Integrating Wine Specialization into a Territorial Tourism Dimension: A STESY-Based Interpretation of La Rioja

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Abstract. La Rioja represents one of the most distinctive wine-producing regions in Southern Europe, where agricultural specialization, territorial identity, and cultural heritage converge into a highly recognizable regional system. Although wine production constitutes the primary structural driver of the local economy and the main source of international visibility, its tourism development remains only partially integrated at the territorial scale.

This study applies the STESY framework in order to investigate how wine specialization may be interpreted not only as a productive asset, but as a territorial structure capable of supporting a more integrated tourism dimension. The methodology combines territorial interpretation, spatial mapping of attractors, services, and reachability, cluster-based subdivision into Destination Areas, and the use of composite indicators including the Balanced Tourism Supply Index (BTSI), Attraction Potential Index (API), and Diversity Reachability Index (DRI). The results reveal a region with a strong and coherent identity, but with uneven integration between its productive specialization, tourism services, and mobility system.

Based on these findings, the paper proposes a strategic framework entitled "The Rioja Experience: Slope & Cellar", aimed at transforming wine specialization into a territorial tourism infrastructure through slow mobility, adaptive reuse, intermodal accessibility, and distributed experiential nodes. The study contributes to the development of policy-oriented approaches for sustainable tourism planning in specialized inland regions, where sectoral excellence can become the basis for a broader territorial tourism model.

Keyword: Sustainable tourism planning · spatial analysis · cluster analysis

1 Introduction

Sustainable tourism becomes more and more a core argument in territorial development debate defining local multi-stakeholders' perspectives and global framework for innovation and better management of such complex phenomena [1, 2]. Today tourism is

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recognized as a dominant driver of economic growth in coastal and heritage destinations, yet its rapid expansion has also generated critical spatial and temporal imbalances [3]. In the perspective of the authors, tourism opens to relevant debate in urban and regional planning research as the decision making process connected with tourism management represent a comprehensive framework in which sustainable urban regeneration and transformation, landscape protection actions, economic development issues interacts generating an effective environment to apply sustainable urban development principles, methods and agendas for short term and strategic territorial design [4–8]. Those applications are also oriented to improve the competences of students in academic curricula dealing with territorial design professionals, and this paper comes as a result of a studio in architectural classes following the research tradition [9–14] of sustainable urban planning and design at UNIBAS [15–18].

Tourism as a spatial phenomenon is a multidisciplinary domain where spatial dimension represents a robust analytical dimension for managing information and designs, applying collaborative approach for strategic planning [19–25].

Within this perspective, tourism planning becomes especially significant in regions characterized by a strong sectoral specialization. In such cases, the issue is often not whether the territory possesses recognizable resources, but whether these resources are effectively capable of structuring a wider and more integrated territorial tourism system. Productive excellence, even when internationally acknowledged, does not automatically generate a coherent tourism ecosystem. Rather, it may remain spatially concentrated, functionally fragmented, or only partially connected with the broader territorial structure [26].

There are good reasons why wine districts can be considered appropriate settings to examine the topic in question. Indeed, their identity tends to consist of an array of factors, including agriculture, landscapes, cultural memory, gastronomy, and territorial symbolic value. At the same time, however, in many situations wine-related tourism is still restricted to a rather limited list of experiences like visiting cellars, tasting, and consumption events, instead of becoming more territorialized, which would allow for more time spent in the area and more utilization of peripheral regions [24].

La Rioja, in northern Spain, represents a particularly relevant case for exploring this transition. Internationally recognized for its wine production and deeply associated with viticultural identity [27], the region possesses all the conditions to support a high-value tourism model. However, despite its international reputation and dense concentration of wine-related resources, the tourism system still appears only partially integrated at the regional scale. Some areas concentrate the main functions of attraction, service, and access, while others remain more weakly connected despite their environmental and cultural potential.

This paper aims to develop a spatially informed planning framework capable of supporting the transition from a short-duration, high-pressure tourism model toward a more balanced system based on extended stays and territorial redistribution. The study proposes an integrated methodological approach combining spatial analysis, cluster-based interpretation, and policy-oriented design strategies in compliance with NUA principles. The contribution lies in bridging analytical diagnosis and operational planning within a coherent framework transferable to similar tourism destinations.

2 Study Area

This paper revolves around La Rioja, which is one of the autonomous communities situated in the north of Spain, and it enjoys great reputation across the globe as a very distinctive wine region within Europe. Though restricted by its geographical territory, La Rioja occupies an exceptional geopolitical-economic position, thanks mainly to the significant impact of viticulture on its production system, landscape, and identity.

The regional geography is clearly defined by the presence of the Ebro Valley, which shapes the north-central portion of the region in such a way as to create a good environment for vine growing. This agricultural structure is supplemented with a slightly more complex structure in the south, with the addition of mountain scenery and settlements in the interior that add to the complexity of the territorial framework. There is, therefore, a clear duality of morphology and environment in the region that includes vine-growing plains and rural landscapes.

Against this background, the wine industry goes well beyond being an agricultural specialization in its own right. Rather, it is a territorial matrix that exerts influence over the local economy, settlement pattern, land use and even the image of the region itself. One of the main nodes in the system is Haro, a city located in the upper Rioja area. Its significance as part of the system is closely associated with the Barrio de la Estación, which features several historically important wineries in terms of its production capabilities and symbolic meaning of bringing together wine production, logistics and territoriality. The role played by Logroño, the capital of the region, complements the above as far as tourism in La Rioja is concerned since it can be seen as the key urban center of the region. While it does not specialize in the production of wines, the city's importance lies in terms of its infrastructure and central role within the region.

Haro emerges as the tourism core of Rioja Alta, attracting between 180,000 and 200,000 visitors annually (Fig. 1) through a territorially embedded wine-based system, with the Barrio de la Estación acting as its main international gateway. The area is characterized by a very high density of tourism resources, particularly wineries, which clearly shape its specialization and strategic orientation.

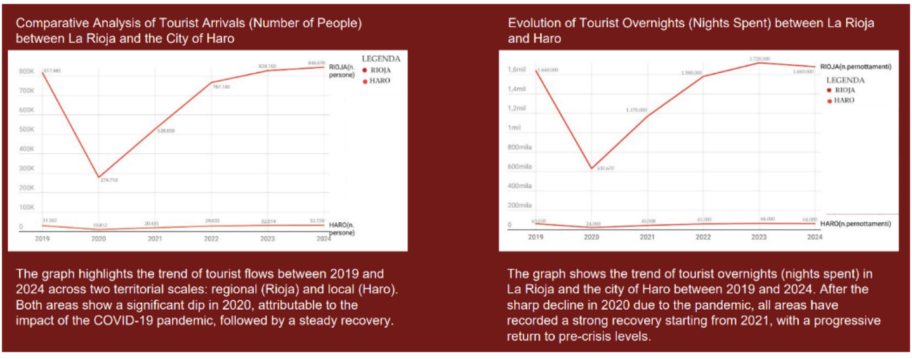

Fig. 1. Comparative overview of tourism dynamics in Haro and Rioja. Source: Personal elaboration of data from https://www.larioja.org/estadistica/es.

The GDP composition of the Rioja region highlights a service-oriented economy, with the tertiary sector accounting for 69.4% of total value added, supported by a balanced mix of consumer services and industry-related services. The secondary sector contributes 24.5%, driven by manufacturing, while the primary sector, though limited to 6.1%, remains strategically significant. The defining feature of the regional economy is the wine value chain, which operates as an integrated system across all sectors: viticulture alone accounts for 3.8% of GDP, while related manufacturing, tourism, and advanced services further amplify its impact. Overall, Rioja represents a model of integrated development in which the wine industry functions as a key economic multiplier, linking agriculture, industry, and services into a cohesive territorial system.

3 Territorial Analysis

The approach adopted in this study is based on the STESY framework [28] conceived as an integrated analytical and interpretative tool to support evidence-based planning strategies.

The first phase consists of a contextual analysis of the study area, focusing on the identification and classification of key georeferenced components (PoIs) of the tourism system, including attractors, services, and reachability (Fig. 2). Attractors include wineries and wine-related facilities, historical, cultural, religious, and landscape elements that contribute to the regional tourism identity. Services include accommodation, food and beverage facilities, and complementary visitor functions, while reachability is assessed through the presence and articulation of infrastructures supporting territorial access and internal mobility. Beyond its wine-related identity, the region also includes a broader set of resources that reinforce its tourism potential. These include the Camino de Santiago, which crosses part of the region and contributes to its wider experiential and symbolic dimension.

The second phase involves the spatial interpretation of these components through a cluster-based approach in order to identifying the Destination Areas of the tourism system in the case study. The territorial system is divided into homogeneous clusters using GeoDA software [29] aimed at identifying distinct spatial patterns. The optimal number of clusters is determined through the application of the Elbow Method [30], ensuring a balance between analytical detail and interpretative clarity (Fig. 3). Cluster analysis in La Rioja identifies four macro-destination areas with a heterogeneous distribution. Logroño (DA 1) stands as the primary hub with over 1,200 points of interest, followed by the wine tourism center of Haro (DA 2). The map highlights a clear polarization of services along the east-west axis, driven by the reachability of the rail network and the Camino de Santiago.

To quantify the characteristics of each cluster, three composite indicators are employed (Fig. 4). The Balanced Tourism Supply Index (BTSI) measures the relationship between accommodation capacity and consumption services, distinguishing between overnight-oriented and day-trip-oriented areas. The Attraction Potential Index (API) evaluates the strength of attractors based on their relevance and scale, while the Diversity Reachability Index (DRI) assesses accessibility and intramodality within the transport system.

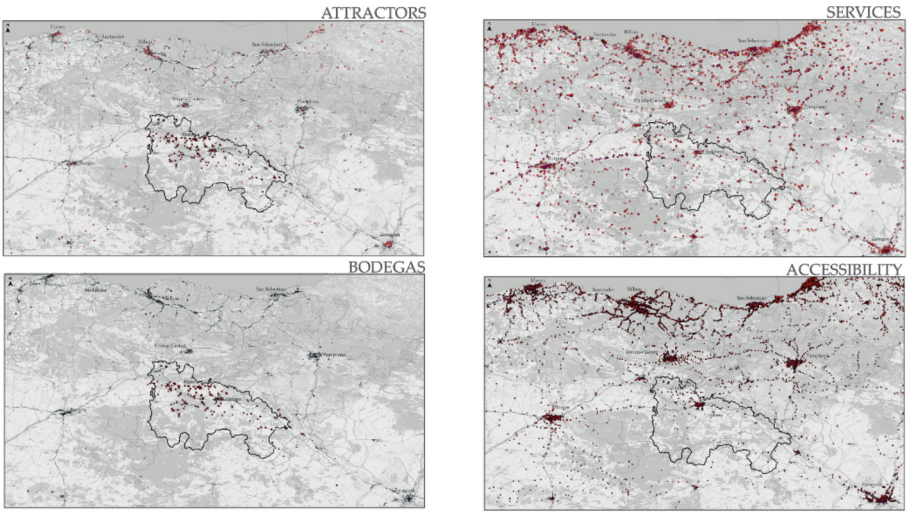

Fig. 2. Distribution of Attractors, services and reachability.

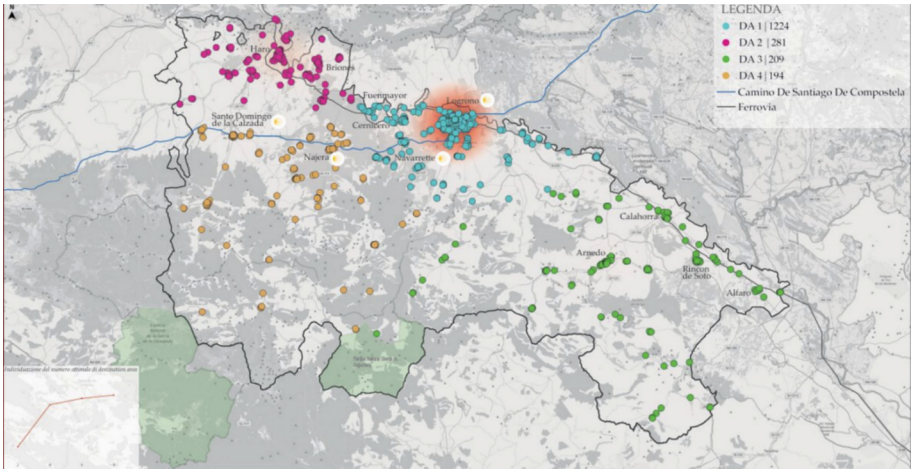

Fig. 3. Map of Clusters identified.

The territorial analysis highlights a structurally unbalanced tourism system. The Balanced Tourism Supply Index (BTSI), which measures the integration between accommodation and food services, shows generally very low values across most of the region, indicating a configuration that mainly supports day trips rather than longer stays.

The only significant exception is Destination Area 4, with a BTSI of 0.32, which reflects a relatively more balanced supply despite operating in a less dense tourism context. In terms of accessibility, the Diversity Reachability Index (DRI) reveals a strong concentration of connectivity in the central part of DA 1, which reaches the maximum score of 6/6 and functions as the primary access node for the region, while surrounding

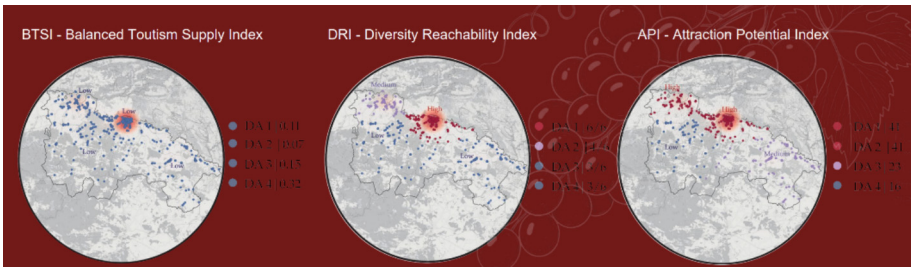

Fig. 4. Indicators applied to each Cluster (Destination Area).

areas remain weaklier connected and dependent on the main multimodal poles. Similarly, the Attraction Potential Index (API) confirms a clear polarization of tourism attractiveness, with DA 1 (Logroño) and DA 2 (Haro/Rioja Alta) both scoring 41, far above DA 3 (23) and DA 4 (16).

Taken together, the results do not describe a weak tourism system, but rather a selectively integrated one. The wine specialization is clear and highly effective in generating attractiveness, but its territorial effects remain uneven. The BTSI highlights a structural tendency toward service concentration rather than hospitality consolidation, confirming that the system is more oriented toward visitability than inhabitation. The DRI reveals a dependence on a limited number of access structures, while the API confirms the strong polarization of attraction around a few key nodes.

In summary, the results indicate that there is an excursion-type model of tourism in this region. Attractive and accessible territories are not yet accompanied by an adequate infrastructure that can maintain tourists for a long period of time.

It becomes clear from the above analysis that the territory of La Rioja already has all elements necessary to be competitive in the tourism environment; however, these elements have not yet been transformed into a territorial model of tourism development. In other words, the problem is not about lack of identity and attractiveness, but rather about the underdevelopment of specialization into a territorial tourism form.

4 Discussion and Planning Strategy

The findings of the analysis support the development of a multi-scalar planning strategy aimed at transforming the existing tourism system. The downscaling of NUA [31, 32] compliance assessment supports the definition of spatial strategies aimed at enhancing the sustainability of the territorial system. The proposed approach is based on the combination of soft measures and hard interventions, designed to influence both visitor behavior and spatial organization.

Key challenge lies in broadening the territorial meaning of wine specialization, transforming it from a highly concentrated and sector-specific tourism driver into a more distributed and connective territorial experience.

This approach is based on a basic premise that in La Rioja, wine already speaks its own language. Nevertheless, this language is still limited in terms of tourism consumption in concentrated ways, such as visiting vineyards, tasting wine, and staying for short

periods of time for food and wine tourism experiences. What has not been developed yet is the ability of this specialization to generate a tourism story at the territorial level. This is why the proposed idea moves from wine as destination to wine as territory.

This shift will be facilitated by the design of the intervention that is aimed at creating a slow mobility network, where cycling tourism is the primary tool used for territorial integration. Unlike conventional approaches, where the introduction of cycling is seen as one of the possible transportation means, this strategy employs cycling as an experience and space-making approach that can help connect different pieces of the regional tourism industry together. With the help of slow mobility, wineries, villas, cultural places, scenic views, accommodation venues, and mountains can be integrated into one continuous territory.

The strategy is articulated through four thematic cycling routes, each designed not simply as an itinerary, but as a narrative and spatial framework for integrating different territorial vocations.

The first route, "The Rails of Rioja," links Logroño and Haro, reinforcing the relationship between the main service hub and the symbolic heart of the regional wine system. This itinerary translates the structural axis of the region into an experiential corridor where the tourism value of wine is extended through movement, stopovers, and territorial continuity.

The second route, "The Path of the Future Vine," combines viticultural landscapes with the symbolic and cultural dimension of the Camino de Santiago, opening the wine experience to a broader cultural and spiritual interpretation of the territory. This route allows the regional wine identity to interact with slower and more reflective forms of travel.

The third route, "Vertical Vineyards," explores the more elevated and marginal parts of the region, emphasizing the relationship between viticulture, mountain landscapes, and environmental specificity. In doing so, it broadens the spatial expression of wine tourism beyond its most established and accessible nodes.

The fourth route, "Along the Must Riverbanks," follows the Ebro corridor, connecting lower-density areas and integrating agricultural landscapes, small settlements, and riverine environments into the regional tourism structure. This route supports the emergence of a more continuous territorial experience, in which the wine landscape is not limited to iconic points, but becomes a readable and accessible regional condition (Fig. 5).

These itineraries are supported by a wider system of territorial nodes and infrastructures designed to make the tourism experience more inhabitable and territorially embedded. In this sense, the strategy includes the adaptive reuse of existing buildings and disused structures, such as former railway buildings, agricultural service spaces, and small infrastructural artifacts, converting them into tasting points, accommodation facilities, information centers, and interpretative spaces. This approach reinforces the territorial continuity between productive heritage and tourism development, while reducing the need for new land consumption.

A key role within this network is assigned to the "Vitis Pavilion – Rioja Hub," conceived as an intermodal and multifunctional structure able to support visitor orientation,

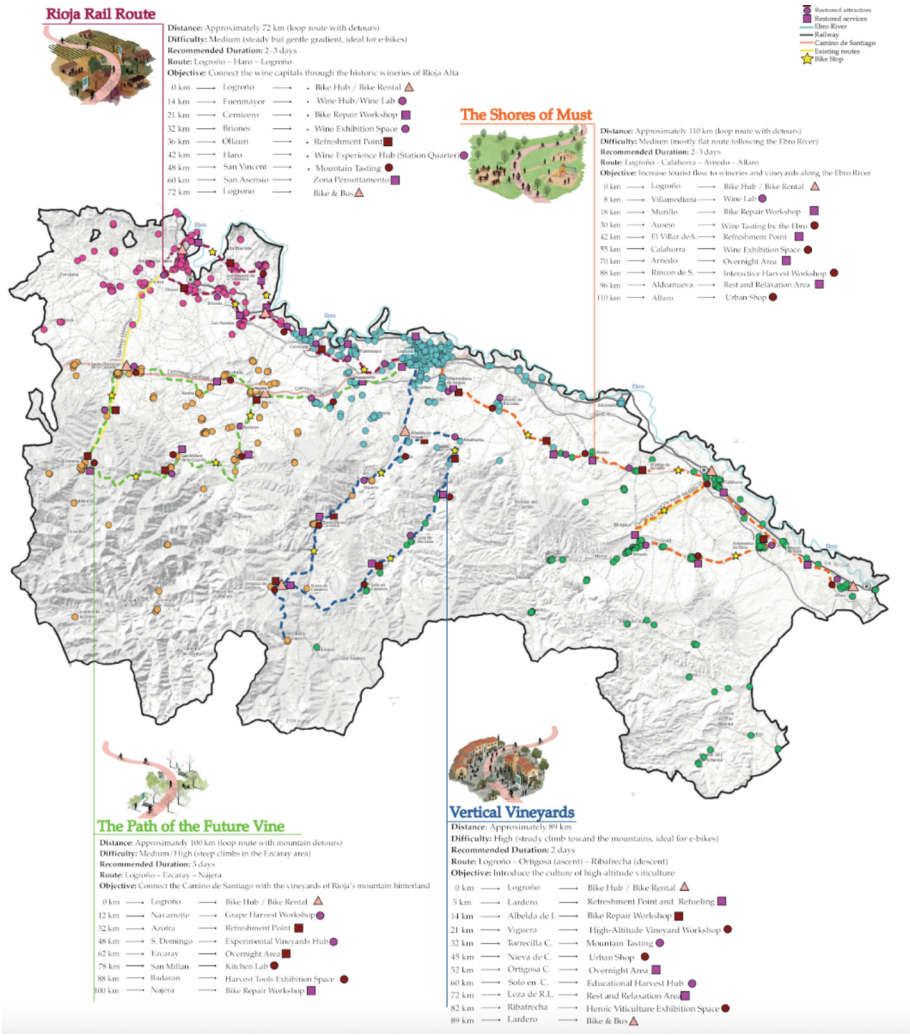

Fig. 5. Map of hard interventions

mobility exchange, and territorial interpretation. Alongside this central node, the introduction of Smart Hubs for e-bike support, service assistance, and route accessibility helps consolidate the practical dimension of the slow mobility network.

The strategy is further reinforced by a set of soft territorial devices aimed at enhancing the coherence and continuity of the visitor experience. These include the "Rioja Passport," designed as a cumulative and exploratory mechanism encouraging visitors to move through different nodes of the region; integrated Wine & Ride packages linking wineries, hospitality, and mobility; and a digital support system capable of improving route legibility, real-time accessibility, and visitor orientation (Fig. 6).

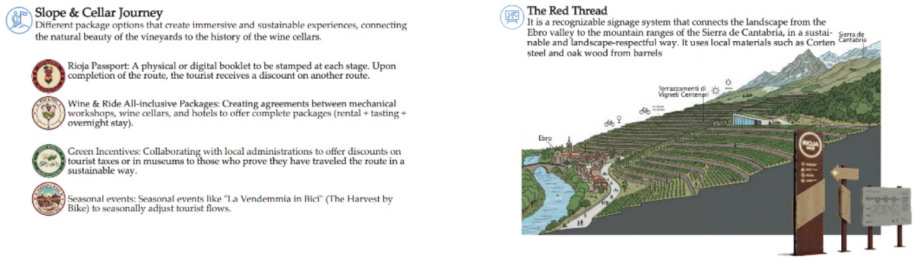

Fig. 6. Map of soft interventions

From a strategic standpoint, what is important about this plan is that it is not just the incorporation of individual attractions, but the creation of an overall territorial tourism syntax in which wine specialization becomes more readable, more livable, and more connected to the regional framework in general. In this context, the project will not be about diluting the wine identity of La Rioja, but rather about reinforcing its territorial ability.

5 Conclusions

This study has explored the case of La Rioja as a specialized inland region in which a strong productive identity, centered on viticulture and wine culture, constitutes the main foundation of territorial recognition and tourism appeal.

The application of the STESY framework has shown that the region already possesses the essential components of a highly competitive tourism ecosystem. Wine specialization clearly functions as the principal structuring element of attraction, symbolic value, and territorial distinction. At the same time, however, the analysis reveals that this specialization has not yet been fully translated into a broader and more territorially integrated tourism model.

The issue emerging from the case study is therefore not a lack of resources, nor the absence of a recognizable tourism identity. Rather, it concerns the limited integration between the wine system and the wider territorial dimensions of tourism development, including mobility, permanence, hospitality, and the activation of complementary areas. In this sense, the study suggests that the strategic value of La Rioja lies precisely in its possibility to evolve from a region visited for wine into a region experienced through wine.

In this regard, the suggested strategy of "The Rioja Experience: Slope & Cellar" addresses this problem by understanding wine specialization as a kind of territorial infrastructure instead of a tourism product per se. This intervention describes some possibilities as to how this infrastructure, through slow mobility, adaptive reuse, distributed experience nodes, and intermodal accessibility, could provide a potential way for the development of the economy of wine into a more continuous tourism environment.

Furthermore, the case of La Rioja provides an additional perspective in relation to planning of sustainable tourism. For many specialized regions, the main problem of tourism planning is not about attracting more tourists, but about understanding what

already exists as excellence and how it could be transformed into territorial sustainability. With this in mind, wine tourism can be considered not only as an activity within some niche or thematic sphere, but also as a planning field itself [33–40].

The whole application is structured on the STESY framework [28, 41, 42]: a robust spatial analytical framework driving from the early stages the strategic design in sustainable tourism for a specific destination area. The framework had been applied in a number of local studies selected among major destinations (i.e. EU Capitals, UNESCO Sites, Environmental global attractors etc.) [43, 44], minor inland tourism areas (i.e. Vulture, Pollino national Park) [45, 46] and niche tourism sites (i.e. Islands) [47–49].

In this paper the main limitation comes from the lack of discussion with local stakeholders. In facts the research was fully development on desk and remotely. It is also relevant to point out how the STESY method effectively supported the process providing a guide to students to start with effective local analysis, to perform meaningful spatial interpretation of a complex phenomenon, to identify design options/solution for a strategic proposal compliant with NUA international principles.

The indicator dashboard included in the STESY platform allows to compare this application with other case study in a significant and effective way, supporting the decision-making process in identifying intervention priority to better plan tourism sector locally benefitting of multi scale assessment options and accountability management of global objective for sustainable and climate responsive design [50–52].

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