



**DA** Dipartimento  
Architettura  
Ferrara

## BOOK OF PROCEEDINGS

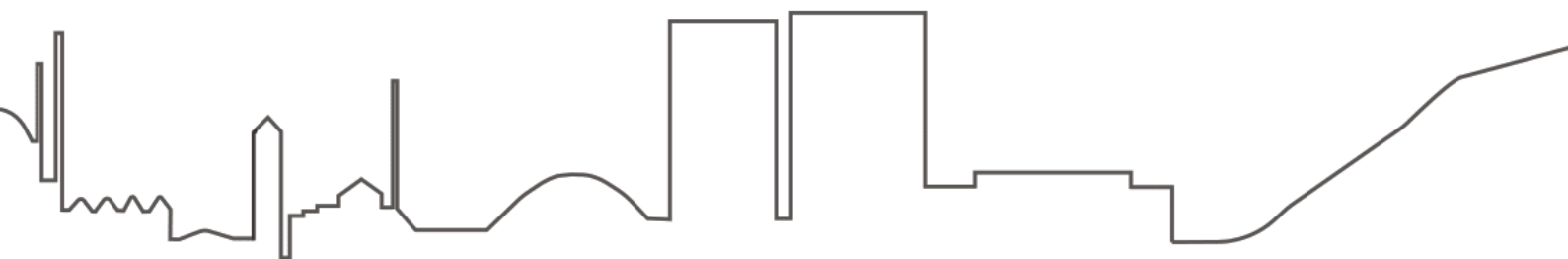
2<sup>nd</sup> INTERNATIONAL CONFERENCE ON HOUSING,  
PLANNING, AND RESILIENT DEVELOPMENT OF THE  
TERRITORY

TOWARDS EURO-MEDITERRANEAN PERSPECTIVES

**OCTOBER 16<sup>th</sup>-17<sup>th</sup>, 2025**

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## **2<sup>nd</sup> International Conference on Housing, Planning, and Resilient Development of the Territory**

### **Towards Euro-Mediterranean Perspectives**

#### Conference Theme and Rationale

This conference returned for the second time within the Albanian and Mediterranean academic context, aiming to build a tradition of collaboration centered on scientific research and academia. Following the success of the first edition held on October 13<sup>th</sup>-14<sup>th</sup>, 2023, where proceedings were published in the Book of Proceedings, Albanica journal, and various international academic platforms, POLIS University and the Academy of Sciences of Albania relaunched this important event. The 2025 edition focused on housing, urban planning, and resilient territorial development, offering a platform for researchers, policymakers, and experts from the region and beyond.

Albania and the Western Balkans have faced major transformations in urbanization, spatial planning, and environmental management. Demographic changes, economic pressures, and environmental challenges created a need for new strategies in architecture, planning, and governance. This conference brought together diverse voices to explore these themes and promote resilient and sustainable development.

Key topics included architecture and the city, with emphasis on urban form, housing typologies, and the role of cultural heritage in modern urban design; urban mobility, addressing traffic challenges, public transport, and the use of technologies like GIS and AI in planning; and new housing models, focusing on affordability, energy efficiency, and innovative materials.

Discussions also covered demography and economy, exploring territorial governance, smart cities, social enterprises, and digital technologies such as AI, VR, and the Metaverse in urban management. Finally, the urban and natural environment was addressed through topics like pollution, adaptive planning, and nature-based solutions for climate resilience.

Through this conference, POLIS University and the Academy of Sciences of Albania aimed to foster a broad interdisciplinary debate on these pressing issues, combining academic and practical perspectives to offer concrete recommendations for future urban and territorial development policies and projects.

## Organizers' Announcement

The International Scientific Conference on Housing, Urban Planning, and Resilient Territorial Development: Toward Euro-Mediterranean Approaches was held on October 16<sup>th</sup>-17<sup>th</sup>, 2025, in Tirana, Albania. Organized by POLIS University in collaboration with the Academy of Sciences of Albania and supported by national and international partners, including the University of Ferrara and Co-PLAN, Institute for Habitat Development, the event brought together researchers, academics, policymakers, and professionals to address key challenges in urban development, with a focus on resilience and sustainability in the Euro-Mediterranean region. The first day of the conference took place at the Academy of Sciences, while the second day was hosted at POLIS University.

The conference explored five main themes:

- I. Architecture and the City, which investigated the typological and morphological dimensions of urban form, the evolution of collective and individual housing types, the relationship between architectural design and urban identity, and the role of historical and cultural heritage in shaping contemporary cities;
- II. Urban Mobility and Resilient Cities, which addressed traffic congestion, infrastructure challenges, and public transportation, while also promoting the redesign of public spaces – such as streets, squares, and pedestrian zones – to improve accessibility and mobility; it also explored the integration of digital technologies like GIS, AI, and simulation tools to enhance planning, automation, and infrastructure management;
- III. New Housing Models, which examined innovative approaches to affordable and social housing in response to demographic shifts and technological change, along with energy efficiency strategies, passive energy systems, and the application of new sustainable materials and construction technologies;
- IV. Demography and Economy, which focused on macro-regional and national dynamics impacting territorial development, including urban governance, disaster risk reduction, and the rise of smart and inclusive cities; it also explored how emerging technologies – such as AI, VR, and the Metaverse – along with social enterprises and circular economy practices, could foster more equitable and adaptive urban systems; and
- V. Urban and Natural Environment, which analyzed environmental degradation in urban settings, including air, water, and soil pollution, and promoted nature-based solutions, ecosystem-based planning, and adaptive strategies to enhance environmental sustainability and climate resilience.

The conference was conducted in English and Albanian (with self-translated texts where applicable) and was free of charge, with all registration fees fully covered by POLIS University in support of open academic exchange. Key deadlines included abstract submission by June 15<sup>th</sup>, acceptance notification by June 30<sup>th</sup>, first draft of papers by September 15<sup>th</sup>, and final submissions by October 31<sup>st</sup>.

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## **V. Urban and Natural Environment: Environmental Problems, Climate Issues and Other Environmental Challenges**

Sustainability and resilience in the natural environment / Adaptive planning / Complexity in territorial development.

Air, water, and soil pollution / Ecosystem services for protected and urban areas / Strategic environmental assessments / Nature-based solutions / Urban biodiversity assessment.

# Integrating Land-River Interactions in the Marzenego River Contract

A relational approach to water governance

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## Abstract

*Contemporary approaches to river management remain hindered by sectoral fragmentation, insufficient spatial integration, and a persistent separation between land and water governance. Consequently, existing frameworks often fail to adequately address the complex and interdependent environmental, social, and economic challenges posed by river systems.*

*This study explores the operational potential of the land-river interaction framework as an analytical tool to integrate fluvial systems within planning processes. By explicitly clarifying spatial and functional connections between terrestrial and fluvial components, the framework aims to enhance the effectiveness of planning instruments for adaptive and integrated management grounded in a socioecological perspective.*

*The methodology is applied to the Marzenego River in northeastern Italy, characterized by heterogeneous territorial configurations and significant anthropogenic pressures. The case study provides insights into the spatial dimension of land-river interactions and supports ongoing local participatory initiatives, such as the River Contract.*

*The study aims at demonstrating that incorporating land-river interactions enables the identification of latent territorial structures, spatial patterns, and immaterial relations frequently overlooked by conventional sectoral planning.*

*Findings show that this approach supports spatially explicit and context-sensitive interventions that address multifaceted territorial challenges. Ultimately, it contributes to embedding fluvial systems within comprehensive governance frameworks to promote environmental sustainability, social resilience, and adaptive capacity.*

## Keywords

*Integrated water management, land-river interactions, river contract, spatial planning*

## 1. Introduction

River management and planning face persistent challenges due to disciplinary fragmentation, weak spatial integration, and the separation between land and water governance (Cid et al., 2008). Although rivers are increasingly recognized as socioecological systems, current approaches often remain limited by sectoral or hydro-technical priorities that overlook their relational and multidimensional character (Kidd, 2007; Dunham et al., 2018).

Over the past decades, several integration-oriented frameworks have been proposed, such as Integrated Water Resources Management (GWP, 2000) and the Source-to-Sea approach (Granit et al., 2017). Although they have provided important guiding principles, their practical implementation has frequently been limited (Granit et al., 2014).

In response to these limitations, new forms of collaborative governance have emerged to reconnect territorial dimensions within river planning. Among them, the Italian river contracts represent co-planning instruments capable of fostering integration across sectoral objectives and governance scales, thanks to their flexible, trans-scalar, and participatory nature (Cialdea and Pompei, 2022; Rossi, 2022). They provide a negotiation arena that enables the alignment of ecological and social priorities, overcoming administrative and hydrographic rigidities (Bastiani, 2011; Scaduto, 2016).

Within this framework, the concept of land-river interaction is proposed as an analytical tool that explicitly addresses the spatial and functional interdependencies between rivers and the surrounding territories. Grounded in socioecological and relational perspectives (Anderson et al., 2019; Stokols, 2018), it emphasizes the fluid, interdependent, and co-produced nature of riverscapes. Building on this conceptual foundation, the study borrows from the author's previous work and established planning paradigms, including Source-to-Sea (Mathews et al., 2019), Land-Sea Interactions (Bocci and Marković, 2022), and Conservation Planning (Álvarez-Romero et al., 2011). Through a systematic literature review and a comparative analysis of selected planning experiences across multiple scales, Beschi (2025) defines land-river interactions as complex networks of multidirectional spatial and functional relationships connecting rivers and the territories they traverse, manifesting in both material and immaterial forms.

This paper applies the developed framework to the Marzenego River Contract in northeastern Italy, demonstrating its potential to inform spatially explicit, integrated, and context-sensitive planning.

## 2. Methods and data

The analysis of land-river interactions follows a seven-step methodology, previously developed in Beschi (2025).

The seven steps are applied as follows:

1. Define the spatial and planning context. Specify the study area and identify the planning instruments to be informed by the analysis, aligning with existing governance frameworks.
2. Identify and classify interactions. Compile a matrix of land-river interactions across five systems - environmental, agricultural, urban, infrastructural, and socio-cultural - considering current,

historical, and potential relations. Local knowledge supports the identification of context-specific dynamics.

3. Link interactions to planning instruments. Relate interactions to relevant policies, plans, and programs, highlighting synergies, conflicts, and overlooked relationships.
4. Map and engage stakeholders. Identify key actors (institutions, associations, research organizations, civil society) and define suitable engagement methods for local conditions.
5. Spatialize interactions. Represent interactions through GIS and visualization tools, integrating both material elements and immaterial dimensions.
6. Delimit the relational space of the river. Integrate results across systems to delineate the river's relational space, identifying hotspots, overlapping dynamics, and transition zones as a coherent spatial frame for planning and management.
7. Formulate strategic orientations and guidelines. Translate findings into operational recommendations, including scenarios and design guidelines, to support integrated and adaptive planning.

The Marzenego River serves as a case study to demonstrate the operational potential of the methodology. Since 2014, a River Contract process has been underway, offering a relevant governance framework for applying the analytical approach.

The investigation combined multiple methods: documentary analysis of official reports associated with the River Contract (Comuni del Bacino Idrografico del Marzenego and Consorzio di Bonifica Acque Risorgive, 2015); historical and cartographic research using materials collected by the association storiAmestre (storiAmestre, 2025); representation of geographical data provided by the Veneto Region (Regione del Veneto, 2025); field surveys and direct observation, employing walking as a method of territorial inquiry to capture elements not evident from documents (Vergunst and Ingold, 2016; Mullally et al., 2023).

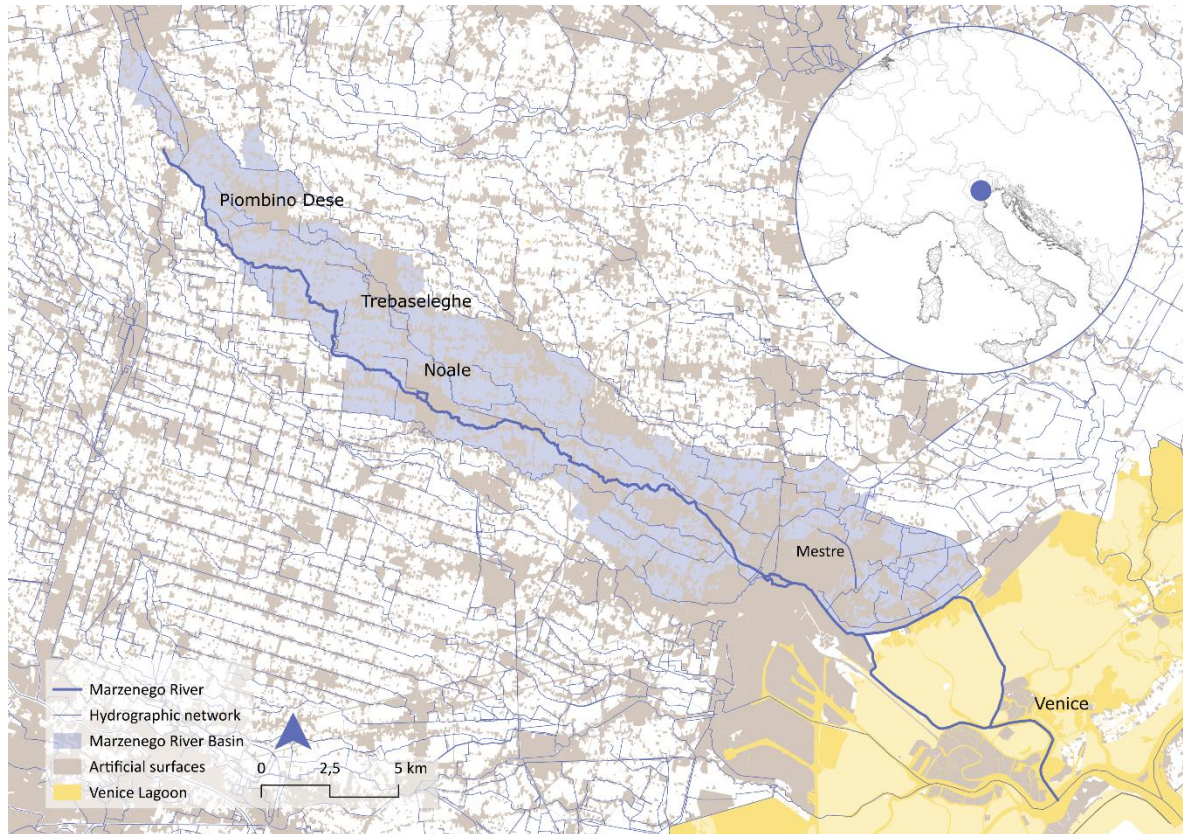
### 3. Results

#### 3.1. Step 1 – Define the spatial and planning context

The Marzenego River (Figure 1) originates from resurgence springs in Resana (Treviso) and follows a 45 km course across the central Venetian plain before discharging into the Venetian Lagoon via the Osellino canal. The river traverses a highly anthropized landscape where dispersed urban settlements, agricultural land, and productive activities coexist within a polycentric “agropolitan” system (Regione del Veneto, 2020).

Extensive human modifications have significantly altered the river's morphology, reduced its natural self-regulation capacity, and increased hydraulic risk in densely populated areas. Additional anthropogenic pressures, such as soil consumption, intensive agriculture, industrial activities, and dense infrastructure networks, contribute to water quality degradation, biodiversity loss, and habitat fragmentation (Renzoni and Tosi, 2016). The variability of settlement patterns, ranging from small villages to major urban centers, provides an opportunity to investigate how land-river interactions differ across gradients of anthropogenic pressure.

Since 2014, a participatory River Contract has engaged local authorities, associations, and citizens in basin governance. Despite the adoption of an action program in 2015, implementation has been limited, and the process remains largely inactive.



**Figure 1.** Study area context - Overview of the Marzenego River Basin.

Source: Author's elaboration.

### 3.2. Step 2 – Identify and classify interactions

Combining desk research and field surveys, the analysis of land-river interactions revealed a complex network of interrelated processes. Interactions were classified within five systems - environmental, agricultural, urban, infrastructural, and socio-cultural - and described in terms of direction, environmental and socioeconomic effects, and key flows affected. Both historical trajectories and future scenarios were considered, allowing the reconstruction of long-term dynamics of transformation.

Figure 2 illustrates the matrix structure, showing one representative interaction per system and the total number of interactions identified in each system.



**Figure 2.** Structure of the land-river interaction matrix with representative system-specific interactions.  
Source: Author's elaboration.

### 3.3. Step 3 – Link interactions to planning instruments

The review of planning instruments indicates overall coherence in objectives across scales, particularly concerning ecological quality, mitigation of anthropogenic pressures, and hydraulic safety. Nonetheless, fragmentation remains evident, with themes such as ecological connectivity and cultural heritage dispersed across instruments without systematic integration. Land-use change represents the most critical concern, as projected urban expansions along the river corridor lack sustainability criteria and risk undermining conservation goals and exacerbating hydraulic vulnerability. Furthermore, hydraulic safety, while central in many plans, is rarely addressed in conjunction with climate adaptation, revealing a gap in resilience-oriented strategies. Conversely, open-space accessibility and active mobility emerge with increasing prominence toward the lagoon, and cultural heritage valorization is more strongly pursued at the regional scale. Within this fragmented framework, the River Contract emerges as a potential coordination mechanism to realign objectives toward a shared vision

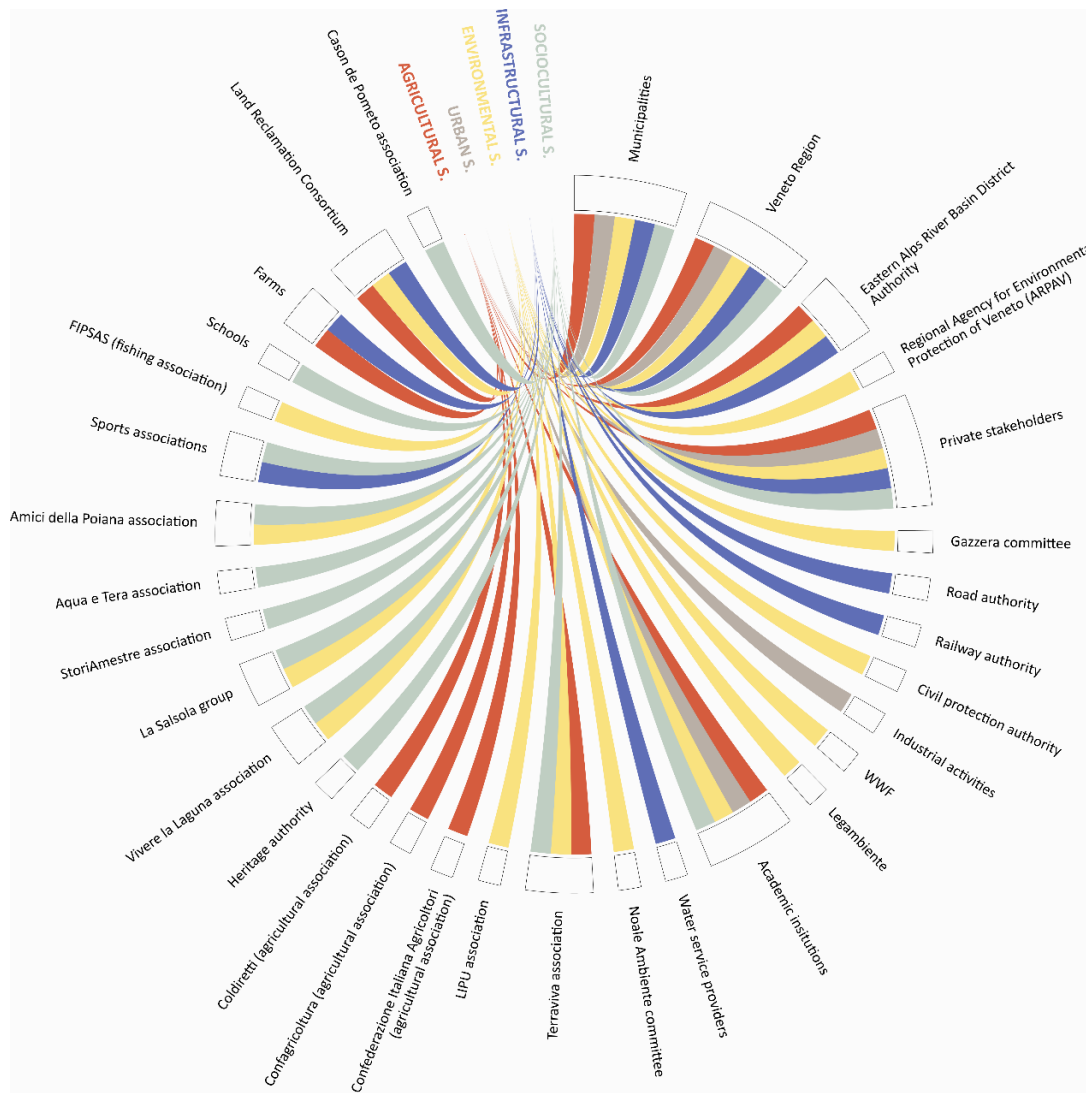
### 3.4. Step 4 – Map and engage stakeholders

The stakeholder mapping (Figure 3) illustrates the high degree of complexity in the governance of the Marzenego. In this study, stakeholders were identified and mapped based on a comprehensive documentary analysis, including relevant policy and planning documents, official institutional websites,

and publicly available reports and project databases. A participatory engagement with stakeholders was not carried out, but the step is conceived to accommodate participatory processes in future applications.

Environmental and infrastructural systems are characterized by a wide distribution of institutional and technical actors, reflecting both regulatory responsibilities and sectoral competences. The agricultural system displays a more restricted but highly specific set of connections, especially with farmers' associations and producer consortia. The socio-cultural system reveals a particularly dense network of associations, cultural groups, and civic organizations, confirming the strong local identity linked to the river.

This heterogeneity underscores the necessity of integrated coordination mechanisms. Importantly, several stakeholders are positioned at the intersection of multiple systems, offering opportunities for synergies if adequately mobilized. However, the limited implementation of the River Contract indicates that these potentials are not yet fully activated.



**Figure 3.** Stakeholder connections across the five systems.

Source: Author's elaboration.

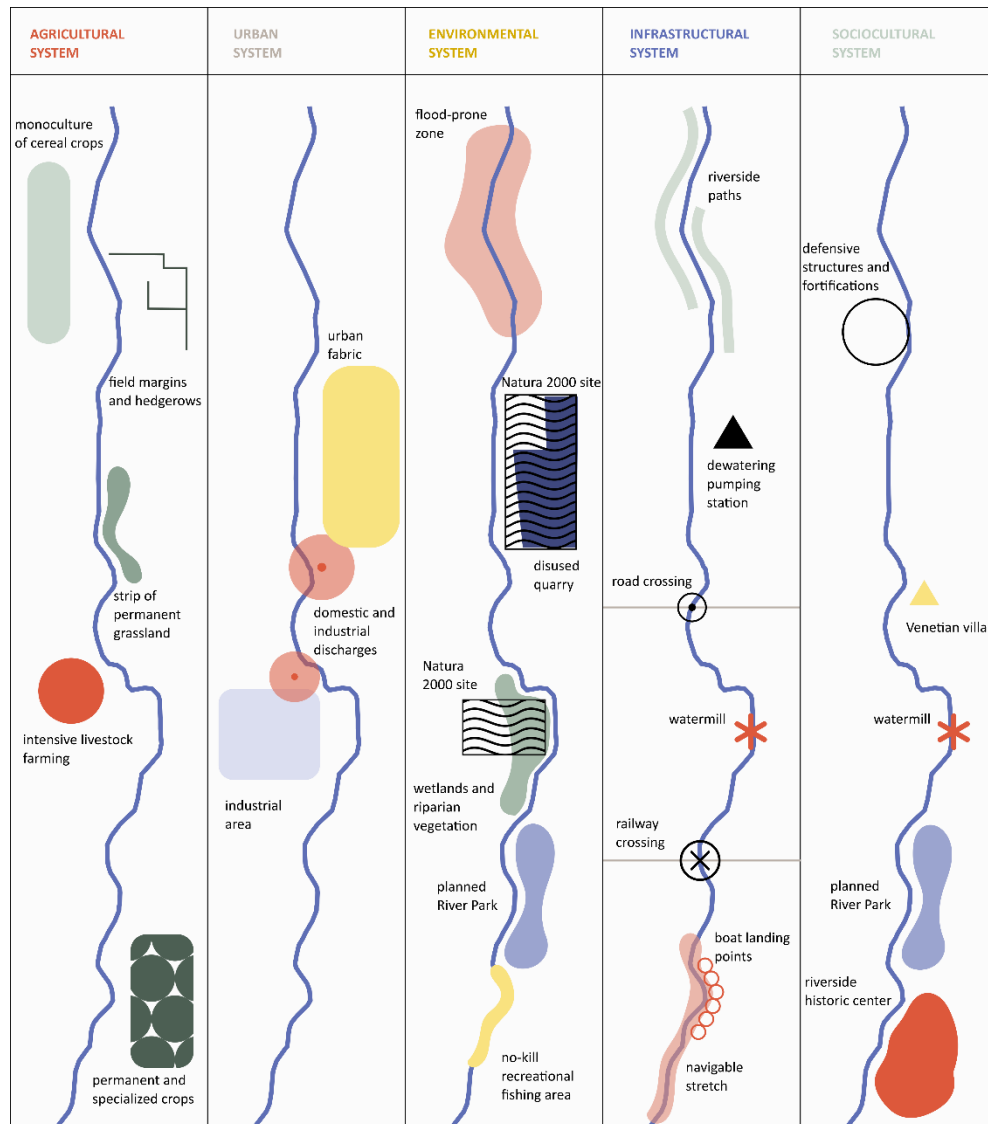
### 3.5. Step 5 – Spatialize interactions

Interactions were mapped separately for each system. Spatial data were sourced from the Veneto Region Geoportal (Regione del Veneto, 2025) and represented using GIS for visualization purposes. The existing official datasets from the Veneto Region were integrated with field-based observations, supporting a qualitative interpretation of the interactions. The decision to map hydrologically relevant elements only (e.g., discharges, intensive monocultures, impervious surfaces) within the strict basin boundaries, while visualizing other features (e.g., cultural assets, ecological networks) beyond them, reflects the relational nature of land-river interactions.

The results highlight the complexity of each system:

- Agricultural system. The basin shows a mosaic of practices: maize monocultures dominate, alongside vineyards, radicchio IGP, and biomass plots. Hedgerows, tree rows, and residual meadows sustain ecological connectivity, while intensive livestock farms exert strong pressure.
- Urban system. The corridor features dispersed settlements, from Mestre's dense fabric to towns like Noale, Trebaseleghe, and Piombino Dese, with frequent contiguity between residential and productive uses.
- Environmental system. The Marzenego acts as a regional ecological corridor linking the pre-Alps, the plain, and the Lagoon. Natura 2000 sites, riparian vegetation, and buffer strips support connectivity. Abandoned quarries reflect a legacy of past extractive activities. Flood risk is high, particularly near Mestre, where the Lagoon further increases hydraulic vulnerability.
- Infrastructural system. Numerous roads and railways fragment continuity; riverside paths are discontinuous. Nineteen historic mills limit navigation to the Osellino Canal. The airport near the mouth adds disturbance, while a dense irrigation network shapes the upper basin.
- Socio-cultural system. Mills, Venetian villas, fortified landscapes, and historic centers reflect the river's formative and strategic role. The River Park project shows how cultural heritage can support ecological and social valorization.

For the purposes of this paper, the spatial representation of the five systems was simplified in Figure 4 to ensure clarity and readability.



**Figure 4.** *Simplified spatial maps of the five interaction systems.*

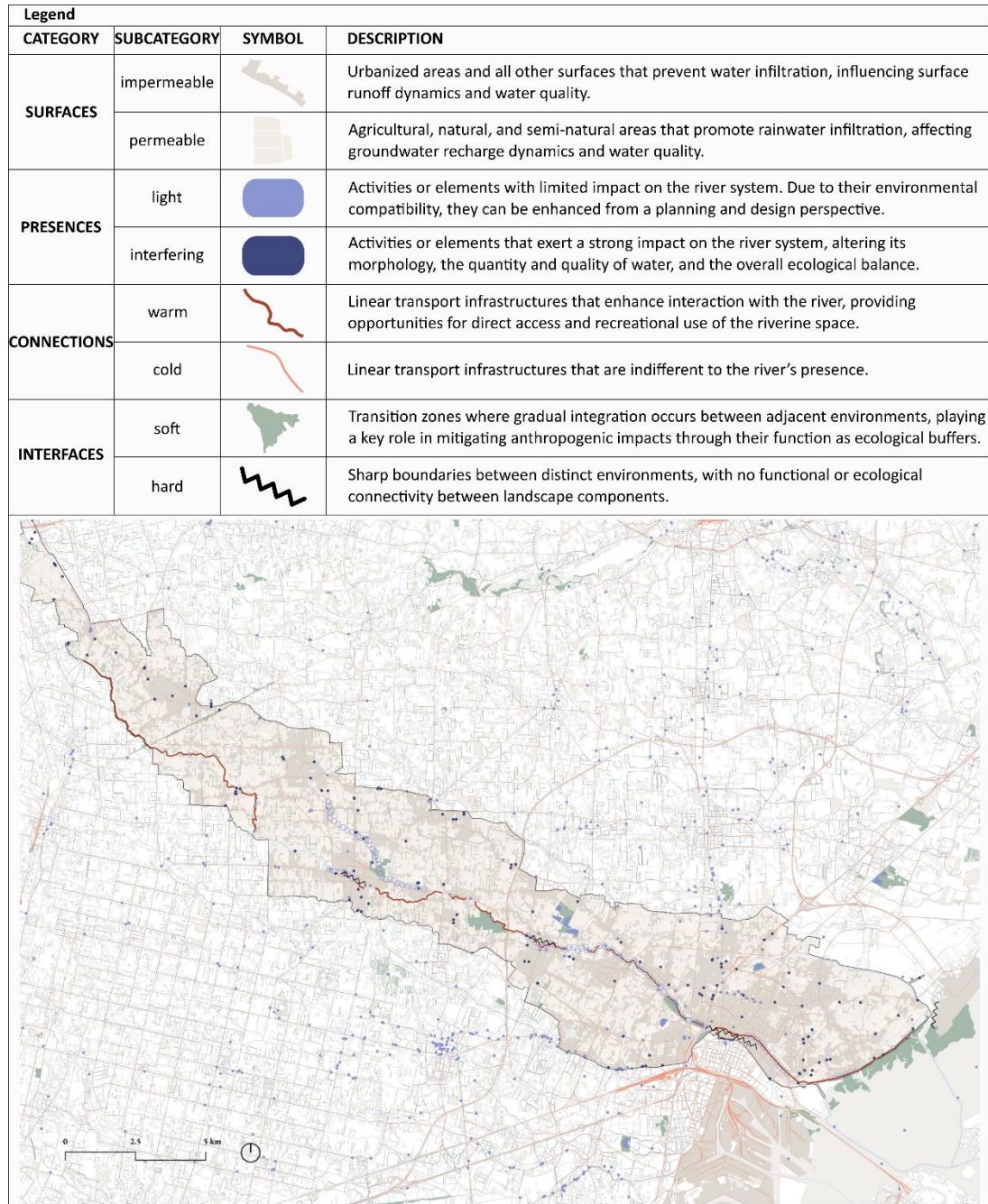
Source: Author's elaboration.

### 3.6. Step 6 – Delimit the relational space of the river

The synthesis of system-specific representations allowed the definition of Marzenego's relational space, conceived not as a fixed territorial unit but as a dynamic field of interactions. The analysis was conducted through interpretive categories, such as permeable/impermeable surfaces, light/interfering presences, warm/cold connections, and soft/hard interfaces, that express the quality and intensity of land-river interactions (Figure 5).

This step marks the transition from descriptive mapping to interpretive reading, where the focus shifts from objects to relations. The relational space of the Marzenego highlights hotspots of conflict and synergy, zones of transition, and overlapping dynamics that require integrated planning responses. It

also provides a conceptual and spatial bridge between empirical analysis and strategic orientations, reinforcing the value of the framework in linking theory and practice.



**Figure 5.** *The relational space of the Marzenego River based on the interpretive categories.*  
Source: Author's elaboration.

### 3.7. Step 7 – Formulate strategic orientations and guidelines

This step translates analytical insights into strategic orientations and actions. Rather than a prescriptive plan, these orientations show how the systematic analysis of land-river interactions informs and enhances the River Contract, helping to refine its objectives and measures. Building on the previous steps, the recommendations provide a structured framework that can be further validated, refined, and prioritized through stakeholder engagement. Key strategic orientations include:

- Integrated flood-risk management, e.g., selective reopening of culverted stretches to restore flow continuity, and creation of riparian grasslands as natural flood expansion areas.
- Maintenance and rehabilitation of the hydrographic network, e.g., coordinated maintenance of the minor drainage system, and naturalization of canals and field ditches using bioengineering techniques.
- Restoration and protection of riverine and riparian ecosystems, e.g., riparian forest restoration, invasive species control, and ecological reconnection between wetlands and Natura 2000 sites.
- Adoption of sustainable and multifunctional agricultural practices, e.g., establishment of hedgerows, tree rows and field margins as ecological buffers, and adoption of conservation agriculture and on-farm phytoremediation.
- Enhancement of landscape and cultural heritage, e.g., restoration of historic mills and riverside villas for cultural and educational uses, and conversion of former quarries into wetlands and recreational spaces.
- Strengthening of recreational networks and public spaces along the river, e.g., improved river access and continuous walking-cycling routes, and regeneration of degraded riverfronts as multifunctional public spaces.
- Active participation and community awareness, e.g., participatory mapping and citizen-science initiatives, and community stewardship programs for river spaces.
- Improvement of organizational and management aspects, e.g., shared monitoring and transparent reporting systems, and integration of River Contract priorities into municipal plans and joint funding strategies.

## 4. Discussion and conclusion

The application of the land-river interaction methodology to the Marzenego demonstrates both its analytical potential and its operational relevance for participatory instruments such as River Contracts. These voluntary agreements are valued for their flexibility and ability to integrate diverse perspectives (Cialdea and Pompei, 2021). Their reliance on stakeholder engagement and independence from strict administrative borders makes them a favorable arena for relational approaches.

The methodology contributes to this process by creating a shared, spatially explicit knowledge base. Systematically cataloguing interactions across environmental, agricultural, urban, infrastructural, and socio-cultural systems enables actors to recognize socioecological dynamics often invisible in sectoral approaches. This shared understanding supports negotiation of strategies tailored to local specificities, enhancing inclusiveness and scientific robustness.

While River Contracts usually follow municipal or basin borders, relational mapping reveals socioecological spaces that cut across them, aligning management with actual dynamics of water, land use, and community practices. The strategic orientations formulated for the Marzenego illustrate how the methodology can refine and enrich the River Contract, making objectives more coherent, integrated, and spatially explicit. Even without full participatory implementation, the approach serves as a valuable diagnostic and preparatory tool.

From a governance perspective, land-river interactions can also help reactivate stalled participatory processes, particularly relevant in Veneto where several River Contracts face delays (La Nuova Venezia, 2020). The framework not only strengthens the legitimacy of these instruments but also expands their operational capacity. More broadly, it demonstrates the value of a relational approach: uncovering latent spatial structures, socioecological dynamics, conflicts and synergies, and bridging the gap between land and water management. By translating complex dynamics into actionable orientations, it supports integration of sectoral objectives, reduces fragmentation, and fosters more resilient and adaptive strategies.

While the application to the Marzenego River provides a robust empirical test, several limitations remain. First, the analysis depends on the availability and quality of documentary, cartographic, and participatory data, which can vary across contexts. Second, translating the methodology into concrete measures requires political will, institutional capacity, and long-term engagement. Additionally, the orientations proposed in this paper are derived mainly from analytical outputs rather than from a participatory process, and their operational legitimacy should be strengthened through direct involvement of local actors. While stakeholder mapping provides a preliminary understanding of governance complexity, validating and operationalizing the results still requires active stakeholder engagement. Future research could apply the framework to other rivers to assess transferability, refine the tools, and compare outcomes under different governance arrangements.

Overall, the study demonstrates that embedding land-river interactions into planning supports both deeper analysis and stronger governance, advancing integrated and adaptive river management.

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