapping will support climate adaptation policies and environmental impact assessments.



AREA	REVITALIZE BANKS	BUFFER ZONE	AGRICULTURAL AREAS VEGETATION INTEGRATION
1			✓
2	✓	✓	✓
3-5		✓	
6-7	✓		✓
8	✓		✓
9	✓	✓	✓
10	✓		✓
11-12		✓	
13		✓	

The project is co-funded by the European Union through the Interreg Alpine Space programme

REGIONE DEL VENETO

GG studio Gioia Gibelli