"Croatia 365": A STESY Based Strategy for Tourism Destagionalization

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Abstract. Following the COVID-19 pandemic, the tourism sector has emerged as one of the most resilient industries. In 2024, many countries are experiencing a strong recovery, with tourism flows returning to pre- design interpretation and guiding sustainable development strategies at the territorial scale. This paper applies the STESY model in the Istrian region of Croatia—an area offering a rich blend of cultural, historical, and natural assets. The study aims to construct a strategic framework for local tourism system development, grounded in a robust analytical process that includes open data and cluster analysis. Findings reveal a strong seasonal concentration of tourism in the summer months, posing significant challenges to economic stability in the off-season. Developed in collaboration with architecture students at the University of Basilicata, the proposed strategy—"CROATIA 365"—seeks to enhance the regional tourism ecosystem through year-round planning initiatives. The paper outlines the methodological approach, presents the case study analysis, and concludes with key insights, limitations, and recommendations for future policy and planning interventions aligned with the New Urban Agenda. Pandemic levels of 2019. This trend confirms the strategic role of tourism in driving socio-economic recovery and in shaping new models of sustainable territorial development. Tourism is analyzed using an integrated approach that combines open data and quantitative analysis.

Keywords: New Urban Agenda · Sustainable development · Sustainable tourism ecosystem · STESY

1 Introduction

Tourism development represents a key challenge in the Post COVID era in order to recover territorial socio-economic structure and an opportunity to foster sustainable development in spatial planning [1–4]. Moreover, tourism represents and horizontal domain of policy making and design implementation in a multiscale [5, 6] and multistakeholder perspective [7].

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From the global perspective of sustainable development [8, 9] to the operational level of key essays discussing various aspects of sustainable urban planning, land use, transportation, and ecological design [10] the request for updated technical competences in urban and regional design is oriented to the need to deliver implementation projects compliance with global SDGs and NUA [11] principles. Traditionally, the territorial strategic design advocates to manage the conflicts arising between economic growth, social equity, and environmental preservation in urban planning [12].

Current trends, more than standard rules, in policy recommendations are at the basis of key international institutional references and academic applications [13–15].

In this case study we refer to an application of the STESY model in a specific area: the tourist region of Croazia centered on the city of Pula. It is part of the Istria and from a tourism perspective it offers a balanced mix between history, art and nature values [16–19].

The objective of the application is to design a strategic framework for developing local tourism system on the ground of a robust analytical process oriented to identify local tourism Destination Areas according to STESY methodological framework. The analytical phase of the study demonstrated how Istria tourism is strongly affected by seasonality: the most part of the visitors is concentrated in the summer months while in winter and spring the tourist flow drops drastically with consequent disadvantages of local economy [20]. Open data and Cluster analysis are applied in order to combine interpretative approach to quantitative design approach during studio lab developed with architectural university students at University of Basilicata.

Tourism as a territorial planning component represents the disciplinary position of this paper, we aim at provide qualified decision support system in defining and support policy making territorial development process referring to the New Urban Agenda as a toolkit for better decision and better "context based" design.

The paper presents the research methodological framework and process. Then, it describes the case study area and the analytical approach based on STESY model. The proposed development strategy "CROATIA 365" integrates local characters and sustainable issues related to enhance tourism eco-system in Pula region. Discussions and conclusions section proposes main highlights of the research, limitations and future perspectives.

2 Background and Scope of the Research

The STESY model [21] serves as a conceptual framework for analyzing and organizing knowledge related to specialized tourism phenomena, with a particular focus on spatial and territorial aspects. This taxonomy provides a structured system for classifying and managing information, supporting the analytical process from the initial phase of territorial classification to the development of strategic decision-making frameworks. The hierarchical approach of the model enables the classification of specialized tourism into three distinct levels: Specialized Tourism Ecosystem, Specialized Tourism System, and Specialized Destination Area (DAj). The latter represents the primary unit of analysis for describing the territorial tourism supply. A DAj does not necessarily correspond to traditional administrative boundaries but is instead defined by the spatial and functional

organization of the local tourism system. Consequently, a DAj may encompass multiple municipalities or, conversely, multiple DAj may exist within a single municipal boundary. The conceptualization of DAj is formalized as follows:

$$\mathbf{DAj} = \mathbf{f}(\mathbf{Aj}, \mathbf{Sj}, \mathbf{R})$$

where:

- Aj (Attractors) refers to physical points of interest (POIs), including officially recognized national and international tourist attractions (e.g., UNESCO sites, certified historic villages, Blue Flag locations, etc.).
- Sj (Services) includes facilities within the tourism supply chain, such as accommodations and restaurants, each defined by specific locations and attributes.
- R (Reachability) represents the accessibility of the destination, encompassing the infrastructural and organizational system that allows visitors to reach the area via different modes of transportation (e.g., train stations, bus terminals, parking facilities).

A key aspect of the STESY model is the concept of tourism specialization (j), which categorizes a destination based on its predominant tourism type (e.g., cultural, gastronomic, nature-based tourism). This approach enables a detailed understanding of the relationships between functional sub-regions within a territory, facilitating the formulation of data-driven tourism development strategies. By applying this methodology to selected case studies, it is possible to construct a territorial network, enhancing the comprehension of spatial interconnections within the tourism system.

The research approach is based on the following phases (Fig. 1):

1. Analysis: Case study description through main tourism statistics, policies and analytics.
2. Application of STESY model: spatial data selection and classification, stakeholder identification, DA identification and benchmarking
3. Design: objectives identification, territorial scenario and design solutions, NUA compliance assessment.

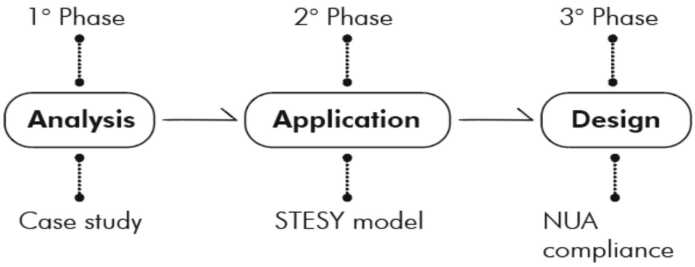

Fig. 1. Description of the methodological framework.

The methodological framework is applied in Croatia case study highlighting issues and opportunities in tourism development strategy. The framework is structured in three different phases that start from the evaluation of tourism supply in given territories to support the design proposal in order to consider specific identity values of territories.

2.1 Case Study Analysis: Croatia

Croatia is currently undergoing a rapid process of touristification, positioning itself as one of the most dynamic tourism hotspots in Europe. According to the latest data from the United Nations World Tourism Organization (UNWTO), the country ranks among the top ten most attractive European destinations in 2024 [22]. This highlights a significant expansion of the tourism sector, increasingly recognized as a key driver of the national economy. However, this accelerated growth also raises important questions regarding the social, environmental, and urban sustainability of such developments.

Croatia's tourist appeal is predominantly tied to its coastal areas and islands, which offer natural and cultural attractors. From a territorial point of view, Croatia is divided into various regions that present highly diverse geographical and territorial values.

The Dalmatian coast and the Istrian peninsula are the most visited areas, thanks to their offer of both seaside and cultural tourism. As shown in Fig. 2, there is a clear concentration of services, attractors, and accessibility along the main coastal nodes. This spatial distribution highlights the centrality of coastal areas in the organization of tourism-related infrastructure and mobility networks.

Based on Eurostat's statistical data, an analysis of overnight stay trends from 2020 to 2023 reveals a pronounced peak in tourist arrivals between June and August, followed by a significant decline from November to February (https://ec.europa.eu/eurostat/data/database). This pattern reflects the region's strong reliance on summer tourism and highlights a structural limitation in the diversification of its tourist offer.

2.2 Application of STESY Model:

The analysis of the territorial system and tourism offer in the study area was carried out following the STESY model, which categorizes key elements into three main components: Attractors, Services, and Reachability.

The analysis focused on multiple dimensions shaping the tourism dynamics in Istria. Central to this are the region's tourist attractions, including its rich historical and archaeological heritage and natural landscapes. These are supported by a network of services such as accommodation, food and beverage establishments, transport facilities, and a variety of experiential activities. Reachability also plays a crucial role, with the connectivity of transport infrastructure influencing the ease of access to key points of interest. Institutions such as museums and art galleries, beach resorts, and archaeological sites emerge as pivotal components of the tourism offer, contributing both to the economic vitality of the region and the preservation of its cultural identity.

Using the GEODA software[23], a cluster analysis was conducted to identify the Destination Areas.

The analysis of Istria's tourist clusters highlighted the presence of six main areas of interest, divided into two groups:

- Areas with a well-established tourist offer, characterized by a high presence of infrastructure and services.
- Areas with a more limited offer, where the tourism potential is still under development and requires strategic investments.

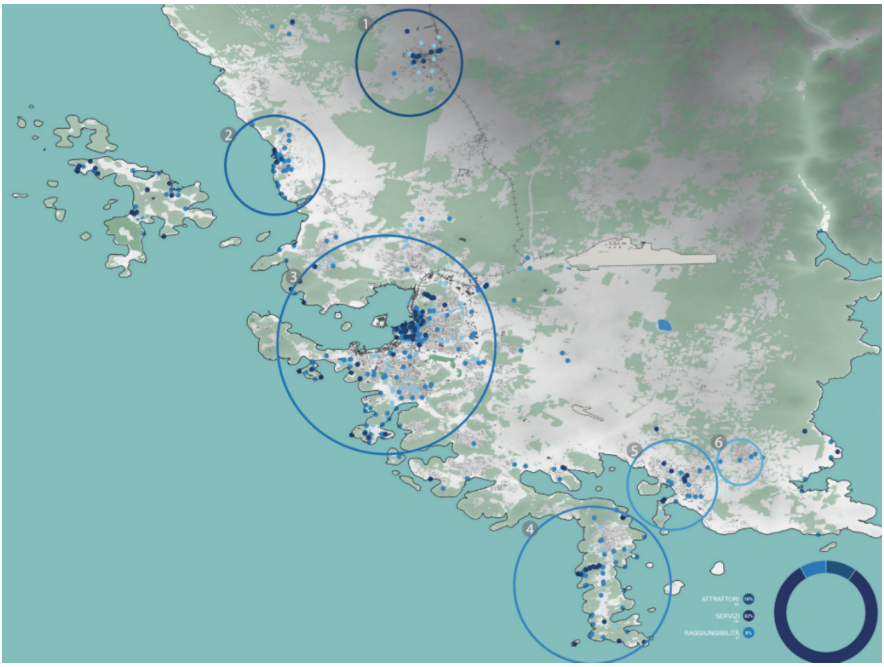

Fig. 2. Personal elaboration. Spatial distribution of Attractors, services and Reachability in Istria region-Croatia.

As shown in Fig. 3, the analysis of Croatia's tourism system has highlighted several issues that hinder the full development of the region's potential—particularly the strong seasonality of the tourism supply and the limited accessibility of less developed destinations. While Istria is one of the country's most renowned tourist regions, its visitor flow is heavily concentrated in the summer months, with a sharp decline in demand during the low season. Furthermore, locations that are part of the so-called "weaker" tourism system lack adequate infrastructure and services to attract visitors year-round.

2.3 Croatia 365

Guided by the STESY model and the New Urban Agenda principles, the intervention includes the creation, job opportunities, infrastructure for biodiversity protection, and the promotion of local culture and mobility.

The analysis of Croatia's tourism system has revealed several structural challenges that hinder the full realization of the region's potential—chief among them, the pronounced seasonality of tourism and limited accessibility to underdeveloped destinations. While Istria remains one of the most prominent tourist regions in the country, visitor flows are heavily concentrated during the summer months, with a sharp decline in demand during the off-season. Moreover, areas that belong to what may be termed the "weaker" tourism system often lack the infrastructure and services necessary to support a year-round influx of visitors.

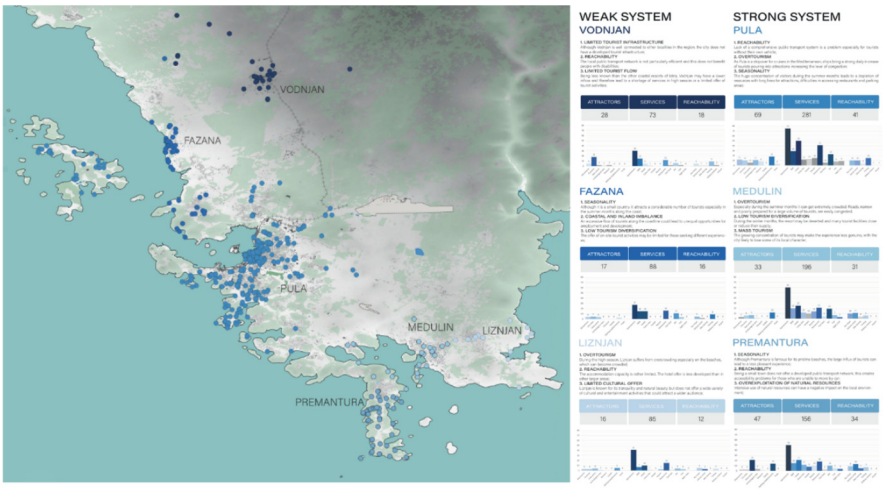

Fig. 3. Study area with Destination areas identification and evaluation.

In response to these issues, the "Croatia 365" project was developed as a comprehensive initiative aimed at transforming Croatia into a more balanced, sustainable, and year-round tourist destination. Drawing on successful international best practices, the project focuses on three strategic objectives:

- De-seasonalizing the tourism offer, encouraging visits beyond the peak summer months and extending demand into autumn and winter.
- Enhancing accessibility and connectivity in less developed areas, particularly within the Istrian region.
- Promoting sustainable tourism models, including soft mobility, experiential travel, and innovative forms of accommodation.

Through an integrated, multidimensional approach, the initiative seeks to valorise Croatia's natural, historical, and cultural assets, positioning the country as an attractive destination throughout the entire calendar year.

The project (Fig. 4) enhances sustainable mobility by upgrading the historic Parenzana cycling route (123 km from Trieste to Poreč). To increase its tourism impact and accessibility, it includes:

- New connections to underdeveloped towns (Vodnjan, Fažana, Ližnjan).
- Installation of 17 bike-sharing stations near major attractions.
- Themed cycling routes blending nature, culture, and gastronomy.

To reduce seasonal imbalances, a Winter Festival (November–February) is planned, inspired by Malta's model. It will feature:

- Concerts and cultural events.
- Food and wine fairs.
- Artisanal workshops and labs.

To diversify accommodations and reach different tourist segments:

- Glamping units in natural settings will cater to high-end cycling tourists, offering privacy, wellness areas, and bike services.
- Scattered hostels in restored historic buildings will provide affordable lodging for young/budget travellers, promote cultural immersion, and support urban regeneration.



Fig. 4. Design proposal

3 Discussion e Conclusions

This research deals with a specific issue of touristification process in Istra: the seasonality combined with the perspective of a better connection between strangest tourism destinations and weakest ones. In this term we applied a procedural approach based on the STESY model to develop a territorial sustainable tourism development design in a strategic perspective. The identification of key tourism Destination Areas (DAj) and the analyses of their components: Attractors, Services, and Reachability, are the basis for a quantitative assessment oriented to demonstrate how proposed soft and hard measures are organized as a tourism development proposal. Our findings underscore the need for a balanced tourism strategy that integrates natural and cultural heritage (less exploited in the internal and less accessible areas) with sustainable infrastructure improvements, connecting seaside destination areas in a territorial scale masterplan [24–26].

The proposed development strategy, "CROATIA 365," aligns with the New Urban Agenda by enhancing territorial connections by cyclo-tourism, fostering environmental conservation and promoting responsible tourism practices. The implementation of a new cycling route equipped with eco-sustainable accommodations aims to create a more structured and resilient tourism system that benefits both visitors and local communities. It represents a strategy to balance tourism presence in the territory redistributing towards weakest destinations (clusters) part of the flow by diversification of tourism supply. The result may be defined as a redeveloped tourism supply chain between coastal areas and inland mountainous sites taking care of the local values [27–31].

Limitations derive from data source (mainly based on open data [32] - Open Street Map - implemented in the STESY model) and the missing step to involve local operators and stakeholders in the design procedures in order to enhance the local validations of the proposal.

This study was conducted on the basis of a University Class Studio conducted with Architectural students at the Basilicata University. Therefore, the character of the application is an academic proposal more than a real case study test. It reinforces a teaching objective oriented to test downscaling of the New Urban Agenda Principles on different topics and thematic area [33–36].

Future research should explore advanced spatial analysis techniques and participatory approaches to refine the STESY model [37–42] implementation placing results in the framework of real decisions making processes for tourism policymaking.

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