

Article

Sustainable Governance of Tourism-Based Social–Ecological Landscapes

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Abstract: In this research, we intended to develop a tool that is able to support the governance of tourism destinations in pursuing adaptation strategies to face environmental impacts. The Sustainable Tourism Assessment Index (STAI) is a synthetic index suitable to assess a destination's readiness for the implementation of sustainable tourism development trajectories, and it is characterized by a place-based and holistic approach. STAI has been tested in two specific destinations, Gargano and Grecia Salentina, both located in Apulia (Italy). The two areas were analyzed based on a set of selected indicators, appropriately adapted from a literature analysis, using data from multi-source scraping and referring to the year 2019. Principal component analysis allowed us to compare the tourism performance of the two areas. STAI was then calculated at the municipality scale on the basis of the values of each variable. According to the results, we argue that STAI is a useful tool for governing tourism destinations, including minor ones, and helps support the implementation of development strategies in accordance with the SDGs. Moreover, it helps in comparing different locations in the same region/country from a different perspective of sustainability, as well as assessing the levels of governance sustainability of a tourism-based socio-ecological destination.

Keywords: sustainable tourism governance; Sustainable Tourism Assessment Index; SDGs; environmental indicators; landscape management



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1. Introduction

Landscapes as social–ecological systems, also understood as spatial units in which crucial processes of social and ecological systems take place, are characterized not only by hierarchies of interdependent ecological processes that condition each other in space and time [1], but also by social processes that influence them and are in turn conditioned by them. They can be considered a panarchy of nested levels of socio-ecological landscapes that combine different sets of political, social, economic, and cultural aspects. These hierarchical levels can be defined in terms of unique socio-ecological landscapes (SELs) [2]. Human-made disorders are driven by the social component of SELs organized into a panarchy of nested jurisdictional levels defined as clearly demarcated and organized sociopolitical units, for example, family, village, county, province, region, and nation [3].

The benefits humans derive from ecosystems refer to the goods and services they obtain directly or indirectly from ecosystems, which can be regarded as natural capital and, in essence, link human well-being to the natural environment [4]. This duality of components, social and ecological, is reflected in some definitions of landscape, which define it as a continuous link between nature and society, as it involves environmental, economic, and social processes [5–7]. The discussion must focus on the valorization of such landscapes so that they are identified not only as natural but also as social/cultural spaces, accepting that these forms of value are interconnected. Separating these dual aspects could destabilize their management models to the point of making them unsustainable. Therefore, landscapes can be considered sets of bio-geophysical elements interconnected with social factors [8].

Sustainability is also defined as a socio-ecological economic process characterized by the desire to pursue a common ideal. Sustainability refers to five main capitals: natural, social, product, financial, and human. Sustainability, in general, must refer to these forms of capital. It is assumed that a balance among these five types of capital is necessary to meet human needs and generate individual and community well-being [9–11].

The main link between the environment and the socioeconomic system is landscape services [12–14] that directly or indirectly support the quality of human life and are provided by structures and processes called “support services” [15], which influence the full functioning of the ecosystem, driving the entire ecosystem, governing most of the provisioning and regulating services (e.g., food and water cycling and regulation and nutrient cycling), and also cultural services, which tend to change as the landscape changes [15,16], with decisive impacts on the economy. On the other hand, it is also important to emphasize the crucial role of feedback: the economy affects both the environment and society, and society affects the environment in different ways (which can be, in general, positive or negative). Determining the impacts of socioeconomic drivers on landscape services at regional and landscape scales is certainly critical for making scientific decisions about ecosystem and landscape management, as well as the ability to estimate the complexity of natural and anthropogenic processes, which is crucial from the perspective of landscape management and restoration [17,18]. In particular, sustainable environmental management can only be achieved if the options and actions taken are environmentally and ecologically sustainable, economically realistic, technologically feasible, socially desirable (or at least socially tolerable), administratively manageable, legally permissible, and politically expedient [19–22].

In addition, the perspective of landscapes as social–ecological systems aims to better understand how natural and social environments interact and the consequences of these relationships on landscape planning and management. It is now more than sadly known that in recent years, the quality of ecosystems, as well as the quality and quantity of natural resources such as soil, air, water, and forests, which are closely linked to human life, have been seriously threatened and sometimes even drastically reduced with unprecedented rapidity. It is estimated that nearly 60 percent of landscape services have been degraded in the past 50 years due to increased human activities [23], but it is even more worrying that this trend of loss of these services is set to increase soon, increasingly compromising current human well-being and significantly reducing the benefits of landscape services for future generations [24].

Among the most impactful factors in this process of degradation of ecosystem goods and services is the rapid development of tourism, which is considered an increasingly driving industry globally for national economies [25,26], to the point that the tourism market has now become a harbinger of economic prosperity [27,28]. The continued development of the tourism industry globally has made the close link between human society and the natural environment increasingly evident [29], since it is well established that sustainable tourism development needs and depends on the integrity of ecosystems [30]. On the other hand, while tourism can promote socioeconomic development and cultural exchange, the negative effects [31–38] (such as increased noise, decreased air quality, increased water pollution, and increasing loss of biodiversity) that tourism activities can have on the environment and its innumerable landscape services are increasingly incisive [39]. Indeed, the tourism–environment pair has proven to be conflicting, causing tourism to be considered a socioeconomic sector that is not ecologically “sustainable” [40]. In fact, tourism is a crucial economic and social activity that nevertheless poses worrisome ecological and environmental challenges of increasing impact [41], in contrast to environmental protection goals [42,43]. The threat to sustainable tourism development is the risk to which ecosystems in tourism destinations are exposed [44].

Precisely by virtue of this double positive and negative link between the environment and tourism, an intrinsic interdependence is determined, which makes it essential to simultaneously promote tourism development and environmental protection in order

to achieve sustainable tourism development and the preservation of the integrity of the ecosystem [45,46].

In this perspective, the United Nations 2030 Agenda for Sustainable Development, published in 2015 as part of the 70th United Nations General Assembly, sets 17 SDGs with 169 associated objectives that fully address the issue of sustainability [47,48], in order to facilitate and spread sustainable practices of using natural resources to be subjected to a control and protection regime, promoting conservation objectives, but also spreading culture [49,50]. From this point of view, therefore, the SDGs can constitute useful elements to encourage a significant contribution from the tourism sector to the topic of sustainable development [34] to be achieved using adequate indicators to effectively evaluate and manage the impacts of sustainable tourism development [51–56]. An effective and sustainable tourism governance process passes through the recognition of economic, sociocultural, and, above all, environmental sustainability objectives to be calibrated with the objectives of the SDGs. Consequently, indicators are useful tools for estimating the effective implementation of the SDGs [49,50,57] but also for assessing the overall tourism sustainability of existing governance objectives [58–60], as well as to identify and quantify progress in sustainable tourism development [61,62].

In the tourism industry, stakeholders and people in general are now more aware of its ability to advance or even reverse progress toward the United Nations Agenda for Sustainable Development.

Tourism is a cultural, social, and economic phenomenon that is founded on and impacts the economy, the natural and constructed environment, the local population of the places visited, and the visitors themselves. Due to this wide range of impacts and the broad range of stakeholders involved, a full approach to measuring tourism is needed.

The Measuring the Sustainability of Tourism (MST) program led by the World Tourism Organization (UNWTO) in collaboration with the United Nations Statistics Division (UNSD) and leading countries, with support from the International Labor Organization (ILO) and others, is the most relevant example of a measuring tool. It aims to provide an internationally agreed-upon framework for measuring the impacts and dependencies of tourism on the economy, society, and environment both at the national and subnational levels. Under this perspective, the abundant scientific debate concerning the study and proposal of indices and indicators for the assessment and monitoring of tourism and its impacts in relation to the objectives and goals set forth by Agenda 2030 should also be considered.

In this context, it is impossible to provide an exhaustive review of the extensive scientific debate on sustainability indicators in tourism from 2015, when the SDGs were launched, to the present. However, we intend to briefly mention some pivotal topics.

Firstly, it is possible to spot recurring application of existing sustainability indicators to tourism contexts, such as the ecological footprint [63–65], as well as indicators and rankings referring to established conceptual models like DPSIR or PSR [66–68], or planning paradigms like smartness [53,69,70].

A second cluster involves studies that focus on specific aspects of sustainability: environment [71,72], social equity [73,74], and culture [75,76], which also underlie the attempt to operationalize a holistic interpretation of the concept of sustainability.

There is also a significant application of existing monitoring systems to specific case studies, such as MST [77], the European Tourism Indicators System (ETIS) [56,78–80], or the Tourism and Travel Competitiveness Index (TTCI) [81].

However, the most interesting aspect lies in the growing literature on monitoring the tourism phenomenon in specific contexts, such as mountain areas [82–84], cities [41,70,85], rural villages [86–88], and coastal areas [89,90], as well as protected areas [25,91] and historic settlements [92,93], and even specific regions. This is a significant trend that indicates, on the one hand, a growing awareness on the part of destination governance systems of the importance of having adequate monitoring systems and, on the other hand, the difficulty,

often due to data accessibility issues, of adapting existing toolkits to all tourism territories. In this sense, our work fits into this latter trend of academic research.

Therefore, this research places itself in the perspective that tourism governance can play a key role in enabling economic development from the perspective of mitigating environmental impacts and effectively and pertinently integrating ecological and geographical perspectives. The main purpose of this research is to contribute to the debate on defining heritage strategies useful for achieving the SDGs, with an initial attempt at a study that can also be implemented on a local scale, considering that specific adaptive capacity is also affected and determined by site conditions [94–98].

For this reason, the specific objectives are:

1. Implement a set of indicators that can be measured at limited spatial levels, such as municipalities;
2. To use this indicator system to define an interpretive model applicable to the study of two tourism destinations, making use of principal component analysis.
3. Propose a composite index to assess the susceptibility of territories to sustainability.

2. Materials and Methods

2.1. Study Area

The study areas of the research are represented by two local authority consortiums, which are also two relevant tourist destinations in the Apulia region (southeastern Italy), namely: Grecia Salentina and Gargano (Table 1). The territory of the Union of Municipalities of Grecia Salentina extends for an area of 257 square kilometers in the hinterland of Salento, a few km from the Adriatic coast south of Lecce, and comprises 12 municipalities and a population of around 50,000 residents in 2020. None of the 12 municipalities reaches the threshold of 10,000 inhabitants: Martano and Cutrofiano come close, with almost 9000 residents; Calimera, Corigliano d'Otranto, and Soleto slightly exceed 5000. The other 7 municipalities in the Union, on the other hand, maintain a demographic size below 5000 inhabitants, giving the Union of Municipalities the configuration of a cluster of small towns. Over the past fifteen years, all the municipalities have been affected, albeit to varying degrees, by a continuous depopulation process; however, this appears more contained when compared to other areas with similar characteristics, for example, the South Salento area or, in northern Puglia, the municipalities in the Monti Dauni area. From 2005 to 2020, the Grecia Salentina saw an overall reduction in its population of 7%, with an average depopulation rate of 8% (the highest peak is recorded in Sternatia with –16%, while Corigliano d'Otranto remains almost stable).

Gargano is located near the homonymous promontory and stretches towards the hinterland of the province of Foggia, which comprises 18 municipalities and covers an area of 2586.63 sq km (Figure 1). The population of the area amounted to just under 195,000 inhabitants in 2020, a decrease of approximately 7% compared to 2005. The distribution of the population has remained almost constant over time, with approximately 40% of residents living in the two largest centers, Manfredonia (54,643 inhabitants in 2020) and San Giovanni Rotondo (26,344), and 33% in the 5 municipalities with a demographic threshold ranging from 10,000 to 20,000 inhabitants (San Nicandro Garganico, Vieste, San Marco in Lamis, Apricena, and Monte Sant'Angelo).

The two areas showed significant differences in terms of natural capital, tourism vocation, and the economic stage of destination maturity [99]. However, it emerged in both cases that the configuration of tourism dynamics depends on the combination of a shared policy framework, on the one hand, determined by national and regional strategic planning, and local features, on the other hand, which results in specific place-based governance trajectories for the pursuit of sustainability goals.

In specific, the Gargano area began to be recognized as a tourist destination in the late 1960s, when the tourist vocation was mainly of two types: seaside, in the coastal areas, and religious, with two important pilgrimage destinations (San Giovanni Rotondo, inland, and Monte Sant'Angelo, on the southern coast). The attractiveness of the Gargano area has been

consolidated over the years, and at the same time, the presence of Gargano Park, established in 1991, has contributed to a more complex and attractive configuration of the area thanks to the emergence of naturalistic and artistic cultural elements alongside the religious and seaside ones [100–102]. Indeed, the coastal area still attracts the highest percentage of tourist flow, but in the meantime, it appears to be less geographically polarized and characterized by an attractive offering that goes beyond the mere seaside dimension. Furthermore, the inland of Gargano also presents higher levels of attractiveness compared to the past, especially in light of the recognition of two UNESCO sites: the Sanctuary of San Michele Arcangelo as part of the serial site ‘The Longobards in Italy, Places of Power (568–774 A.D.)’ in 2011, and the Ancient Beech Forests of the Foresta Umbra in 2017, as part of the transnational serial site ‘Primeval Beech Forests of the Carpathians and Other Regions of Europe’.

Grecia Salentina, unlike Gargano, does not yet have an established tourist vocation, having represented for years a minor attraction within the local “Salento” tourism system, whose main attractors are in the coastal area. In fact, the first forms of tourism in the area developed in the early 2000s following diffusive processes with regard to the municipalities in the area closer to the large tourist resorts located on the east coast, which, instead, suffer from an excess of tourism. However, during the last two decades, Grecia Salentina has started a massive process of enhancement of its intangible cultural heritage, especially that linked to tarantism (the reference is to the mega event “La Notte della Taranta”, which has been held every August since 2000), that has contributed to attracting national and international tourist flows [99,103–105]. Furthermore, the distinctive feature of Grecia Salentina is its settlement configuration, which turns the area into a constellation of small historic towns characterized by relevant examples of vernacular architecture and where traditional rites and celebrations are still performed by local communities. Beside the traditional cultural capital, some municipalities in Grecia Salentina have recently undertaken significant efforts in the field of cultural development, promoting events like boutique festivals linked to visual arts and cinema or experiences such as artistic residencies, yoga retreats, and smart working opportunities, which are deeply influencing the attractiveness of the area. Moreover, in the last two years, the municipalities in the area, together with private and public local stakeholders, have been working to consolidate Grecia Salentina as an autonomous tourist destination; in 2023, they developed a shared strategic plan for tourism development.

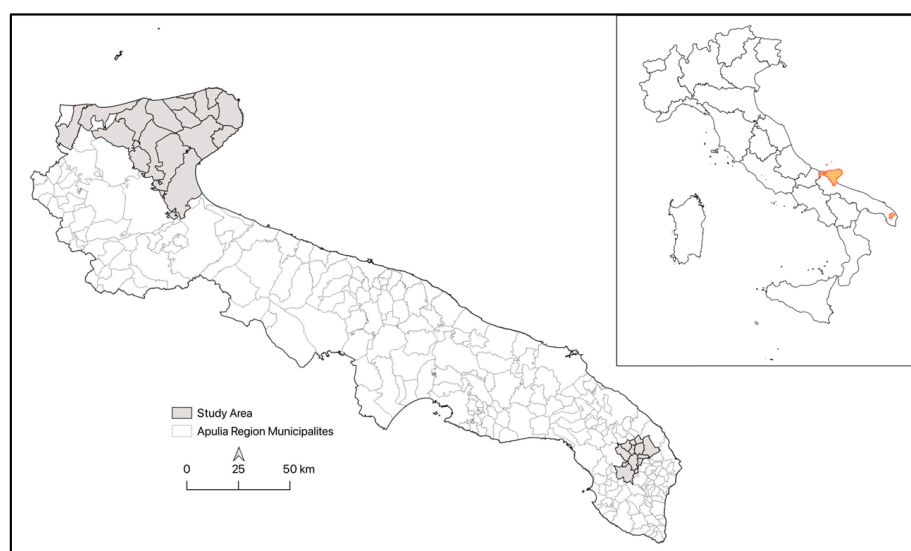


Figure 1. Map of the study area.

Table 1. List of municipalities for each local authority consortium considered.

Local Authority Consortium	Municipalities
Gargano	Apricena Cagnano Varano Carpino Ischitella Isole Tremiti Lesina Manfredonia Mattinata Monte Sant'Angelo Peschici Rignano Garganico Rodi G. San Giovanni Rotondo San Marco in Lamis San Nicandro Garganico Serracapriola Vico del Gargano Vieste
Grecia Salentina	Calimera Carpignano Salentino Castrignano de' Greci Corigliano d'Otranto Cutrofiano Martano Martignano Melpignano Sogliano Cavour Soletto Sternatia Zollino

2.2. Methods

The two areas chosen for analysis were compared with the help of indicators selected based on the literature [53,54,56,61,106–108] and, where appropriate, modified according to their adaptability to the relevant territorial context and data availability. The selection of these indicators specifically reflected their effectiveness in providing useful elements for a holistic reading of sustainability, with consideration to economic, social, environmental, and cultural dimensions. All data were collected through multi-source scraping at the municipal scale, while the base year was 2019. This choice was necessary to preserve the analysis from perturbations due to the COVID-19 pandemic and due to needs related to the availability of municipal-scale data, the latter being the limiting factor in the choice of indicators. Specifically, the indicators selected are shown in Table 2.

To reduce the variability associated with the indicators chosen for the analysis, a principal components analysis was carried out on the entire dataset, consisting of the values of the 10 indicators for each of the 30 municipalities, using the XLStat software by Addinsoft (v. 2022.4.5).

The Sustainable Tourism Assessment Index (STAI) was then calculated by adding the values of each variable for each municipality. Obviously, the values of the variables that represented proxies of tourist pressure (En_TSWP; Ec_EDT; Ec_ATS; So_TPR) were assigned a negative sign.

The values of the STAI Index for each municipality were then spatialized using QGIS software (ve. 3.22.0-Białowieża, licensed under the GNU General Public License), by choosing the “graded” mode for “equal intervals”.

Table 2. List of Indicators chosen for the research.

Topic	Indicators	Description	Data Sources
Environment	Protected Areas over the municipality area (En_PA)	Protected area (ha) over the municipality area (ha)	SIT PUGLIA; ISTAT
	Annual tourist waste production over the municipality area (ha) (En_TSWP)	Annual solid undifferentiated waste production (Kg) related to tourist presences (TP) over the municipality area (ha)	ISTAT; Apulia Region
Economy	Annual average tourism stay over the municipality area (Ec_ATS)	Average number of days spent by a visitor in a tourist location, given by the ratio of tourist presences to arrivals, over the area of the municipality analyzed.	Apulia Region
	Economic dependency on tourism sector over the municipality area (Ec_EDT)	The percentage of tourism enterprises, identified according to the official classification of economic activities (ATECO code), in the total number of enterprises in a municipality and, therefore, over the municipality area.	ISTAT
Society	Tourism pressure on residents over the municipality area (So_TPR)	The ratio of the number of tourist presences to the number of residents of the municipality over the municipality area	ISTAT; Apulia Region
	Employment in tourism sector over the municipality area (So_ETS)	The number of employees in the tourism sector compared to the number of total employees at the municipal level over the municipality area.	ISTAT
Culture	Cultural asset protection—intangible heritage over the municipality area (Cu_PIH)	Number of events and festivals related to traditional food and rituals, per year, at the municipal level, over the municipality area	Italian Ministry of Culture; Apulia Region; Municipalities' official websites
	Cultural asset protection—tangible heritage over the municipality area (Cu_PTH)	Number of museums, archaeological sites, and similar facilities falling within the municipality over the municipality area	Unesco; ISTAT; Italian Ministry of Culture; Apulia Region; Municipalities' official websites
Governance	Governance networks over the municipality area (Go_GN)	Number of ecological, cultural, and social networks where the municipality is involved for its historical value, for its involvement in the National Strategy for Inner Areas, for their involvement in the Covenant of Mayors, and so on, over the municipality area	Borghi più Belli d'Italia; Borghi Autentici d'Italia; National Agency for Development and Cohesion
	Local engagement over the municipality area (Go_LE)	Number of projects promoted by local communities and related to sustainable tourism in each municipality over the municipality area	Apulia Region, National Agency for Development and Cohesion

3. Results and Discussions

3.1. Comparative Analysis of the Areas Using PCA

Once it was ascertained that the Kaiser–Meyer–Olkin test, aimed at measuring the adequacy of sampling both globally and for each variable considered, and that the Bartlett test of sphericity were both satisfied, it was possible to proceed with the extraction of the main components.

According to the interpretation of the eigenvalues and the cumulative variability, it is believed that an adequate number of principal components to extract is 3. In fact, the eigenvalues in Dim.1, Dim.2, and Dim.3 satisfy Kaiser's rule for, which the components to choose are those with eigenvalue $E > 1$. Therefore, by applying the criterion of the proportion of cumulative variance, we can consider the hypothesis of a three-component model valid.

Once the main components were extracted, they were interpreted and characterized.

XLStat's graphical outputs allowed us to conduct our reflections on a dual scale: that of the tourist destinations and that of the individual municipalities that are part of them. In the graph, the municipalities pertaining to Grecia Salentina are shown in purple, while the municipalities in the Gargano area are shown in green (Figure 2a,b).

The first component explains 59.7% of the variance. It shows very high levels of correlation, with all the variables representing a form of tourism pressure ("tourism economic dependency", "tourism pressure on residents", "annual tourism solid waste production"). Furthermore, this component is also useful in assessing the level of tourism in each system using the two areas. Indeed, it is strongly correlated with variables like "employment in tourism", as well as those related to governance, both in terms of networks and engagement, and "protection of tangible heritage". For this reason, we can refer to this component as "environmental, social, and economic governance".

Likely, municipalities that record paramount values with reference to the first component will be characterized by significant tourism performances. This confronts these municipalities with the need to cope with the pressures arising from intensive tourism land use, especially in those territories that, on the one hand, have a particularly attractive natural capital in terms of natural and cultural-historical assets but, on the other hand, are characterized by very limited areas and, consequently, have a reduced carrying capacity. In this sense, the relevance of the two governance variables in defining component 1 can be explanatory of the response strategies implemented by territories to mitigate the impacts of tourism on the natural capital. Such strategies are, not infrequently, promoted as part of supra-local networks whose goal is to support peripheral territories, often small rural municipalities, in the implementation of territorial development strategies by fostering the proactivity of local actors in enhancing local heritage and assets. Also, the "local engagement" dimension is suggestive of a certain degree of proactivity on the part of a diverse range of local actors, including local institutions, first and foremost, but also associations and research organizations.

The second component explains 19.5% of the variance. The variable that most characterizes this component is "protected areas". For this reason, the second component can be interpreted as "environmental protection". Furthermore, it is relevant to note that this component shows a negative correlation with the variable "intangible heritage". Municipalities with relevant scores with reference to this component are more likely to have an environment-based tourism strategy. In this sense, the environment is both a driver for tourism and a principle that guides stakeholders' behavior.

Finally, the third component explains 10.8% of the variance and is characterized by the variables "protection of cultural intangible heritage" and "annual average tourism stay". Nevertheless, the two variables show no correlation. The variable "average stay" is moderately correlated with "protected areas", while "protection of cultural intangible heritage" has a negative correlation with "protected areas" and a moderate correlation with governance variables as well as some of the variables related to tourist pressures.

been induced by geographical proximity to the major overcrowded tourism destinations and that their tourism development is due to policy-led initiatives centered around the enhancement of intangible heritage. On the other side, longer average stays are recorded in municipalities with a high percentage of protected areas.

On these grounds, we can now observe how the territories behave according to the components and provide a spatial interpretation of the given data.

Looking at the biplots, it immediately jumps out at the different ways in which municipalities are aggregated within the two destinations with respect to all three components.

In general, it can be said that the municipalities of the Gargano area have higher levels of sustainability with reference to the environmental dimension: although levels of tourism are significant, especially in coastal areas, this would not seem to result in excessive weight on the territory in terms of pressures. The only exception, an outlier, is represented by the Tremiti Islands. The territory of the small archipelago is completely protected; however, the extremely limited carrying capacity is a reason for the fragility of the area, with specific reference to the production of waste attributable to tourism.

On the other hand, the municipalities of Grecia Salentina show a marked cultural connotation of tourism, not infrequently developed within the numerous supra-local networks of purpose, of which the municipalities of this area are part, but also starting from the effectiveness of local planning. In this area, the rediscovery of local heritage stands as a tool for the revitalization of the territory and represents the focus of the planning and design activity of local governance and the partnerships between public and private territorial stakeholders. The two areas, therefore, are emblematic of two different strategies of sustainable tourism enhancement. In the Gargano area, the centrality of the environmental dimension is determined not only by the actual territorial endowment but also by the need to equip the area, which is already highly touristic, with a tool to mitigate environmental impacts. Therefore, it can be argued that the environmental connotation of the Gargano area's tourism strategy can be read as conservative and compensatory [109].

Also, in the case of Grecia Salentina, the predominantly cultural connotation is attributable to the territorial endowment. However, unlike the Gargano area, Grecia Salentina is currently in its tourism development phase [110]. Therefore, the implementation of culture-based tourism strategies is not limited to making the local cultural heritage an attractor but has the potential to route the destination's planning activity towards development trajectories centered on the needs of local communities. Moreover, it should be emphasized that the tourism development of Grecia Salentina should be read because of the previous tourism development of the surrounding area, characterized instead by the seaside attraction and increasing episodes of over-tourism. Therefore, the tourism model that Grecia Salentina is putting in place can be grasped, if not in opposition, at least as an alternative to the mass tourism that has characterized the surrounding areas until now. As a consequence, the model of tourism that Grecia Salentina intends to inspire is to be read in a preventive key [109], where it is oriented toward a type of territorial fruition that, on the one hand, prevents the loss of territory in terms of territorial capital, but also of land consumption, and, on the other hand, encourages the development of a responsible tourism habitus from the point of view of both demand and supply.

3.2. STAI Index

The use of the composite index appears particularly useful not only to synthesize the information conveyed by the simple indicators but also because it favors a spatial interpretation of them. In this way, it is possible to identify spatial aggregates on the basis of the propensity to implement sustainable tourism strategies and thus assess their possible correlation with eminently geographic factors.

The maps in Figure 3 provide an effective representation, as they are concise and immediate, of what is yielded by the PCA. They also allow for the extraction of additional information. Specifically, the diversity in the approaches to sustainability in the two areas is confirmed. Through PCA, this diversity in approach could be attributed to both

the different stages of development in the two destinations and the prevalence of the environmental dimension, in the case of Gargano, and the cultural dimension, in the case of Grecìa Salentina, in shaping tourism development strategies.

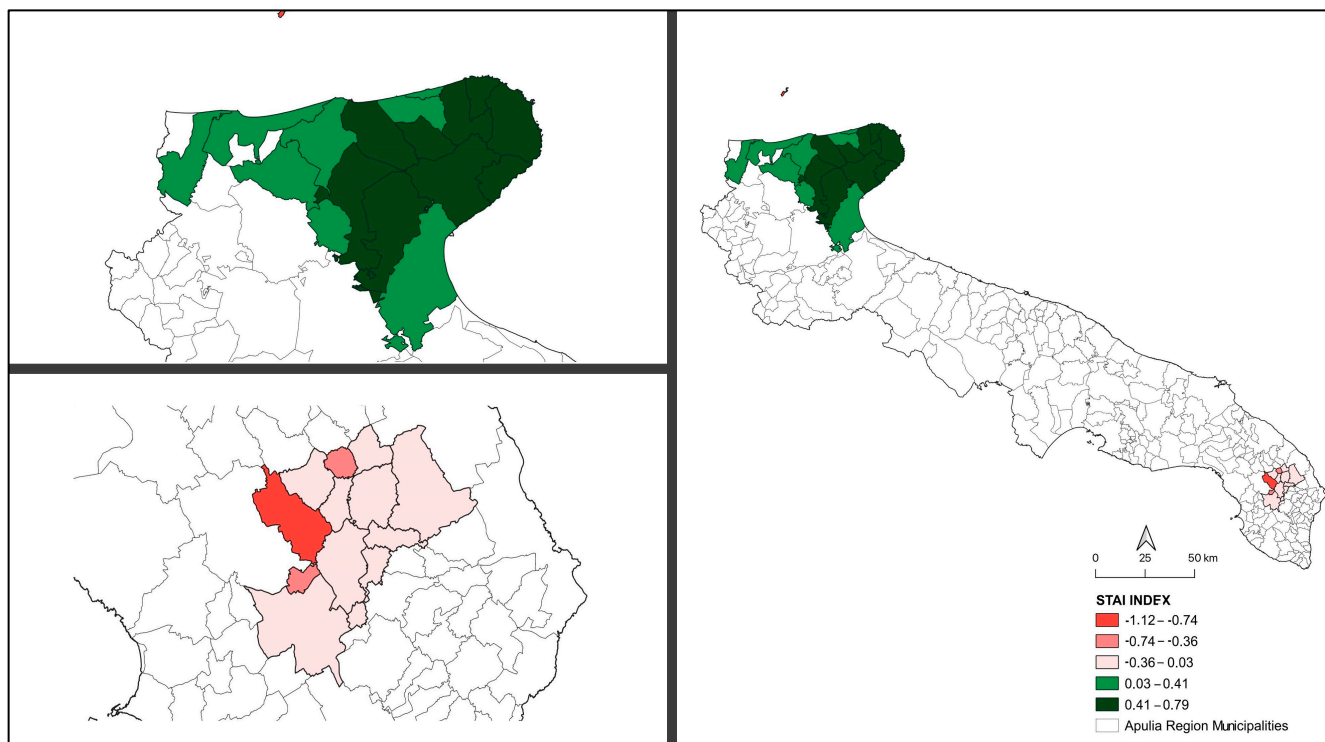


Figure 3. STAI index map of the study areas.

The cartographic representation of the STAI also reflects differentiation in terms of performance, currently showing a greater inclination toward sustainability in the Gargano area compared to Grecìa Salentina. There could be multiple reasons for this.

Firstly, the municipalities in Gargano have a larger area compared to those in Grecìa Salentina and are, on average, less populous. This contributes to a greater carrying capacity beyond the absolute values of pressures. As evidence of this, the case of the Tremiti Islands, the only municipality in Gargano with a negative STAI value, is highlighted.

Another reason contributing to the different performance of the two areas is the role of environmental protection in tourism development strategies. Certainly, the establishment of the Park Authority in the 1990s in Gargano has, over time, facilitated the compensation of pressures resulting from the already high tourist use of the area. Consequently, the definition of the tourism offer has progressively adapted to a new interpretation of natural heritage, no longer just a tourist attraction but an indispensable value in territorial development strategies, not only in terms of tourism but also in a sustainable key. In this sense, the crucial role played by the process of valorization of the natural capital of the territory is evident in Gargano, where it is now consolidated, while in Grecìa, it is in the initial stages.

There is also an aspect that only the cartographic representation can convey, and it concerns the diffusive trajectories of the analyzed phenomena. Historically, tourism in Apulia has primarily developed in coastal areas and then spread, progressively but not uniformly, inland.

As previously highlighted, the coastal area of Gargano constitutes the historical core of tourist attractiveness for the entire Apulia region, as well as being the first to demonstrate a clear propensity for the ecological transition of tourism. However, probably also thanks to the role played by specific experiences of negotiated programming, including the implementation of the National Strategy for Inland Areas as well as the aforementioned processes of valorization of natural capital, the touristification of the Gargano hinterland

has followed the trajectory of sustainability. The tourist boom in Grecia Salentina, on the other hand, should be read, albeit only in part, as an effect of the diffusion processes starting from the high touristification of the contiguous coastal area, which occurred quite recently, although its magnitude is not yet comparable to that found in the Gargano hinterland.

However, we have also explained that the tourism strategy of the emerging Grecia Salentina destination is characterized by a proactive approach reinforced by a significant level of territorial proactivity. Therefore, the negative performance in terms of STAI may be attributable not so much to the actual lack of adequate tools for mitigating tourism impacts but rather to their recent and not always organized establishment. It will be interesting to verify this hypothesis in the future, as well as to see if and how the cultural dimension, prevalent in the Grecia area, will influence the overall STAI value. It is obvious, however, that the analyses carried out are absolutely outlined and guided by the data we had available. The critical point of the research, in fact, was precisely the possibility of accessing data on a municipal scale.

This last observation allows us to emphasize the utility of STAI as a tool for periodic monitoring of the tourism performance of territories at a municipal scale, with the provision of updated data.

4. Conclusions

The aim of this paper was to study the behavior of two tourist destinations in light of the relationship between tourism and sustainability. The relationship between tourism and sustainability was investigated considering the holistic approach to sustainability promoted by Agenda 2030, and, on these bases, we developed a set of indicators able to represent and synthesize sustainability in its economic, social, environmental, political, and cultural aspects. Working on two Italian case studies, we found it particularly useful to start with pre-existing international (UNWTO) and European (ETIS) indicator systems, which allowed us to identify the most relevant themes and potential indicators. The latter were adapted based on data availability.

The interpretive model developed by applying PCA to our analysis allowed us to compare the tourism performance of the two destinations, bringing out the relevance of some latent variables in determining the level of sustainability of the strategies currently in place.

PCA confirmed the empirical evidence, according to which Grecia Salentina and the Gargano act as two destinations with different levels of maturity and with different territorial tourism development strategies, while taking as a starting point a common programmatic framework. Consequently, the way sustainability is interpreted and implemented is also deeply connected with local features.

If we rescale the model and focus on the inter-municipality level, it is possible to identify, within the same destination, groupings of municipalities according to their behavior with regard to individual phenomena; this returns the level of complexity and heterogeneity of tourist destinations that, often for mere marketing needs, are considered unitary entities.

The STAI index is also intended to respond to the growing need for more detailed information that can foster a deeper understanding of the territory. In the present case, the STAI index was used to arrive at a spatial representation of the phenomena analyzed, but because of its synthetic nature and given the high availability of the data used, it can find wide use both in benchmarking analyses and as a periodic monitoring tool.

Therefore, having monitoring tools that are simple but allow us to bring the analysis to a sub-area level seems crucial for the governance of a tourist destination in order to identify territorial imbalances resulting from different types of pressures and also to encourage forms of cooperation from an equalization perspective. The adherence of indicators to the needs of representativeness and use in circumscribed and particularly vulnerable territories such as tourist destinations stems from the non-univocal nature of the very definition of sustainability and, more specifically, of sustainable tourism. As already pointed out,

sustainability indicators can lead policymakers to better decisions and more effective actions by harmonizing global and local demands.

However, there is a critical issue to consider that concerns the creation of site- and destination-specific indicators that can thus adapt to the characteristics and sustainable development needs of sub-state-scale territories within a shared framework of principles. In fact, while the SDGs provide such a framework, the modes of action, assessment, and, above all, planning aimed at achieving these goals are, not infrequently, place-based, not necessarily relevant, detectable, or synthesizable at a broader scale level, yet fundamental to the achievement of the common goals. This becomes even more valuable if such indicators do not represent a mere academic experiment but are designed as a tool to support policy, including at the local level.

However, all this is based on the need to have updated and timely data on a local scale, which represents the limiting factor of the entire governance process since, while it is certainly true that the objectives of the 2030 Agenda for Sustainable Development outline the framework general guiding principles, it is equally true that the real sustainability game is played at a local level, that is, it is there that decisions that concern citizens closely and personally are made. Therefore, these analysis and monitoring tools can be very useful in offering concrete help to those who are called upon to make those decisions upon which sustainability ultimately depends.

In fact, the goal is to foster the development of spatial intelligence, understood as ‘collective learning about adaptation to local conditions and resources’ [111]. In this sense, supporting the construction of a good governance system means enhancing the ability to grasp and interpret the complexity of the socio-ecological system in order to strengthen levels of territorial resilience. Thus, questioning with respect to the resilience levels of a tourism destination means grasping it in its systemic dimension so as to be able to intercept the relationships and feedback that underlie not only its functioning but also its conservation mechanisms. In other words, there is a need for devices that facilitate territorial knowledge that can support governance in implementing sustainable adaptation strategies. As noted in a large part of the literature, specific adaptive capacity is also affected and determined by site conditions. Therefore, a functional element in the implementation of effective strategies is precisely the knowledge of the territory through the definition of appropriate tools for the detection and analytical processing of information, including from a predictive perspective.

Finally, in this case study, the place-based nature of the analysis affects the availability of data and the selection of the variables, and this could represent a limit to the replicability of the model outside Italy. However, despite that fact that the indicators have been defined according to the local context, it has to be underlined that they have been conceived within a multi-scale framework; this means that further development of this research could consider the adaptation of these indicators to other national contexts within Europe.

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