

"Sherry Triangle", Investigating Tourism Ecosystem in Andalusia (ES)

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Abstract. Sustainable development strategies at urban and regional levels encompass a multidisciplinary discourse integrating global perspectives with practical insights into sustainable urban planning, land use, transportation, and ecological design. Addressing the tensions between economic growth, social equity, and environmental preservation, current trends in policy recommendations draw from international institutions and academic research. Tourism emerges as a pivotal sector in urban sustainability discourse, shaping policy and design across multiple scales and stakeholders. This paper presents a case study applying the STESY model to in Andalusia (Spain) a region witnessing substantial growth in its tourism industry. With eno-gastronomic and cultural tourism as its focus, the study employs open data and cluster analysis to identify local tourism Destination Areas, guided by a strategic framework developed through collaborative efforts with architectural students from the University of Basilicata. Focusing on tourism as a critical component of territorial planning, the paper advocates for a decision support system aligned with the New Urban Agenda, emphasizing context-based design and sustainable development principles. The methodology outlines the STESY model application, culminating in a proposed development strategy titled "Sherry Triangle" aimed at enhancing Andalusia's tourism ecosystem while preserving its local identity and sustainability. Discussions and conclusions highlight research insights, limitations, and future directions for sustainable tourism development.

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

1 Introduction

Different regions face sustainable development strategies for sustainable tourism enhancement under the umbrella concept of regional development from the global perspective[1–3] to the operational level of key essays discussing various aspects of sustainable urban planning, land use, transportation, and ecological design [4]. Challenges and opportunities of sustainable urban development [5, 6] generally are positioned in

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O. Gervasi et al. (Eds.): ICCSA 2025 Workshops, LNCS 15887, pp. 16–26, 2026.
https://doi.org/10.1007/978-3-031-97589-9_2

the conflicts between economic growth, social equity, and environmental preservation in urban planning [7].

Current trends, more than standard rules, in policy recommendations are at the basis of key international institutional references [8, 9] and academic applications [10–13].

Tourism is a key sector for current debate in urban sustainability [14–16] and it represents and horizontal domain of policy making and design implementation in a multiscale[17] and multistakeholder perspective [18]. In this research paper we refer to an application of the STESY model [19] in a specific case study: the "Sherry Triangle" in Spain. The Sherry Triangle in southern Spain is a destination for wine lovers and culture seekers. This sun-drenched region in Andalusia offers a perfect blend of history, gastronomy, and traditions representing a relevant case study of tourism phenomena investigation. Local tourism offer includes visits to world-famous sherry bodegas (wineries), attending flamenco performances, and local food tasting. Wine tourism plays a significant role in the local economy, generating approximately €75.5 million in 2022. This figure represents a 39% increase compared to 2021, highlighting the sector's robust recovery post-pandemic. Notably, around 80% of these tourists were domestic travelers, with the remaining 20% comprising international visitors.

Whether strolling through the charming old towns or experiencing the coastal beauty, the Sherry Triangle provides an authentic taste of Southern Spain but also structural imbalances that will be addressed by the design phase.

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. Open data and cluster analysis are applied in order to combine interpretative approach to quantitative design during studio lab developed with architectural university students at the 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 [20–22].

The first section of the paper presents the research methodological framework and process. Then the case study area is described and the analytical approach is detailed. The proposed development strategy "The Sherry Route" integrating local slow mobility options to improve the link among the three corners of the "Sherry Triangle" is discussed in terms of tourism eco-system. Discussions and conclusions section proposes main highlights of the research, limitations and future perspectives.

2 Background and Scope of the Research

The STESY model represents the conceptual framework for analyzing and organizing knowledge related to specialized tourism phenomena in the case study area, with a particular focus on spatial and territorial aspects and the relation among elements of the local tourism chain. 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 d[19]oes 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:

$$\mathbf{DA_j} = f(\mathbf{a_j}, \mathbf{s_j}, \mathbf{r})$$

where:

- a_j (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.).
- s_j (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 on the basis of 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.

2.1 Case Study Analysis: Sherry Triangle

The study focusses on the cities of Jerez de la Frontera, El Puerto de Santa María, and Sanlúcar de Barrameda in the South of Spain. This area, known as the "Sherry Triangle" is characterized by a strong winemaking tradition, which represents a significant part of the local economic income. The three cities contribute 0.70% of Spanish tourism system, which is part of the 3% represented by the province of Cadiz and 13% of Andalusia.

Jerez Airport recorded around 200,000 passengers, marking an increase compared to previous years (www.turismojerez.com, visited 20/03/2024).

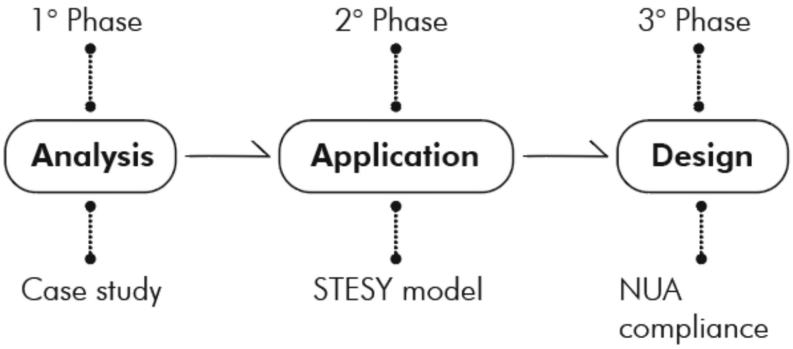

Fig. 1. Description of the methodological framework.

However, Jerez Airportdoes not account for the highest tourist flow in the Andalusian province, as cars remain the most commonly used means of transport, with about 87% of tourists choosing this option to reach the area (www.turismojerez.com visited 20/03/2024). Over the years, accommodation facilities have experienced significant growth, with Jerez leading the way, offering nearly 40,000 beds (Fig. 2). This has resulted in an increase in occupied overnight stays, with the three cities collectively reaching approximately 115,000 overnight stays for all tourists (Fig. 2).

Wine tourism saw a peak in visitors to Jerez in 2018–2019, surpassing 400,000. This trend began to rise again after the COVID pandemic crises, affecting and all three cities contributed similarly. However, Sanlúcar is now the city receiving the highest number of winery-related tourists, with 320,000 visitors in 2022 (Fig. 2).

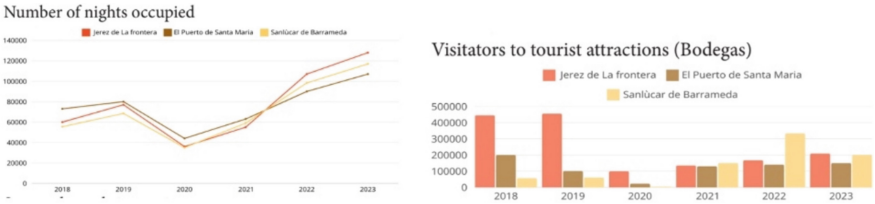

Fig. 2. Personal elaboration of municipal data. Sources: www.turismojerez.com, www.elpuertodesantamaria.es, https://sanlucarinformacion.es/.

2.2 Application of STESY Model

The analysis of the territorial system and tourism offer of "Cherry triangle" was conducted by dividing the territorial elements (represented as POIs) into three main categories according to STESY model: Attractors, Services, Reachability.

The study area highlights the significant presence of services, cultural, and religious attractions. Services account for 73% of the identified points, with 79% consisting of traditional bars and restaurants, confirming the importance of gastronomic tourism.

Additionally, 46% of the main attractions are related to wineries, emphasizing the value of the region's winemaking heritage for local tourism [23–26].

To identify the DAj and then to analyze the distribution of the services, the tourist attractions, and the reachability of the three cities per each DAj, the GeoDa analysis software was used [27, 28].

The results (Fig. 3) showed 3 distinct DAs located in the three administrative boundaries of the Sherry triangle. DA in Jerez de la Frontera and DA in El Puerto de Santa María have a higher concentration of services and attractions, along with good accessibility due to key infrastructure such as the airport (for Jerez) and the port and railway network (for El Puerto). In contrast, DA in Sanlúcar de Barrameda displayed significant challenges:

- Limited Accessibility: The city is less connected, relying mainly on private vehicles or regional buses.
- Fewer Attractions: The analysis highlighted a lower presence of cultural and tourist attractions, which could weaken the overall tourism offering.

The figure below describes the spatial distribution of main POIs categories included in the analytical process.

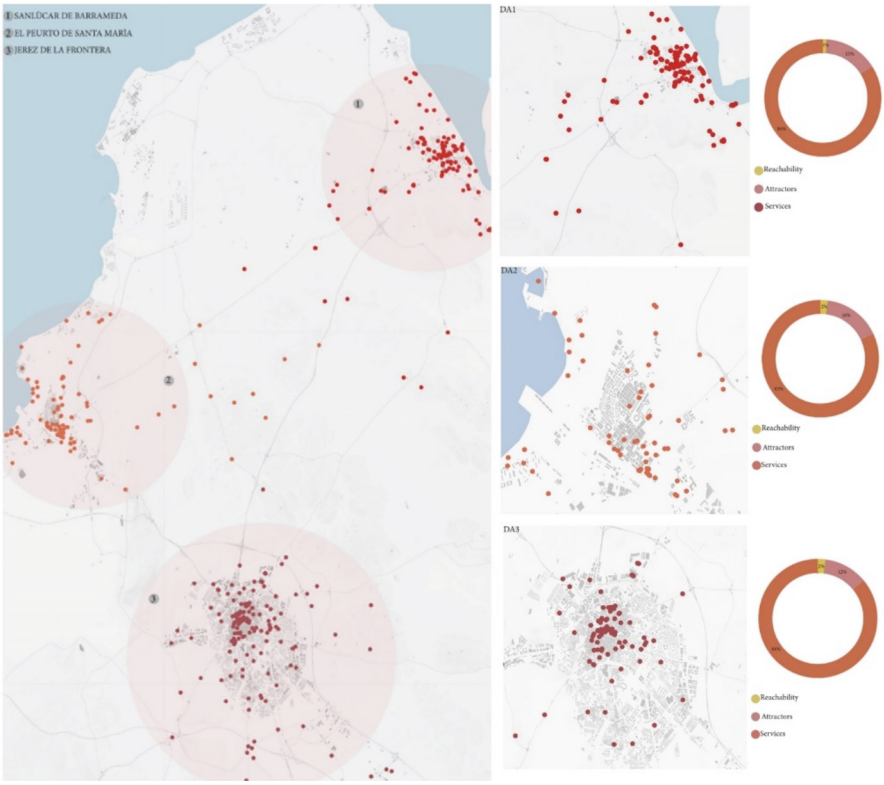

Fig. 3. Study area with Destination areas identification and evaluation.

2.3 Design: The Sherry Route

To enhance wine tourism and improve connectivity between DA Jerez de la Frontera, DA El Puerto de Santa María, and DA Sanlúcar de Barrameda, several actions proposals have been developed in line with the objectives of the New Urban Agenda on the basis of the methodological approach oriented to the downscaling of NUA principles [29–33].

One of the main initiatives focuses on improving transportation, with particular attention to Sanlúcar, which currently faces disadvantages due to limited access infrastructure. Strengthening the connections between the three cities would help reduce territorial inequalities and ensure a more efficient and inclusive transport system, aligning with New Urban Agenda [34] which aims to provide safe, sustainable, and accessible transport for all[35–37].

Another initiative is oriented to define a pedestrian route that passes through the region's vineyards, offering visitors an immersive and direct experience of the territory.

This itinerary would not only promote slow tourism but also contributes to the enhancement of the natural heritage by ensuring accessible and sustainable spaces, encouraging access to inclusive and safe green spaces.

To support this project, the construction of three tasting facilities along the route has been proposed, where visitors can explore local wine varieties and learn about the production processes. This initiative would not only foster economic growth and employment but would also contribute to the protection and promotion of the region's food and wine heritage, reinforcing the link between culture and sustainable development.

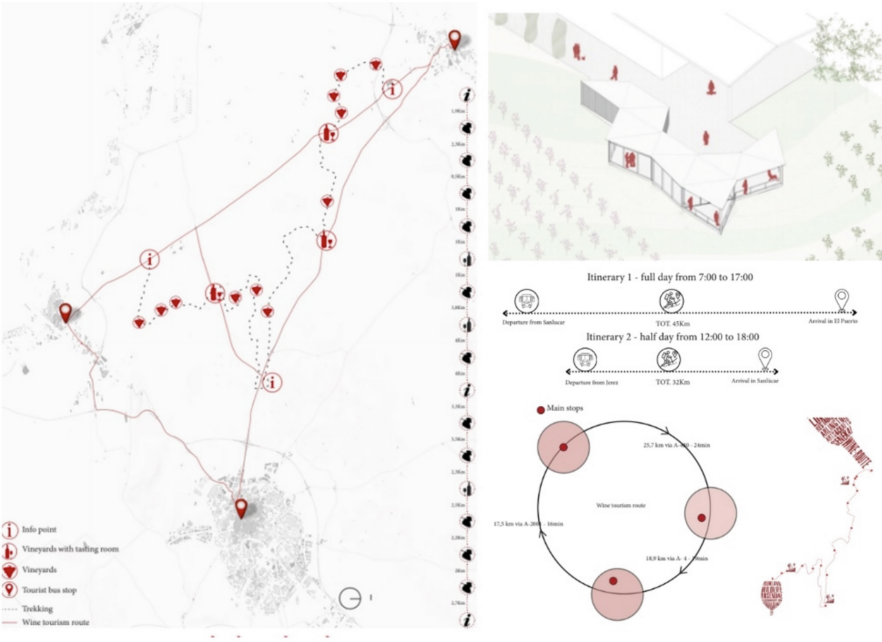

Fig. 4. Design: Strada dello Sherry

Finally, a key aspect of the project is the promotion of slow and sustainable tourism, offering authentic experiences that respect the environmental features and local traditions. This strategy aims to reduce environmental impact while enhancing cultural identity by involving local actors in the tourism process.

Overall, these proposals represent an integrated approach to enhance the appeal of the "Sherry Triangle," strengthening its infrastructures, and promoting its rich food and wine heritage.

Through the identification of DAs and Components, the primary stakeholders detected. The Wine producers are the main actors involved in the supply of eno-gastronomic attractors. Tourism operators manage the facilities and services related to the value chain while local authorities are responsible for infrastructure and development strategies (Figs. 4 and 5).



Fig. 5. Design: Project view.

3 Discussion e Conclusions

This paper reports the results of a specific studio experience developed with architectural students handling the implementation of the STESY model as a structured approach in tourism strategic design in a target area [33, 38]. The "Sherry Triangle" in southern Spain represents a significant study case as it includes strong identity value connected with a well-known tourism identity (the Sherry production) combined with inland and rural characters defining infrastructural and organizational challenges for the sustainable management of tourism phenomena. Such elements refer to a specific tourism category: eno-gastronomic tourism. Those main features are common in many European territories where the presence of quality food traditions is currently driven towards economic

development processes based on tourism exploitation. From the early stages of context analysis and data collection the methodological framework driven a territorial design process toward specific place-based proposal including architectural and organizational elements under the umbrella of NUA downscaling [39–42].

The applied research process delivered an effective collective learning both for students, tutors and involved technicians demonstrating the advantages of applying a structured methodology in strategic design focusing on tourism development as a component of territorial planning connected with real estate values and the complex framework of other territorial resources [43–47].

The limitations regard the need to extend this approach to additional case studies comparing results and connecting the analytical approach to real territorial development applications.

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