







## Article

# Designing Cultural Routes as a Tool of Responsible Tourism and Sustainable Local Development in Isolated and Less Developed Islands: The Case of Symi Island in Greece

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**Abstract:** Responsible tourism practices promote the idea that responsibility refers to both visitors and local communities, ensuring the protection and conservation of the natural environment and cultural heritage and contributing to a better quality of life. The role of “sustainability” in a tourist development strategy is to protect and reveal what already exists (“reuse, recycle, renovate”) rather than consume. In these terms, cultural routes can serve as valuable tourism assets that can attract visitors and generate economic activity, while protecting the environmental and cultural heritage. This study is focused on Symi, a small and remote Greek island better known as a religious tourism destination, examining how cultural routes could be at the core of an economic development and social cohesion strategic plan. Symi served as a case study due to the island’s rich cultural and natural heritage, including historic buildings, natural attractions, monuments, and archaeological sites. The revealing of those assets is crucial for the advancement of an integrated local strategy for cultural tourism in terms of responsible tourism. The primary objective of this study is to analyze how the development of a cultural routes network, integrating monuments from diverse historical periods, significant religious sites, and areas of significant architectural and environmental value, can contribute to a responsible tourism approach and further a sustainable development that generates multiple benefits for the local community in an insular region.

**Keywords:** sustainable development; cultural heritage; island development; responsible tourism; cultural routes



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## 1. Introduction

In contemporary times, managing and promoting cultural heritage is a complex issue due to the variety and diversity of the evolving parameters that need to be considered for the effectiveness of a successful action plan [1,2]. Alternative strategies for highlighting and revealing the cultural reserve, such as cultural routes, require the comprehensive study, management, and organization of a range of information [3,4].

Focusing on insular areas, economic development heavily relies on preserving and promoting their natural and cultural heritage [5,6]. Islands offer, in particular, a favorable setting for studying sustainability challenges, as limited resources and carrying capacity are more apparent and analyzable [7,8]. Additionally, given their remote locations and fragile environments, sustainable development in island communities is of the utmost importance [9].

According to the literature, the concept of cultural routes underlines its significance in promoting alternative and sustainable tourism models in remote areas—such as islands—but also in preserving the environmental and cultural reserve of each region through alternative tourism products [10–12]. Additionally, both the scientific community and the local community are interested participants in such practices [13,14]. Additionally, it is no coincidence that several European funding programs support such initiatives, especially in rural, insular, and generally remote areas with important cultural assets, both tangible and intangible [15–18].

Subsequently, in this work, we propose the creation of a network of cultural routes in Symi as a tool for the sustainable development of isolated insular areas, focusing on the protection of its cultural and environmental reserve. Symi, a small island of the Dodecanese Island complex, having a rich cultural and environmental reserve, serves as a unique “lab” with which to study and promote the initiative of cultural routes. The objective of this study is to utilize the traditional settlements and the cultural and environmental reserves to create new points of interest for the visitors, while strengthening the local economy and improving the living conditions of the residents, under a sustainable and ecologically conscious concept.

The proposed actions within the cultural routes aim to establish an open-air museum, utilizing innovative mapping practices and promoting responsible tourism practices to preserve the environmental and cultural reserve of the island. The proposed network of six routes showcases characteristic monuments and archaeological sites of Symi’s history.

## 2. Literature Review

### 2.1. Responsible Tourism in Insular Areas

Sustainability has become increasingly important in recent years as a key policy issue, having been mentioned in every development plan [19,20]. The publication of “Our Common Future”—commonly known as the Brundtland Report—by the United Nations World Commission on Environment and Development (WCED) in 1987 was a significant moment in the history of sustainability [21]. It served to popularize the concept of sustainable development, a concept which gained widespread acceptance among governments and organizations and within industry and academia. This concept also found its way into the field of tourism research and practices. The UN World Tourism Organization (UNWTO) has defined sustainable tourism as “Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities” and released numerous recommendations and manuals on the topic [22]. The three pillars of sustainability—economic, socio-cultural, and natural—have also been proposed in tourism practice [23]. However, empirical evidence from the tourism industry suggests that economic performance is often prioritized over ecological and social performance, making it challenging to achieve the optimization and balance of all three pillars of sustainability [24–26].

Due to the increasing concerns about the adverse consequences of over-tourism and the serious threat it poses to the environment, a new approach to sustainable tourism has emerged, an approach known as responsible tourism [27–29]. It is only through adopting ethical and accountable behavior that sustainability can be achieved [27,29].

Responsible tourism seeks to minimize the negative impacts and maximize the benefits of tourism development by actively engaging with local communities, supporting environmental conservation, and promoting cultural awareness among visitors [30,31]. Responsible tourism is defined as “making better places for people to live in and better places for people to visit, requiring that operators, hoteliers, governments, local people, and tourists take responsibility and action to make tourism more sustainable” [32]. The significance of engaging various stakeholders in the creation and oversight of responsible tourism initiatives was affirmed by the Cape Town Declaration of 2002 [33]. In this document, responsible tourism is characterized as a strategy that encompasses: improving

the quality of life of the local community; enhancing the experiences of tourists in the destination; and generating superior business prospects for tourism enterprises [34,35].

Sustainable tourism encompasses various aspects related to sustainability, while responsible tourism relates to the practical implementation of sustainable measures and the factors that drive it [36–38]. This means that achieving sustainable tourism requires a sense of responsibility towards the environment, society, and economy [31,39].

Specifically, insular areas face unique challenges due to their geographic location, including isolation, lack of infrastructure, limited economic opportunities, high costs of living, limited access to healthcare and education, vulnerability to natural disasters, environmental degradation, and abandonment [40,41]. At the same time, insular areas often possess authentically preserved cultural and environmental reserves, as well as traditional practices that are still alive [42]. The development of responsible tourism policies and practices in these areas requires a deep understanding of the local context and stakeholders involved, as well as a long-term perspective that prioritizes sustainability and the well-being of local communities [43–46].

## 2.2. Cultural Routes as a Tool of Sustainable Tourism Development

The term “cultural route” has emerged as a new concept within the constantly expanding and increasingly comprehensive framework of cultural heritage [47,48]. The removal of chronological limitations and the recognition of the significance of other forms and expressions of culture, including those related to industry and technology, have led to the inclusion of new elements as essential components of cultural heritage [49]. The Council of Europe (COE) defined cultural routes as “a cultural, educational heritage and tourism co-operation project aiming at the development and promotion of an itinerary or a series of itineraries based on a historic route, a cultural concept, figure or phenomenon with transnational importance and significance for the understanding and respect of common European values” [50].

In 1987, the term “European Cultural Route” was introduced as part of the Cultural Routes program of the COE. The aim was to highlight, through a journey across time and space, how the cultural heritage of various European countries and cultures contributes to the common European tangible and intangible cultural heritage [51].

ICOMOS recognizes the complexity of new information about cultural heritage, its increasing importance, and its relationship with the territories it occupies. It also acknowledges the need to protect it through scientifically structured actions, as well as the need for social awareness and awakening [52]. To address these challenges, ICOMOS has established the International Scientific Committee on Cultural Routes (CIIC) [53]. Additionally, ICOMOS has developed the Charter for Cultural Routes, which seeks to distinguish cultural routes from other thematically related sets of elements and establish a scientific framework for identifying cultural routes and approaching work in this field [54].

A cultural route should not be narrowly interpreted as natural hiking trails but should be viewed more broadly as a network of places or geographical areas with common significance. The concept of cultural routes does not undermine or compete with other categories or types of cultural elements that may exist in the surrounding areas of the route, such as individual monuments, historical sites, and places of natural beauty [55]. Cultural routes are recognized as a complementary aspect of the broader cultural heritage, and their identification and protection contribute to the overall preservation of cultural heritage [56]. Furthermore, cultural routes are often associated with hiking tourism [57]. Hiking tourism is defined as a form of tourism that involves walking excursions through areas of significant aesthetic, environmental, and cultural value [58]. The existence of appropriate trails, whether organized or not, and whether of easy or difficult access, is closely linked to hiking tourism [59]. Cultural routes are one aspect of the broader cultural heritage which contributes to hiking tourism by providing a unique and experiential journey through history, culture, and natural beauty [60]. The identification and protection of cultural routes

can promote sustainable hiking tourism by enhancing the visitor experience, supporting local communities and economies, and preserving cultural and natural resources [60].

Especially in insular areas, where resources may be limited, cultural routes can serve as valuable tourism assets that can attract visitors and generate economic activity. Local authorities and community members can provide valuable insights into the local context and cultural heritage, while tourism and cultural heritage institutions can offer expertise in product development, marketing, and management [61,62]. Through cooperative efforts, cultural routes can serve as a tool for sustainable tourism development that: (a) benefits local communities and protects cultural and natural resources, (b) lengthens the tourist season, (c) highlights lesser-known attractions and cultural or natural features as tourist goods, (d) reduces negative impacts on the environment caused by mass tourism, (e) attracts new visitors in a recurring phase, and (f) contributes to the reduction of unemployment and the development of new activities and businesses in the indigenous population [63–65].

As a member of the European Union, Greece has adopted all relevant Community principles and conventions related to the promotion, management, and protection of cultural routes. Greek regions are included in several cultural routes that have been recognized by the Council of Europe, such as “The Palm Roads”, “The Routes of the Olive Tree” [66], and “The Roads of European Cemeteries”. Moreover, Greece has played an active role in promoting the theoretical understanding and practical implementation of cultural routes. The country has organized forums and meetings on cultural routes, their relationship with cultural tourism, and their place in sustainable development. For example, the 2nd Delphi Forum on Cultural Routes and the International Meeting in Karpathos are two events that took place on Greek soil, indicating Greece’s dedication to advancing the field of cultural routes. During the International Meeting in Karpathos, it was observed that cultural routes are grounded in the tangible, intangible, and natural cultural heritage of each region or country [67]. The potential of these routes as tools for promoting cultural heritage was acknowledged, as they document and emphasize the cultural identity of each region and its inhabitants. Cultural routes can be leveraged to promote cultural tourism and alternative forms of tourism responsibly and sustainably [68].

### *2.3. The Nexus of Cultural Networks, Open-Air Museums and Responsible Tourism*

In 2006 the COE implemented a novel strategy known as the “Cultural Corridor” initiative, primarily in the Southeast European region [69]. Cultural corridors are conceptualized as networks that foster interaction and economic exchange built upon cultural and creative principles [69]. This initiative prioritizes sustainability, fairness, and inclusivity, and is founded on broad stakeholder partnerships that are firmly anchored in robust institutional frameworks to encourage regional socio-economic progress [70]. The fundamental concept of this initiative is to establish networks that transcend physical routes connecting cultural sites, and instead encompass the complete spectrum of creative resources within a particular region [71]. A crucial aspect of a network is its ability to facilitate connections between individual elements or groups who are united by mutual support and a shared objective. In the context of cultural networks, this occurs through interconnectivity and a horizontal arrangement of constituent elements, which are characteristic features of cultural routes [72].

The “Les Chemins du Baroque” route [73] in the French Savoie region was established in 1992 to respond to the growing demand for cultural tourism. It aimed to restore and preserve cultural heritage, promote rural development, and provide alternative sports and recreational activities. The network includes eighty Baroque churches and rural chapels across four regions, and involved restoration works, the establishment of a reception center, and the engagement of drivers, guides, and volunteers. Since then, cultural networks have become popular for promoting fluidity and connectivity among diverse attractions, regardless of state borders, and fostering mobility within the tourism industry.

The organization of tourist products around cultural routes can be achieved through the implementation of specific themes [74]. By connecting cultural routes of varying



levels, such as local, national, regional, European, or international levels, through cultural networks, it is possible to create an approach to tourism that is more accessible to the public and which encompasses all cultural values [75]. Open-air museums represent one form of cultural network, and their content, organization, and operation have evolved in various ways [76].

Arthur Hazelius, a Swedish ethnologist, founded the first open-air museum at Skansen in Sweden at the end of the 19th century [77,78]. The concept of an open-air museum, one which aimed to preserve and display traditional cultural heritage, quickly gained popularity, and was subsequently adopted by numerous countries worldwide [78]. Notably, Denmark, the Netherlands, Canada, the United States, and the United Kingdom established open-air museums in accord with Hazelius' vision [79]. The concept of open-air museums was founded on the notion that traditional cultures and ways of life were rapidly disappearing, and that it was necessary to document and preserve them for posterity [80]. Hazelius' Skansen Museum, for instance, aimed to provide a glimpse into Swedish rural life in the past by recreating a village setting with historic buildings and objects [79,80].

When considering how a cultural landscape can function as an open-air museum, it is important to understand the historical context of the destination and the interactions between people, places, and events over time [81]. By taking a comprehensive approach to understanding the significance of the site, responsible tourism practices can be adopted to minimize the impact of tourism on both the environment and cultural heritage. Open-air museums can promote environmentally sustainable practices such as reducing waste, conserving energy, and preserving water resources. For example, the open-air museum of Skansen, to minimize the amount of waste that is thrown away, sorts and re-uses as much waste as possible. As part of this, Skansen and Rosendal's Garden came up with a remarkable collaboration in which Skansen delivers animal manure to Rosendal, and then, one year later, Rosendal has turned it into compost to use in their gardens. This initiative not only reduces waste, but also saves on transportation costs and fuel [79,82]. Additionally, responsible tourism requires visitors to respect the cultural heritage of the destination, including not touching or damaging historical artifacts, following local customs and traditions, and showing respect for the privacy and dignity of residents [83].

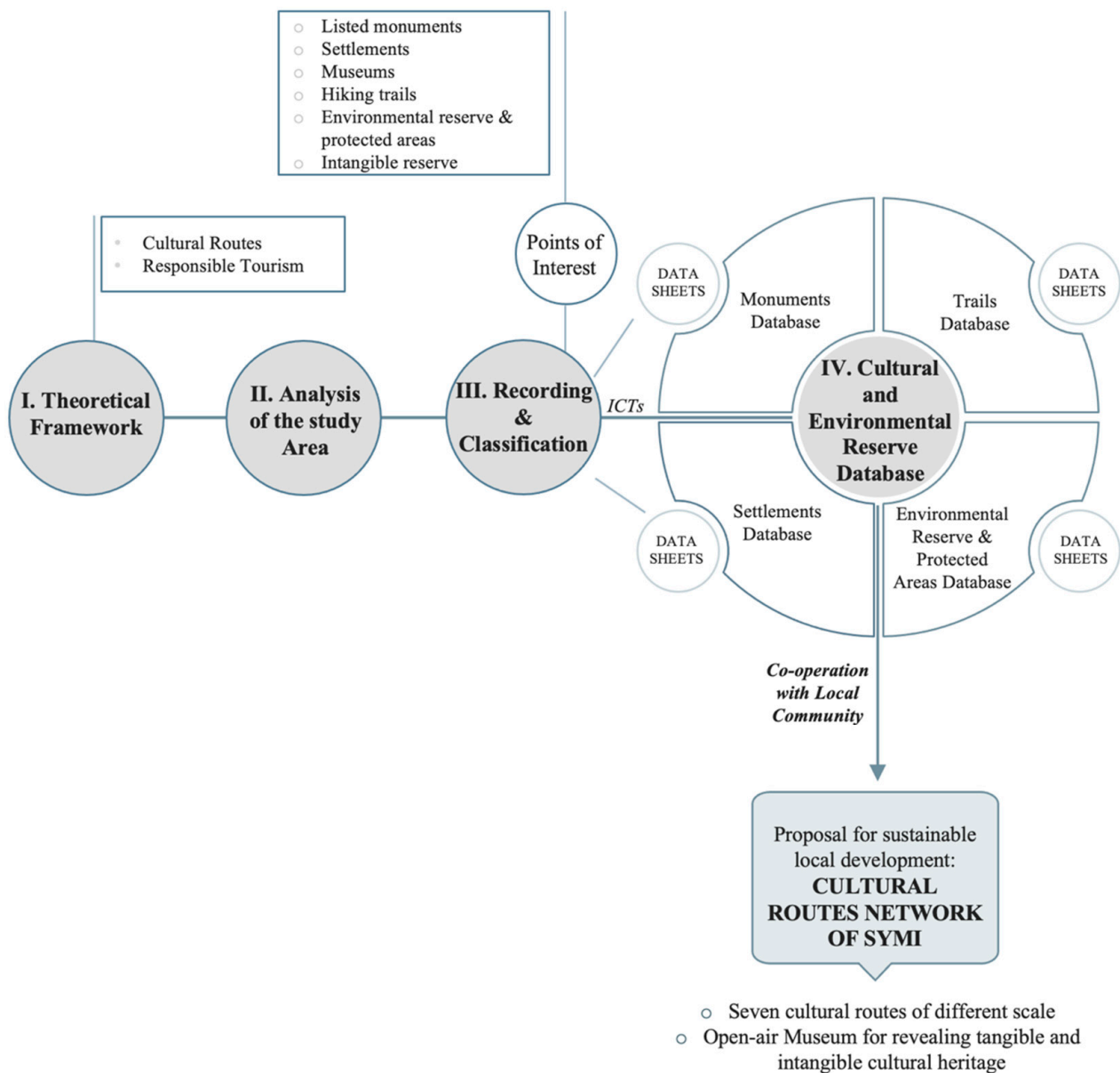
In addition to preserving the cultural heritage of the site, responsible tourism can also generate economic benefits for the local community. Museums can work with local businesses and suppliers to promote local products, services, and activities, thereby supporting the local economy [84–86]. This not only benefits the community but also provides visitors with a more authentic experience of the destination. By promoting responsible tourism, cultural landscapes can function as sustainable, educational, and meaningful open-air museums that benefit both visitors and local communities [87].

### 3. Materials and Methods

The proposed methodology (Figure 1) is predicated on the necessity of establishing a comprehensive network of cultural routes, one specifically targeted towards promoting sustainable development in insular areas. At the core of this approach is the concept of integrated sustainable cultural management, which seeks to address the multiple challenges that threaten the preservation of monuments, settlements, and sites. By adopting this approach, the proposed methodology endeavors to harmonize the imperatives of sustainable development with the pressing need to protect cultural heritage by developing an open-air museum as a practice of responsible tourism on the island of Symi.

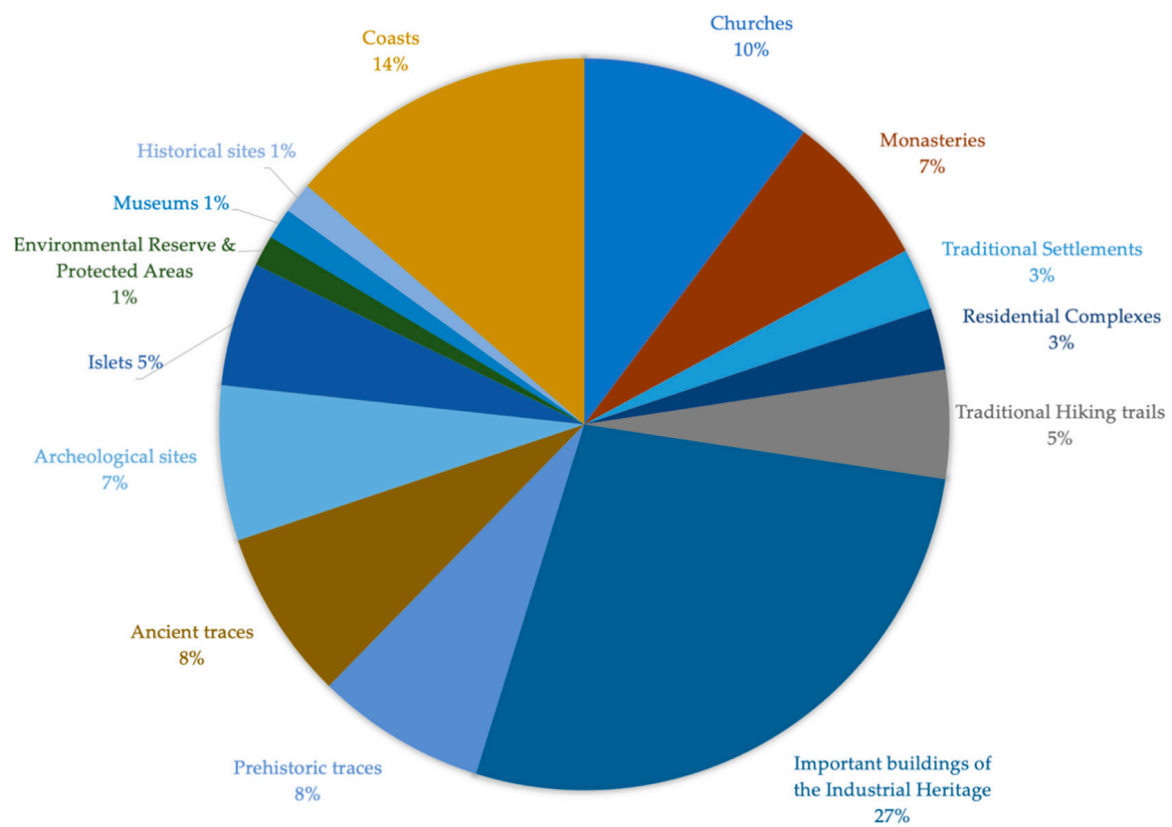
Initially: Symi is a typical example of a small and isolated island of the Dodecanese complex, with a rich environmental and cultural reserve, as detailed in the next chapter, attracting strong interest from both domestic and foreign populations in recent years. The case study of Symi island was analyzed through a comprehensive review of relevant literature on the island's natural environment, historical background, architectural and cultural heritage, and social organization. Moreover, to conduct an in-depth analysis,

active engagement and communication with local entities such as the Municipality of Symi, community members, and relevant stakeholders was necessary.

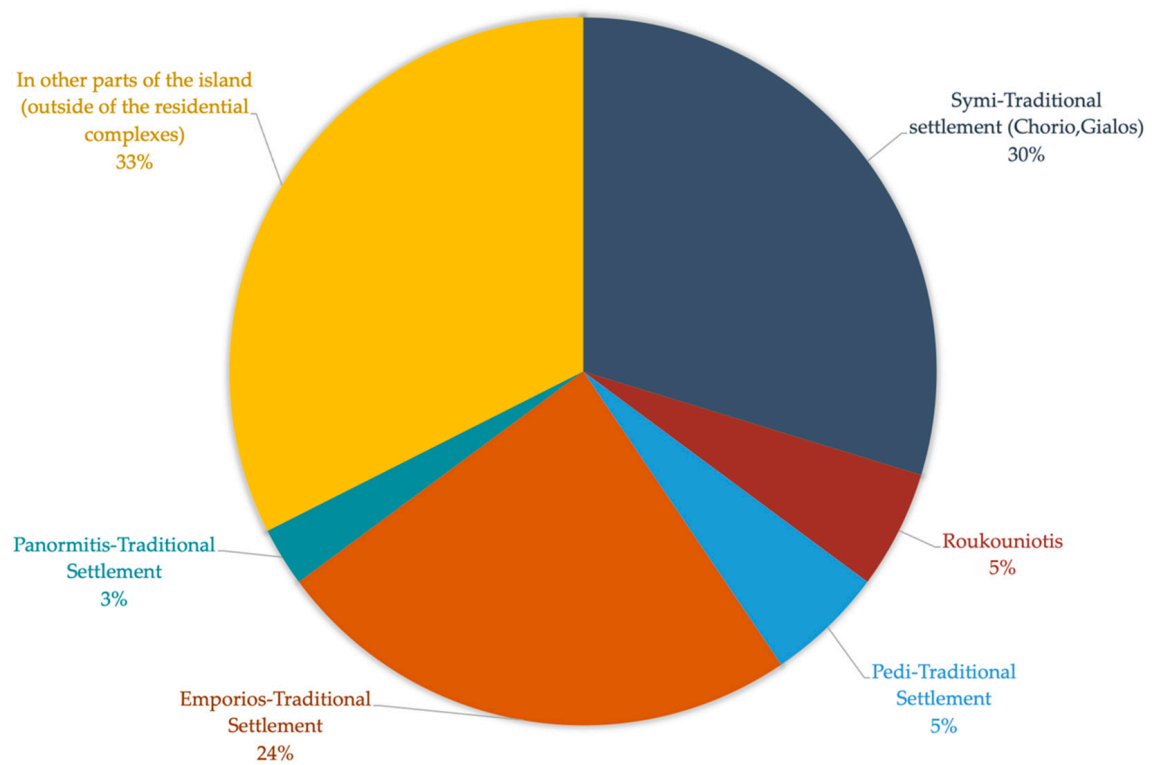


**Figure 1.** Sustainability in insular areas. The proposed methodology.

Firstly, the listed monuments and protected areas, traditional settlements, infrastructure, museums, hiking trails, districts of special protection, and intangible cultural assets were identified and classified (Figure 2). Moreover, for each region of the island, the listed monuments were also recorded (Figure 3). Specific data sheets were created for each point of interest, providing details about each monument (Figure 4), including its name, administrative affiliation, location and type, architectural style, construction period, historical name, original and current use, protection elements (such as the body, status, zone, and content of protection), observations and sources of information, declarations, conservation status, building materials, damage and restoration interventions, and photographs and/or drawings (Figure 5a,b). The sheets also provide information regarding the spatial location of each monument as well as details about its financing (Figure 6).



**Figure 2.** Chart of the cultural and environmental assets of Symi island.



**Figure 3.** Monuments by location.

CULTURAL HERITAGE		
IDENTITY OF MONUMENT		
Name	Monastery of the Archangel Michael the Roukouniotis	
Administrative district	Regional Division of Dodecanese – Symi Municipality	
Location	5 km. Southwest of the settlement of the Symi - Mesa Nimoraki district	
Type of Monument (Category)	monastery compound, religious site	
Architectural Type	Monastery – crusader basilica	
Period	Byzantine - post-Byzantine / 14th–15th century	
Historical Name		
Existing Use/Initial Use	Monastery – religious site	
PROTECTION OF MONUMENT		
Protection Body	Ephorate of Antiquities of Dodecanese	
Ownership status		
Protection Zone		
Content of protection (outershell, building complex)	Monastery complex, frescoes	
OBSERVATIONS		
Notes		
References	<a href="https://www.scribd.com/doc/215419061/Το-Αρχαιολογικό-έργο-στα-Νησιά-του-Αιγαίου-Περλήψεις-συνεδρίου-Ρόδος-2013#">https://www.scribd.com/doc/215419061/Το-Αρχαιολογικό-έργο-στα-Νησιά-του-Αιγαίου-Περλήψεις-συνεδρίου-Ρόδος-2013#</a> <a href="https://www.culture.gov.gr/el/service/SitePages/view.aspx?iID=3034">https://www.culture.gov.gr/el/service/SitePages/view.aspx?iID=3034</a>	
DECLARATION		
Type of Declaration	Ancient monument	
Ministerial Decision Number / Greek Government Gazette (FEK)	Ministerial Decision 17601/1601/14-11-1949	Government Gazette ΦΕΓΔΔ 36/12-12-1949
CONSERVATION CONDITION		
Building Materials	Crude stone (argolithos)	

**Figure 4.** Data sheets used for cultural and environmental heritage classification. Data sheet of the Monastery of the Archangel Michael the Roukouniotis.

Information about the cultural stock and traditional settlements was drawn from the Archeological Cadastre, the Archive of Traditional Settlements and Listed Buildings (Ministry of Environment and Energy), and the List of Monuments of the Ministry of Culture. Information for the environmental reserve and trails was obtained from literature reviews, in situ observations, the Natura network map, the National Cadastre, the Ministry of Environment, tourist guides' maps, and local authorities.

The use of information and communications technologies (ICTs) facilitated the organization of all these data sheets. The collected data was used for the development of detailed maps and analysis of the study area. These maps included the current road network, hiking trails, beaches, culturally and naturally significant points, and settlements. The base map utilized firstly, for this purpose, was a map of Symi obtained from the Greek Cadastre in EGSA coordinates, in CAD (Figure 7). This approach allowed for a comprehensive and detailed representation of the study area, facilitating a better understanding of the geographical and spatial features of Symi.



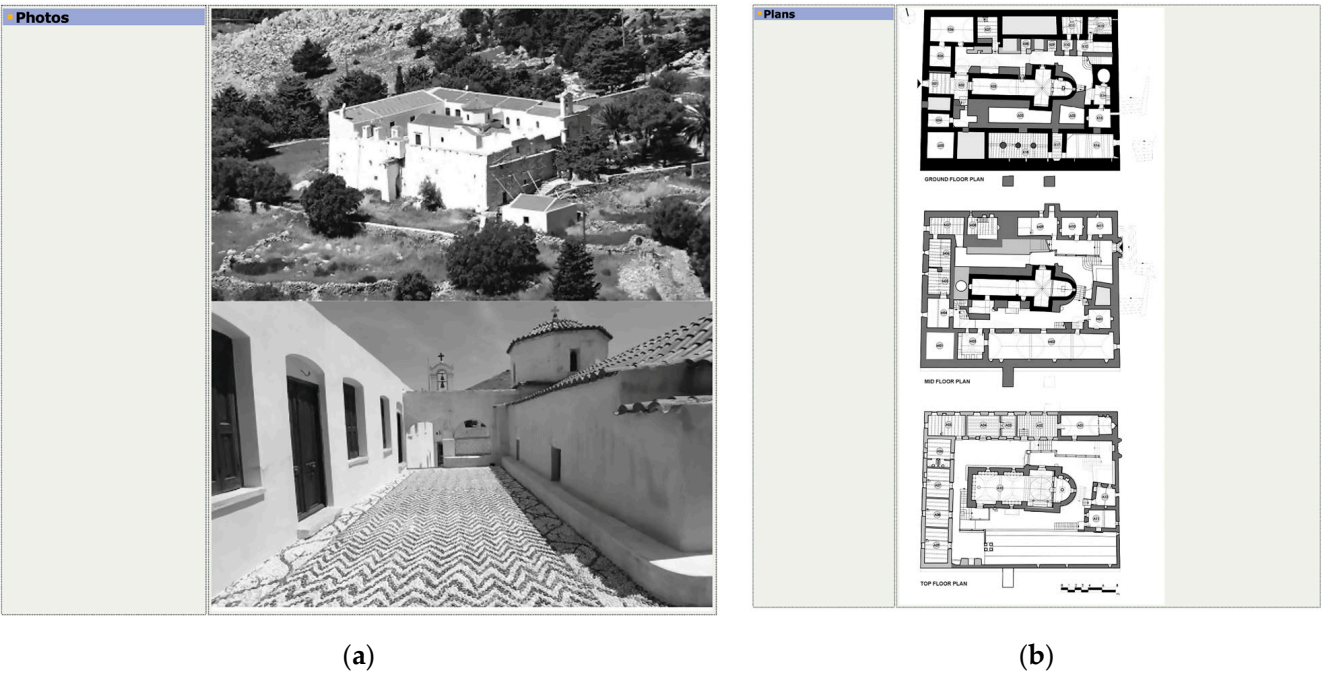


Figure 5. Data sheet of the Monastery of the Archangel Michael the Roukouniotis: (a) photos and (b) plans.

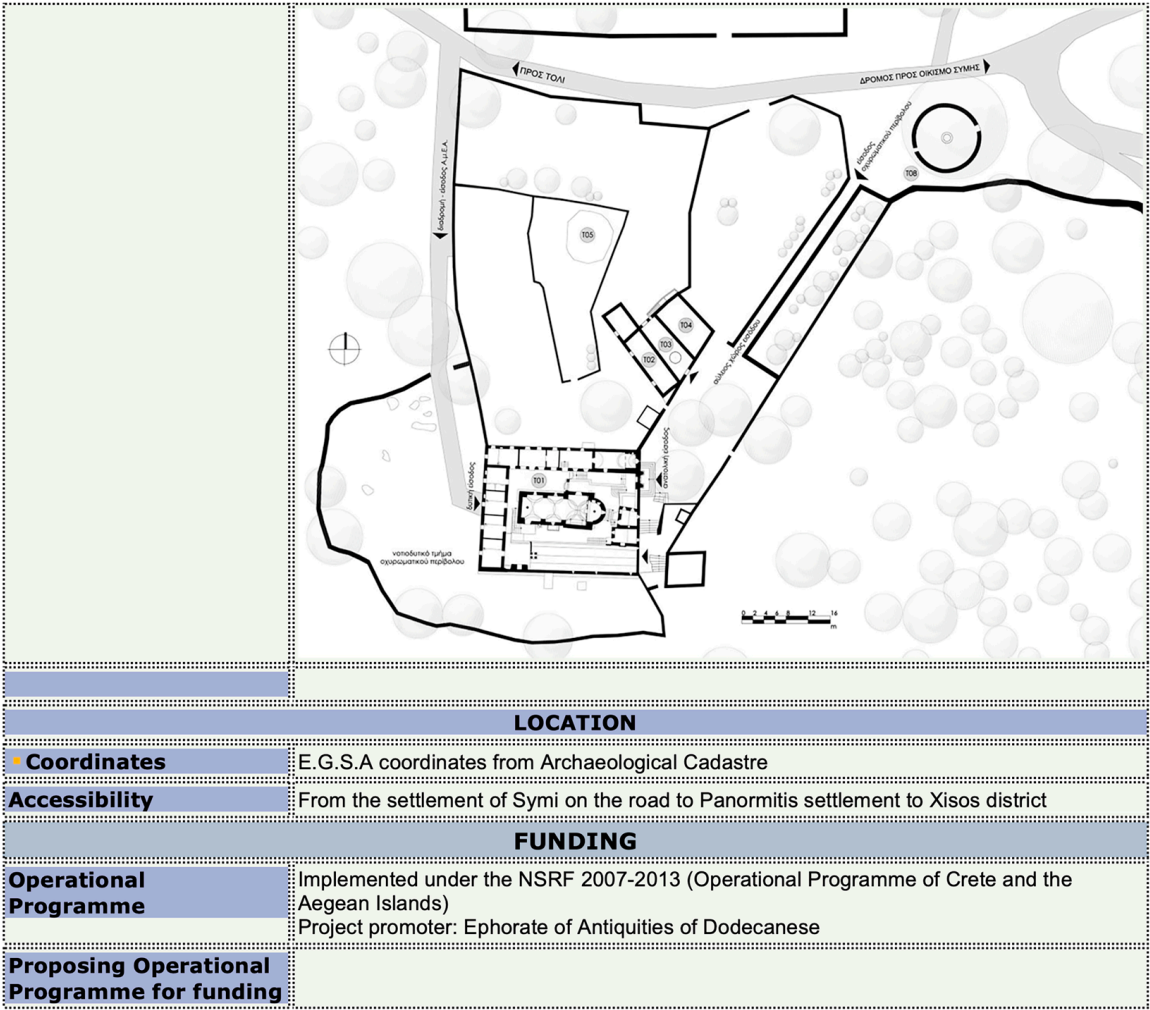
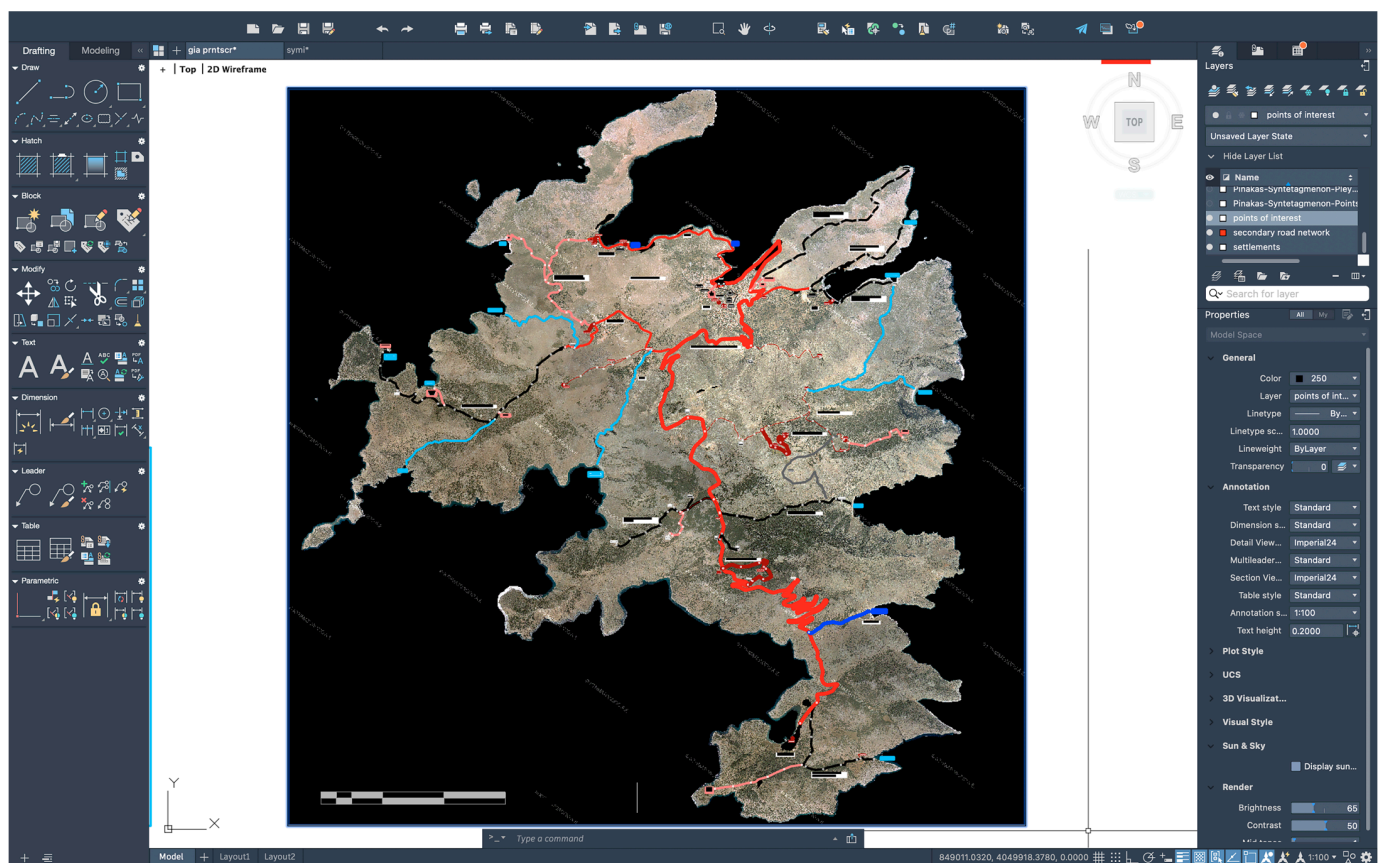


Figure 6. Data Sheet of the Monastery of the Archangel Michael the Roukouniotis. Location and funding.





**Figure 7.** Map of Symi in CAD. Red lines: road network; black lines: hiking trails; blue lines: trails to beaches; pink lines: Trails to historical points of interest.

During the decision-making process, a collaborative approach with local stakeholders, including businesses, community organizations, and government agencies, was also crucial to ensure that the proposals aligned with the area's cultural and environmental values and contributed to its sustainable development. Meetings with the Local Government (the Mayor of Symi and Members of the Municipal Board), Symi's Merchants' Chamber and the Hoteliers Union, and local organizations (such as the Union of Symi's Women) and residents were organized to ensure their participation in the project and to gain locals' trust in this initiative.

In the first meeting, locals of various ages and occupations expressed their main interests in preserving the customs of their place and facilitating access to significant parts of the island that are connected to their daily life and traditions. Additionally, they discussed their concerns about extending the tourist season and addressed issues arising from increased tourist traffic and creating new job opportunities to improve their standard of living and encourage the younger population to remain on the island. During this meeting, the local government and stakeholders also shared information about the growing interest of foreign and domestic tourists in Symi, highlighting the activities that attract visitors, such as hiking and yachting, as well as the possibilities of and limitations on the island. The impact of tourism on the permanent population was also a crucial topic of discussion. Both the local government and the residents recognized the island's significant environmental and cultural reserve and expressed their concerns about preserving these assets, which are at risk of being completely abandoned. They emphasized on the importance of planning for the island's development, taking into account its size and unique characteristics.

At a subsequent meeting, the first results of the analysis and documentation of the study area were presented. The contribution of the residents and the Technical Chamber (engineer association of the region) to the documentation was decisive, providing knowledge

about the history, customs, and traditions of the place. In addition, preliminary proposals were discussed, while special interest was shown in the aspects of creating alternative forms of tourism, exploiting and preserving the environmental and cultural reserve, and improving the living standards of residents. The Technical Chamber of Dodecanese played an essential role in ensuring the technical applicability of the proposals.

Following this, there was a dialogue with the Central Government regarding the implementation of the proposed ideas. A subsequent meeting was then held with local stakeholders and residents to discuss the final aspects of the study and the idea of designing a cultural route network as a tool for responsible tourism and sustainable local development. This dialogue took place in Symi, under the auspices and participation of the Central Government, which was represented by the General Secretary of Energy and Natural Resources and with the presence of the General Secretary of Tourism, thus ensuring the Central Government's interest, support, and involvement. During this meeting, the feasibility of practical implementation of the project was described, and local stakeholders and residents had the chance to communicate their needs and suggestions, based on the cultural and environmental heritage of the island, directly with the Central Government.

#### 4. Analysis of the Study Area—The Case Study of Symi Island

Symi is a Greek island of the Dodecanese Island Complex in the southeastern Aegean Sea (Figure 8). Symi is one of the small islands in the Dodecanese archipelago, boasting a total land area of 57.865 square kilometers and a coastline that extends over 88 km. The island administratively includes 14 islets; the most well-known of them are the islets Nimos, Seskli, Kouloudros, and Aghia Marina. Located just six nautical miles from the southwest coast of Asia Minor of Turkey, twenty-two nautical miles from Rhodes, and two hundred and thirty nautical miles from the port of Piraeus, Symi is connected to the mainland through ferry services from Piraeus and, more frequently, from Rhodes.



Figure 8. The island of Symi in the map of Greece.

Symi's transportation infrastructure does not include an airport, making the island inaccessible by air travel. However, the island can be reached by ferry from Rhodes, which has the nearest airport, with the journey taking approximately 3–4 h. Symi's transportation infrastructure also includes a helipad for special needs such as medical patient transportation, as well as for supporting the island's economic and tourism development. Additionally, the island has several small harbors that primarily serve tourist ferries. These harbors include Nimporios, Panormitis, Agios Aimilianos, and Pedi. The Port Station of Symi in Gialos is equipped with customs services and oversees the island's sea transportation activities (Figure 9).

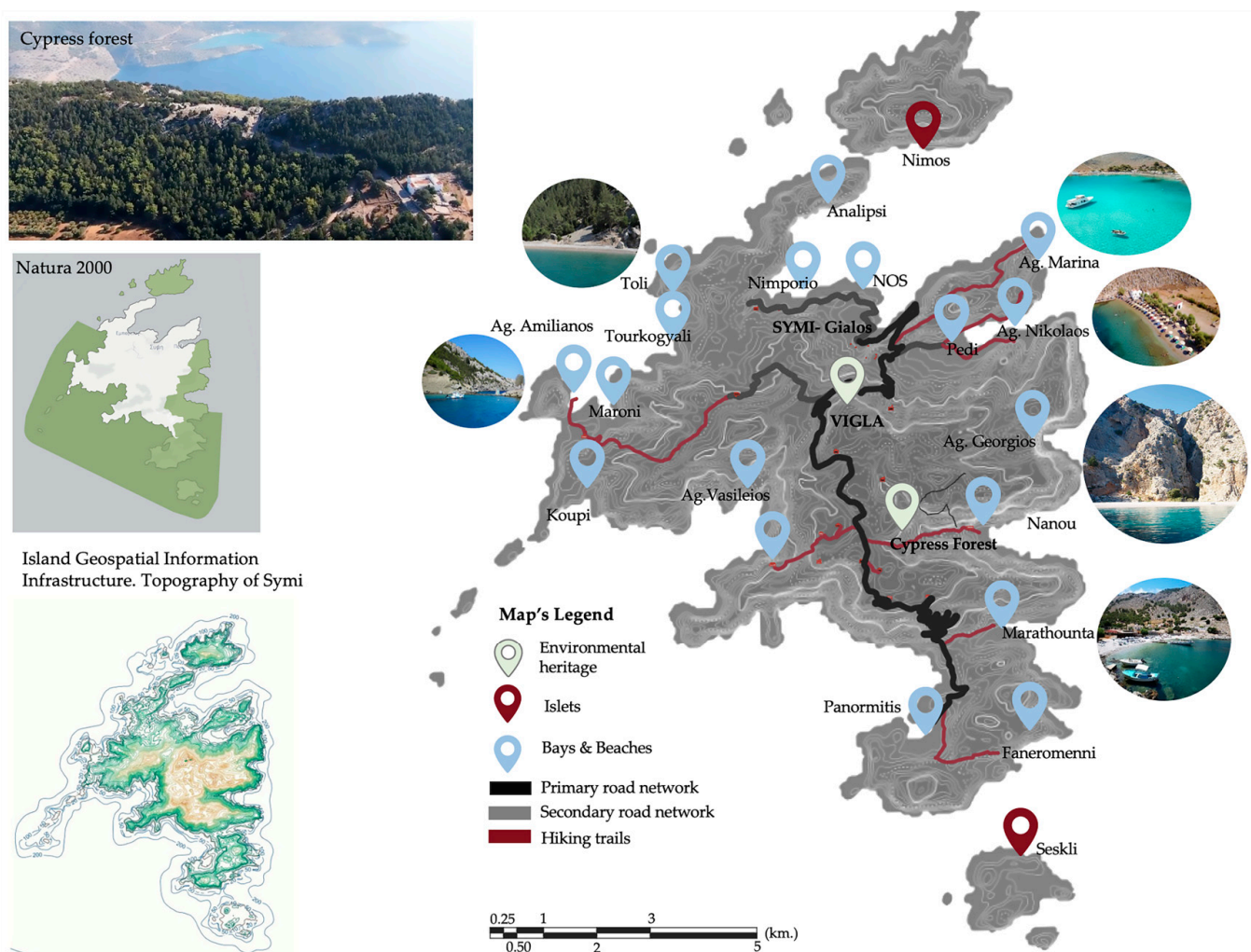


**Figure 9.** The Port Station of Symi in the map of the island.



Symi Island has a rugged, mountainous terrain characterized by a stark, barren landscape and a dry, arid climate that supports scarce amounts of vegetation. The island's topography is dominated by its highest peak, Vigla, which rises to an elevation of 617.60 m and divides the island into two distinct regions: the northern part, which is lower and more suitable for cultivation, and the southern part, which is characterized by cliffs and rocky outcrops. The eastern portion of Symi Island, along with the islets of Kouloundros, Seskli, Troumpeto, Marmaras, Karavalonisi, Megalonisi, Gialesino, Oxeia, Chondros, Platy, and Nimos, has been duly recognized by the scientific community as an important ecological area. The cypress forest and the eastern portion of Symi—an area of 2303 hectares—have been incorporated into the NATURA 2000 network, and designated with code GR4210025.

The coastline of Symi is noted for its diverse topography, which is characterized by a plethora of bays, coves, capes, and small harbors. Many of these scenic coastal features can be accessed via an extensive network of trails (Figure 10), including Ag. Marina, Ag. Nikolaos, Agios Georgios, the Bay of Nanou and Faneromeni, Koupi, Maroni, Tourkogiali, Toli, and Analipsi. The existing network of hiking trails facilitates access to both the island's numerous beaches and other notable points of interest, including (1) Panormitis-Faneromeni Bay; (2) Pedi-Aghia Marina Beach; (3) Pedi-Aghios Nikolaos Beach; (4) Kotika-Aghios Aimilianos; (5) Nera-Aghios Nikolaos; (6) Symi-Koutsoumpas Lighthouse; and (7) Nera-Ormos Nanou. The qualitative characteristics of these hiking trails are presented in the table below (Table 1).



**Figure 10.** Symi's topography, hiking trails, and road network.

**Table 1.** The existing hiking trails of Symi.

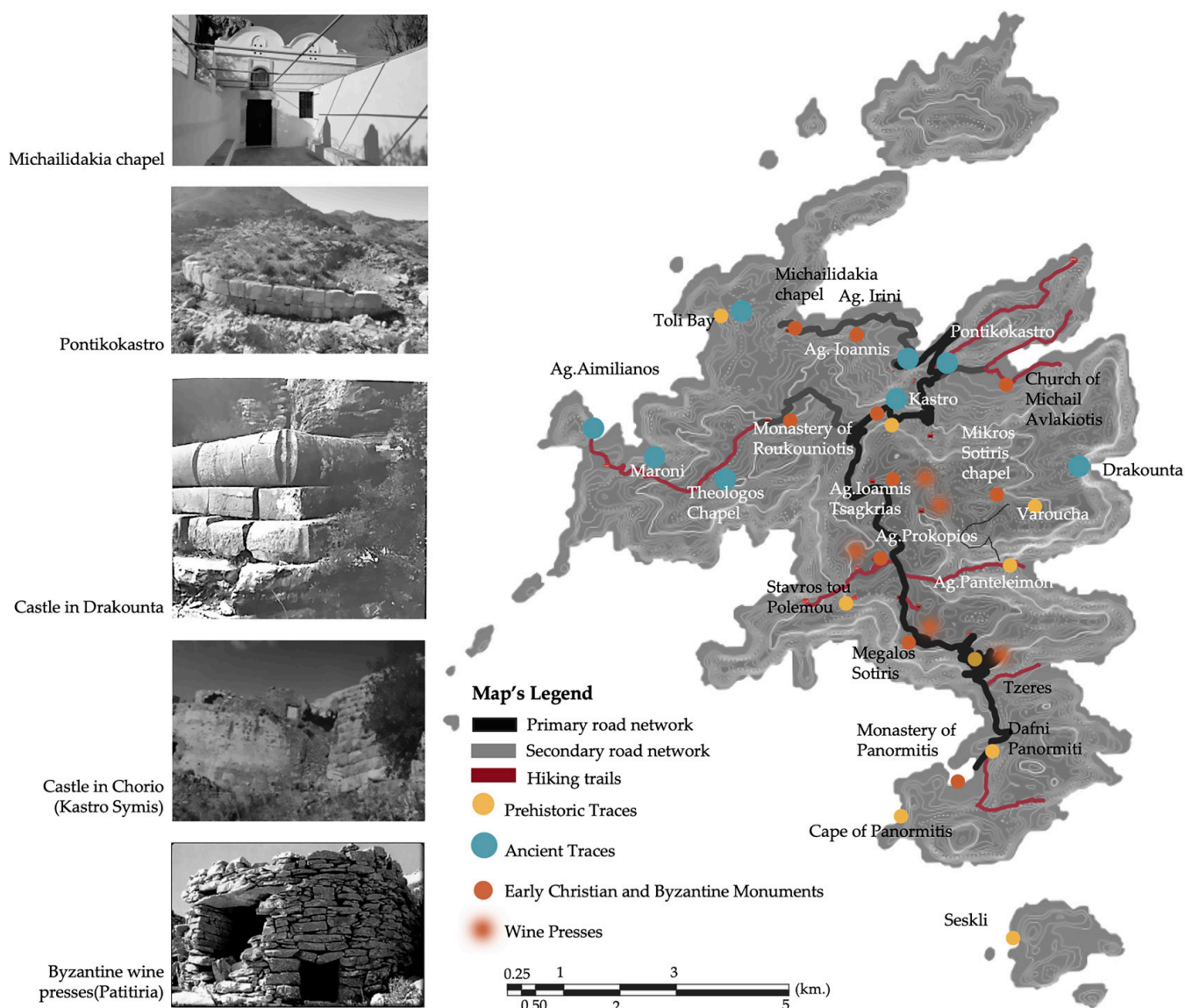
Hiking Trail (Name)	Length (km)	Difficulty	Duration
Panormitis–Faneromeni Bay	2.4	Easy	45 min
Pedi–Aghia Marina Beach	2	Easy	40 min
Pedi–Aghios Nikolaos Beach	1.6	Easy	30 min
Kotika–Aghios Aimilianos	4.7	Easy	1 h 55 min
Nera–Aghios Nikolaos	2	Easy	45 min
Symi–Koutsoumpas Lighthouse	3.5	Easy	1 h 25 min
Nera–Ormos Nanou	2.4	Moderate	1 h 20 min

The countryside of Symi Island has yielded a wealth of archaeological finds from multiple periods (Figure 11), ranging from the Late Neolithic–Modern Chalcolithic era, when the island was first inhabited, to the Early, Middle, and Late Bronze Age. Of particular interest are the artifacts discovered in the Drakounta area, pieces which exhibit strong Minoan influences at the onset of the Late Bronze Age. Furthermore, evidence of Mycenaean presence has been discovered in the Castle of the Symi settlement, where the ancient acropolis once stood. During the Byzantine era, Symi, along with other neighboring islands, was incorporated into the “*Provincia insularum*” and eventually became part of the Kibyrraeots. It was during this time that the construction of a castle in Chorio began, erected upon the site of the ancient acropolis. Also, during this period, viticulture was greatly developed, a fact that is evidenced by the approximately 120 wine presses (*patitiria*) that have been recorded in various regions. Today, 11 wine presses of varying sizes have been restored around the Kourkouniotis district, near the unique cypress forest.

During the period of the Ottoman Empire, the inhabitants of Symi made significant strides in sponge fishing and merchant shipping, engaging in transit trade that brought wealth to the island and led to the establishment of trading houses in various European and Mediterranean cities. Throughout the second half of the 19th century, Symi’s privileges were increasingly curtailed; yet, despite these challenges, the island experienced a remarkable period of cultural activity. Notably, the establishment of schools was accompanied by the founding of “*Aegli*”, the oldest library in the Aegean, in 1872. At the same time, a wave of emigration began among the island’s inhabitants, a trend that intensified during the period of Italian rule. In 1948, Symi was incorporated into Greece, along with the rest of the Dodecanese. During the Second World War, bombings destroyed most of the island’s buildings, driving almost two-thirds of its inhabitants to migrate to Rhodes, Piraeus, or America. Consequently, out of the population of 25,000 that Symi once boasted in its heyday, only around 2500 people remained. Despite this significant loss of population, the island experienced an economic recovery in the 1970s, driven largely by the growth of tourism. According to the 2011 census of the Hellenic Statistical Authority, the tertiary sector, particularly the tourism industry, employs over half of Symi’s population, which currently stands at approximately 2590 inhabitants. This observation underscores the growing importance of tourism as a key driver of the island’s economy and development, a trend that has become increasingly prominent in recent years.

Symi is known as a religious destination for many visitors, but recently, it has also become increasingly popular as a yachting destination. The growing interest in marine tourism has made Symi the top choice for yachts and boats, with over 17,000 arrivals in this category. The recent renovation of the marina in Pedi has played a significant role. Tourists from the Asia Minor coast and the wider Mediterranean region are arriving on the island but most of them primarily approach the coastal front. Apart from swimming and sailing, the nature of Symi is ideal for diving, snorkeling, and hiking.





**Figure 11.** Historic traces in Symi.

The peak tourist season from May to October attracts a substantial number of visitors, including one-day travelers, inhabitants, and excursion participants, as reported by the Symi port authority (Table 2).

**Table 2.** Arrivals of tourists 2022. Source: Symi port authority.

May	June	July	August	September	October
10.417	35.078	36.395	50.114	19.287	24.563

Data obtained from the Hellenic Chamber of Greece (Table 3) reveal that Symi Island hosted a total of 15 hotel establishments in 2022, providing accommodations with 252 rooms and 499 beds [88]. Notably, there are no five-star or one-star hotels at present, but the island offers a selection of six four-star hotels, five three-star hotels, and four two-star hotels.

**Table 3.** The distribution of hotel capacity 2022 by region-island from the Hellenic Chamber of Greece. Source: Hellenic Chamber of Hotels Website.

Type of Accommodation	Number	Rooms	Beds
Hotels	15	252	499
Other types of accommodation	77	274	566
Total	92	552	1.048

The tourist infrastructure predominantly centers around Gialos, which serves as the primary hub for visitor accommodations, including hotels, guesthouses, and rooms available for rent. Unlike large-scale complexes, the island offers a selection of small hotels and entire houses for rent. Tourist accommodations can also be found in Pedi, Nimborio, and Chorio. Moreover, during the summer months, the Monastery of Panormitis provides a host of holidaymakers with lodging in its cells, offering a range of amenities at a reasonable cost.

As part of the analysis, a thorough examination of the built environment of Symi was conducted, with a particular focus on the island’s urban planning and architectural heritage. The entire island, along with its neighboring islets, has been declared an archaeological site by the Ministry of Culture, according to the *Greek Government Gazette* (FEK) 228/05-09-2011. Moreover, the island is host to a multitude of archaeological treasures, including four traditional seaside settlements—Symi, Emporios, Pedi, and Panormitis—as briefly presented below, and four residential complexes, the smaller settlements of Roukounioti and Xisos, nestled in the mountainous region, and Sykidi and Marathounta, situated along the coast (Figure 12).

#### The traditional settlement of symi

Symi’s amphitheatrical settlement (Figure 13) exemplifies the island’s economic growth during the 19th century and seamlessly blends Aegean architectural traditions with neo-classical elements. However, this style was not always the norm.

The first houses in Symi, located in the Chorio district, were oblong and either single-story (“mona”) or two-story (“anokatoga”), featuring flat roofs that were properly designed to collect rainwater (Figure 14a).

Originally positioned in the north as a precaution against pirate attacks, the Chorio district later expanded to Gialos on the coast. In the 19th century, the island of Symi experienced a period of great prosperity, primarily due to the local inhabitants’ advancements in sponge fishing and shipping industries. The interactions between Symian merchants and major urban centers towards the end of the 19th century and the first half of the 20th century, such as those with Syros, Genoa, Constantinople, Smyrna, Trieste, Alexandria, Paris, London, and Brussels, exposed the locals to new cultures and ideas. They assimilated these influences, integrating them into the local traditions. This interaction led to the exploitation and enhancement of traditional art and architecture, resulting in the distinctive houses of Gialos, which serve as morphological examples of eclecticism and encapsulate an important part of the island’s history. The characteristic cube-shaped buildings with a roof, which are typically two or three stories tall and painted in bright earthy colors, are often the primary association made with Symi’s architecture (Figure 14b).

Kali Strata (Figure 15a), a 500-step street that connects Skala Square in Gialos—the “official” square of the island in the 18th century—to “Syllogos” Square in Chorio—where the community pharmacy and the Reading Room of the Association are located—is one of the most distinctive streets on the island and an important part of its everyday history, according to residents. The dense structure of the area represents a significant portion of Symi’s cultural heritage and is a valuable addition to its existing cultural reserve.

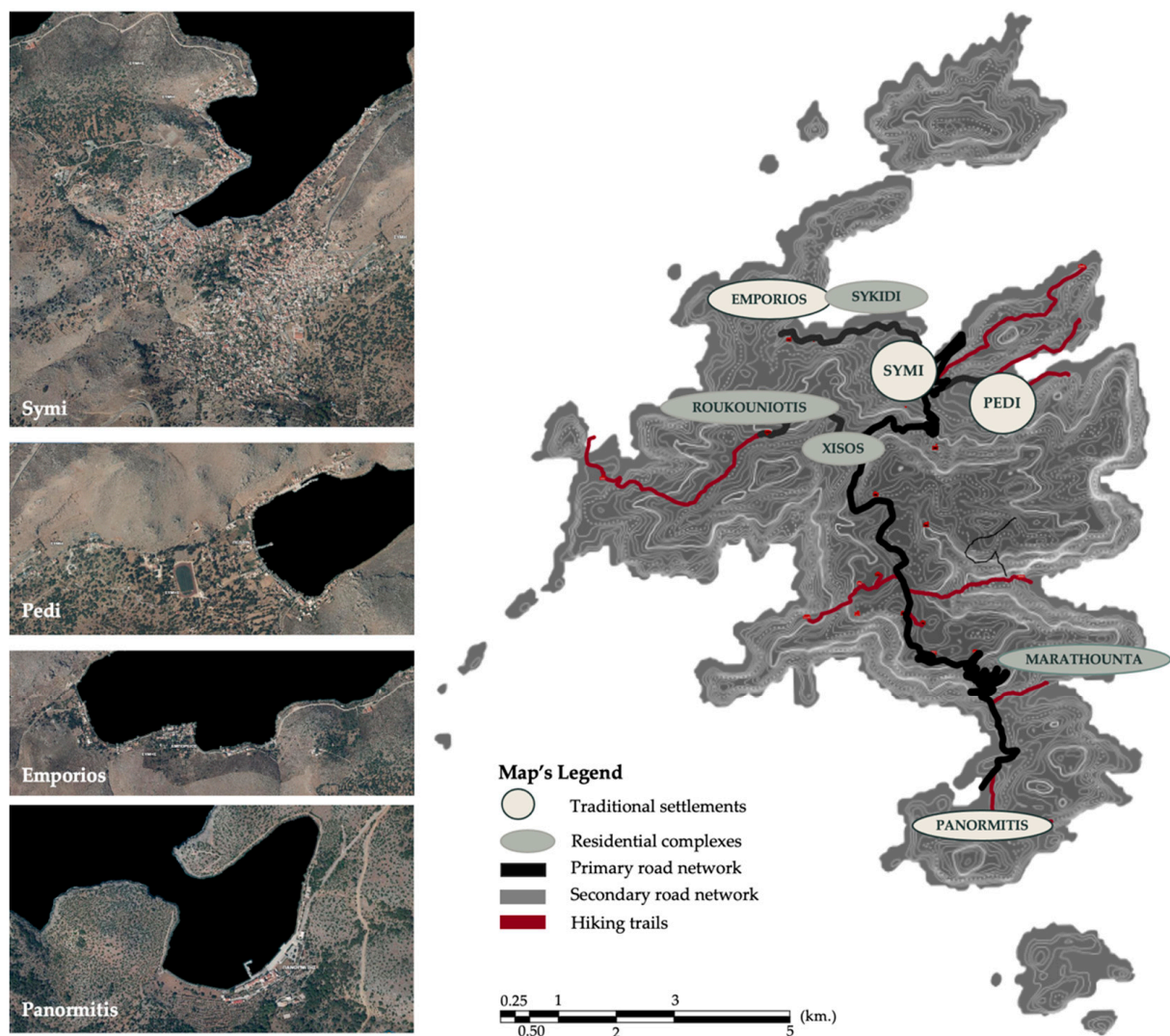
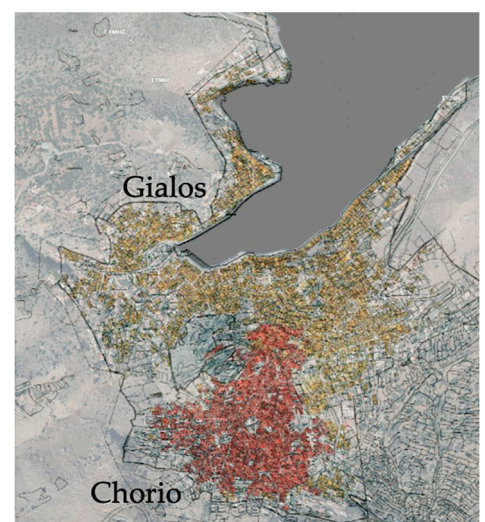


Figure 12. The settlements of Symi.



(a)



(b)

Figure 13. (a) Panoramic view from Chorio; (b) the districts of Gialos and Chorio in the traditional settlement of Symi.





(a)



(b)

**Figure 14.** (a) Houses in the Chorio district; (b) Houses of the characteristic Symi's architecture in Gialos. Houses of the characteristic Symi's architecture in Gialos.



(a)



(b)

**Figure 15.** (a) Kali Strata.; (b) the traditional settlement of Pedi.

Symi was declared a preserved settlement, maintaining its unique architectural character, in 1971, when the settlement was granted special protection status as a historical site under Ministerial Decision No. 24908/23-10-1971.

#### Pedi

The settlement of Pedi (Figure 15b), situated in a charming bay roughly two kilometers from Symi's settlement, boasts a lush terrain abundant with olive groves, vineyards, and fruit orchards.

Its immaculate beaches and expanding marina have resulted in a surge of tourist interest in recent times. The area boasts several historically significant and preserved monuments, such as the Church of Archangel Michael the Avlakitotis.



### Emporios

The coastal settlement of Emporios (Figure 16a) is characterized by a linear development that follows the curvature of the shoreline. This region is also an important repository of cultural heritage, with numerous historical remnants.



(a)



(b)

**Figure 16.** (a) The traditional coastal settlement of Emporios.; (b) the Twelve Caves.

Among the most significant are the ecclesiastical monuments, including the Temple of Michailidakia, the Church of Mesa Panaidi and Mesa Sotiri (built on the ruins of an early Christian Basilica), the church of Agia Irini, the Church of Sotiris, and the remains of an early Christian building located to the east of the Temple. All of these have been declared historically preserved monuments. In addition to these landmarks, two other historically preserved monuments located within the settlement are particularly noteworthy. The first is the old bell-making industry of Anastasios Anastasiades in Emporios of Symi, which dates to 1865 and is the only bell-making industry in the Dodecanese. The second is the burial complex of Twelve Caves (Figure 16b), consisting of underground vaulted spaces from the late Roman–early Christian era. According to other sources, these domes served as sculpture and painting workshops.

### Panormitis

The settlement of Panormitis (Figure 17a) is renowned for the Panormitis Monastery, a celebrated pilgrimage site dedicated to Archangel Michael that attracts many worshippers (Figure 17b).



(a)



(b)

**Figure 17.** (a) The traditional settlement of Panormitis.; (b) the harbor and the Monastery of the Archangel Michael the Panormitis.



The island's devotion to Archangel Michael is also evident through the presence of nine monasteries and chapels dedicated to him, each representing one of the angelic orders. The widespread worship on the island stems from the widespread angel worship of the early Christian years in Asia Minor Phrygia.

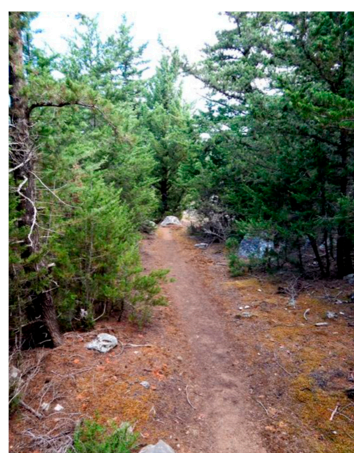
Another monastery dedicated to Archangel Michael is situated in the settlement of Roukouniotis, and numerous chapels dedicated to the Virgin Mary, known as "Panaidia" (diminutive address of the Virgin Mary), are scattered throughout the island, holding significant importance to the local community. It is also worth mentioning that the Monasteries of Michael the Panormitis and Michael the Roukouniotis played a leading role in the life of the island during the Ottoman occupation.

According to the *Greek Government Gazette* (FEK) 594/13-11-1978, the settlements of Symi, Emporios, Pedi, and Panormitis have been recognized as traditional settlements.

While examining the aforementioned settlements of Symi and their historical and architectural significance, a wealth of industrial heritage was identified, reflecting the island's prosperity during the 19th century.

Despite its importance, this heritage has not received adequate attention and protection to date. A previous study [89] presents in detail and documents the rich industrial heritage of the island. Some of the most important buildings of historical and architectural interest as to the industrial heritage are the Kladakis Sponge Warehouse, the Konstantopedo Tannery, the boat slips, the Anastasiades Bell Factory, the Volonakis Forge, and the old olive press of Panormitis. Each one is a special sample of the industrial activity which dominated the traditional settlement it belongs to. For example, in Pedi, there were mainly tanneries. The most characteristic of them, and the one that is in better condition and retains its equipment, is the tannery of Kostadopedo. In Emporios, the bell factory of Anastasios Anastasiades is the only bell factory in the Aegean and a listed monument. In the traditional settlement of Symi, which was the center of the industrial activity of the island, three buildings characteristic of these flourishing activities have been selected, while in the settlement of Panormitis, the olive press of the monastery, which has an important role in the society of the island, has been chosen.

The island of Symi has a road network that connects its traditional settlements. The main road axis of the island is the ring road that starts in the settlement of Symi and extends south to the settlement of Panormitis. In the northern part of the island, there are branches of the main road axis that lead east to Pedi and west to the areas of Roukouniotis and Xisos. Additionally, the road network of the island includes the asphalt coastal road that connects Gialos with the settlement of Emporios. The remaining parts of the island are accessible via dirt roads (Figure 18a) and the aforementioned hiking trails (Figure 18b).



(a)



(b)

**Figure 18.** (a) The dirt road to the Theologos district. The Theologos district is adjacent to the Roukouniotis settlement. (b) A hiking trail in the same area.

## 5. Results

The process of studying the cultural and environmental stock and, more broadly, the physiognomy of the island of Symi, led to the following observations determinative of the formulation of the proposals. Firstly, Symi's architectural physiognomy is well preserved, especially in the traditional settlements, presenting interesting examples of neoclassical and traditional Aegean architecture. The island's history is represented through various cultural heritage assets of different historic periods and uses. Moreover, elements of Symi's intangible heritage such as the strong religious beliefs of the residents or the traditional professions are depicted on the island's cultural reserve via monasteries or buildings of industrial heritage. Symi's coastline is interesting as well, and many environmental and cultural assets are accessible via the traditional hiking trails. In terms of transportation infrastructure, the road network of the island connects the main residential cores, and Symi is sufficiently connected via ferry with Rhodes and Athens. One important observation is the fact that Symi's population is increasing, mainly because of the return of younger residents who have chosen to work in the tourism sector. Tourism development in Symi is mild, with a few small accommodation facilities, and providing activities that respect the island's environment, culture, and vivid intangible heritage.

On the other hand, although Symi's hiking trails are connected to the road network and lead to important points of cultural and environmental interest, they are not signed, demarcated, or promoted. Symi is known as a religious tourism destination due to the recognition of the Panormitis Monastery, but important temples such as Michaelides and Panaidia are not widely known. The rich industrial heritage also remains abandoned. Finally, the touristic development of Gialos, combined with the construction of the ring road, led to the one-sided projection of the coastal front, resulting in the desolation of important landmarks of the traditional daily life of the residents, such as the once-busy street of Kali Strata.

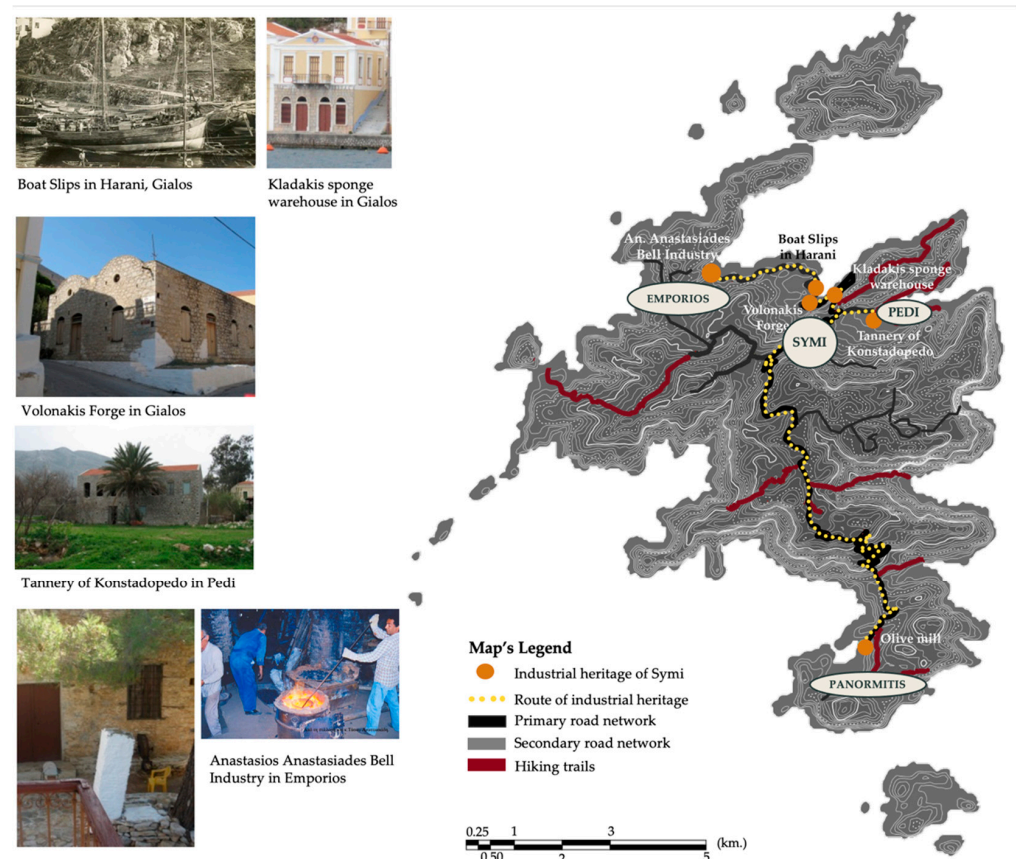
In this framework, the proposal's scheme aims to engage elements of Symi's history, culture, and intangible heritage to reinforce the economic prosperity of the residents while promoting vivid traditions and customs that are related to the local identity. Therefore, while exploiting the recognition of Gialos and the existing stream of religious tourism in Symi, it is proposed to establish on the island a thematic cultural route network, utilizing and expanding the existing network of roads and trails. The proposed network of cultural routes is developed throughout the island and addresses different visitor profiles, offering road and hiking alternatives. The proposal's scheme focuses on:

- Promoting the lesser-known industrial heritage of Symi in a way that will simultaneously contribute to the promotion of all the traditional settlements of the island;
- Revealing the entire spectrum of the religious tradition of Symi;
- Highlighting all aspects of the island's history;
- Revitalizing the traditional settlement of Symi beyond the beachfront.

Through the proposed thematic routes, visitors could have the opportunity to engage with the island's history and tradition in an alternative way. At the same time, a new tourism product is created, offering economic, environmental, cultural, and social benefits to the local community, while respecting and revealing the authentic traditional identity of Symi.

### 5.1. The Cultural Route of the Industrial Heritage of Symi

The first proposed route seeks to establish connections among the traditional settlements of Symi by highlighting the island's less-known industrial heritage. In cooperation with the local authorities, the adaptive reuse of emblematic buildings of the industrial cultural reserve is proposed as the key point of this route. An emblematic building is selected for each traditional settlement based on its historic and architectural value, the industrial history of the settlement, and the testimonies of the inhabitants (Figure 19).



**Figure 19.** The cultural route of industrial heritage in Symi.

The proposed interventions enhance the sense of community, foster cultural exchange, and contribute to the sustainable development of the region. The adaptive reuse of emblematic buildings generates employment opportunities in various sectors, such as architecture, construction, tourism, hospitality, event management, education, and cultural heritage conservation. Moreover, by preserving and promoting the traditional arts and techniques that took place in these industrial buildings, interventions can ensure the transmission of knowledge to future generations. Local artisans and craftsmen can be engaged in training programs or workshops, where they can share their skills with others, and even create marketable products. Also, the development of community-led initiatives, such as festivals, cultural events, or guided tours, can actively involve the community and strengthen their bond with the industrial heritage. These activities not only preserve traditions but also enhance symbiotic relationships between the community and visitors, promoting mutual understanding and cultural exchange.

The proposed route commences in the Gialos district, considered the heart of industrial activity. In Gialos, the Volanakis is proposed for reuse as a seminar and blacksmithing workshop space which features a photographic exhibition of the mechanisms and traditional art of blacksmith shops, as well as a temporary exhibition of the lab's works. Maintaining, demarcating, and reusing the Slips in Gialos as a venue for events is also proposed. This open area is linked with the island's history of shipping. It is also proposed that there be established a small ship repair unit for local boats in the Harani ship repair unit and the transfer of ownership of the Kladakis Sponge Warehouse to the Municipality to establish a museum and workshop for sponge fishing and shipbuilding. The latter shaped the history and morphology of Symi's settlement.

In Pedi, the Tannery of Konstadopedo is selected as a cultural multipurpose space which would include an exhibition section on the history of industrial heritage. The building is the only tannery on the island that retains its equipment and accompanying



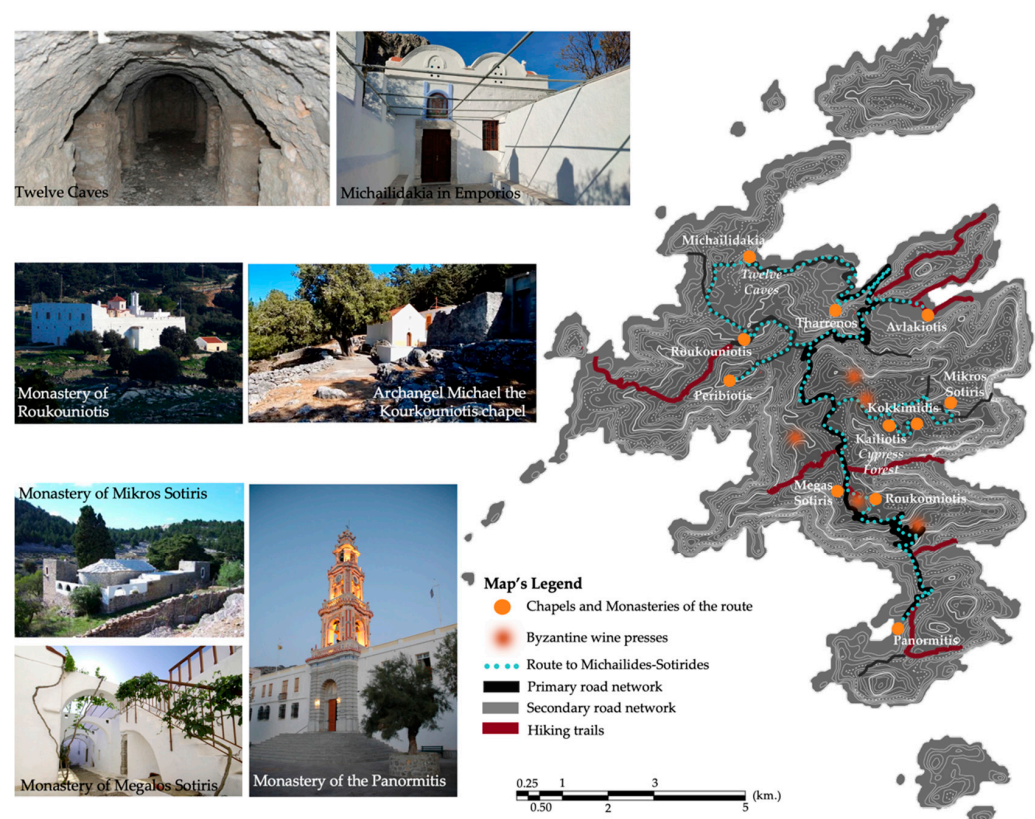
constructions; it has a special architectural form, and operated until 1955. The Anastasiades Bell industry-listed building is chosen in Emporios as the only such one in the Aegean, and the study recommends its restoration and uses for workshops within the framework of the Symi Festival, as well as the gradual creation of a “digital museum” that would promote its unique history beyond local boundaries. Finally, the olive mill in the traditional settlement of Panormitis is proposed for repurposing into agrotourism following an agreement between the Municipality and the Monastery (Figure 19).

## 5.2. The Religious Cultural Routes

Symi is already known as a religious tourism destination, mainly because of the Panormitis Monastery. The residents’ strong religious devotion led to the construction of numerous chapels, all with different typologies and local significance. The widespread worship of the Angel Michael and the Virgin Mary is still expressed today, with local festivals and customs in the yards of various chapels and monasteries. Taking advantage of the existing religious tourism stream, two religious cultural routes are proposed, using the existing road and trail network. These routes aim to reveal Symi’s religious tradition, an element of intangible heritage that is important for the residents, and enrich the tourism experience, while also facilitating locals’ access to these points. The locals’ involvement is also important for fostering a stronger sense of community and pride in the religious traditions of Symi. Locals are encouraged to share their stories, artifacts, and knowledge related to the religious heritage, and also be involved in the maintenance and preservation efforts of the religious heritage.

### 5.2.1. The Cultural Route of “Michaelides–Sotirides” Chapels and Monasteries

This route has a strong religious character, connecting the Michaelides and Sotirides chapels and monasteries. Based on the natives’ strong religious tradition, this route adjoins eleven chapels and monasteries with sites of natural beauty and monuments (Figure 20).



**Figure 20.** The cultural route of “Michaelides–Sotirides” chapels and monasteries.

The proposed cultural route connects: (1) the chapel of Michaelidakia in Emporios, which was built, together with the chapel of (2) Mesa Sotiris, on the ruins of an early Christian basilica; (3) the Bell Industry of Anastasios Anastasiades in Emporios (a declared monument in Emporios); (4) the Twelve Caves in Emporios, a burial complex consisting of built-underground vaulted spaces of the early Christian era (according to other sources, these domes served as sculpture and painting workshops); (5) the Monastery of Mega Sotiris and (6) the post-Byzantine Monastery of Mikros Sotiris, which are also declared monuments; (7) the post-Byzantine Chapel of Michael Kourkouniotis (single-aisle basilica without dome); (8) the Byzantine wine-presses in the Kourkouniotis district; (9) the Cypress Forest (landmark and a unique ecologically area integrated into the NATURA 2000 network with a GR4210025 code); (10) the Monastery of Michael Roukouniotis (14–15th century, post-Byzantine monastery with richly colored frescoes); (11) the Chapel of Michael Peribiotis; (12) the Chapel of Michael Tharrenos; (13) the Chapel of Michael Avlakiotis; (14) the Chapel of Michael Kailiotis; (15) the post-Byzantine Monastery of Michael Kokkimidis (monastery complex with cells and medieval fortification, organized to be protected from pirate raids); and (16) the well-known 18th-century Monastery of Michael Panormitis in the homonymous settlement (one of the most important pilgrimage destinations in the Southeastern Aegean).

The points of interest encompass both cultural and natural heritage sites. The cultural sites comprise archaeological monuments, medieval castles, monasteries, and churches that are representative of the region's distinct cultural heritage, and also hold significant religious importance for the locals. Meanwhile, the natural landmarks include the cypress forest, the Byzantine winepresses in the Kourkouniotis district, and the Monastery of Megas Sotiris.

As far as the intangible heritage is concerned, on this route, many festivals are organized in memory of the Metamorphosis of Sotiros on the 6th of August, and the Taxiarches on the 8th of November when the Panormitis and Archangel Michael the Roukouniotis are celebrated with all magnificence, attracting worshipers from all over Greece. Thus, this route allows all visitors to experience different assets of the tangible and intangible heritage of Symi.

The route of 36.6 km is moderate, and its altitude ranges from 15 to 460 m. The route could be accessed through the existing road network and paths, starting from the bay of Panormitis, heading to Emporios and to the settlement of Symi, with various and interesting branches.

#### 5.2.2. The Cultural Route of “Panaidia” Chapels

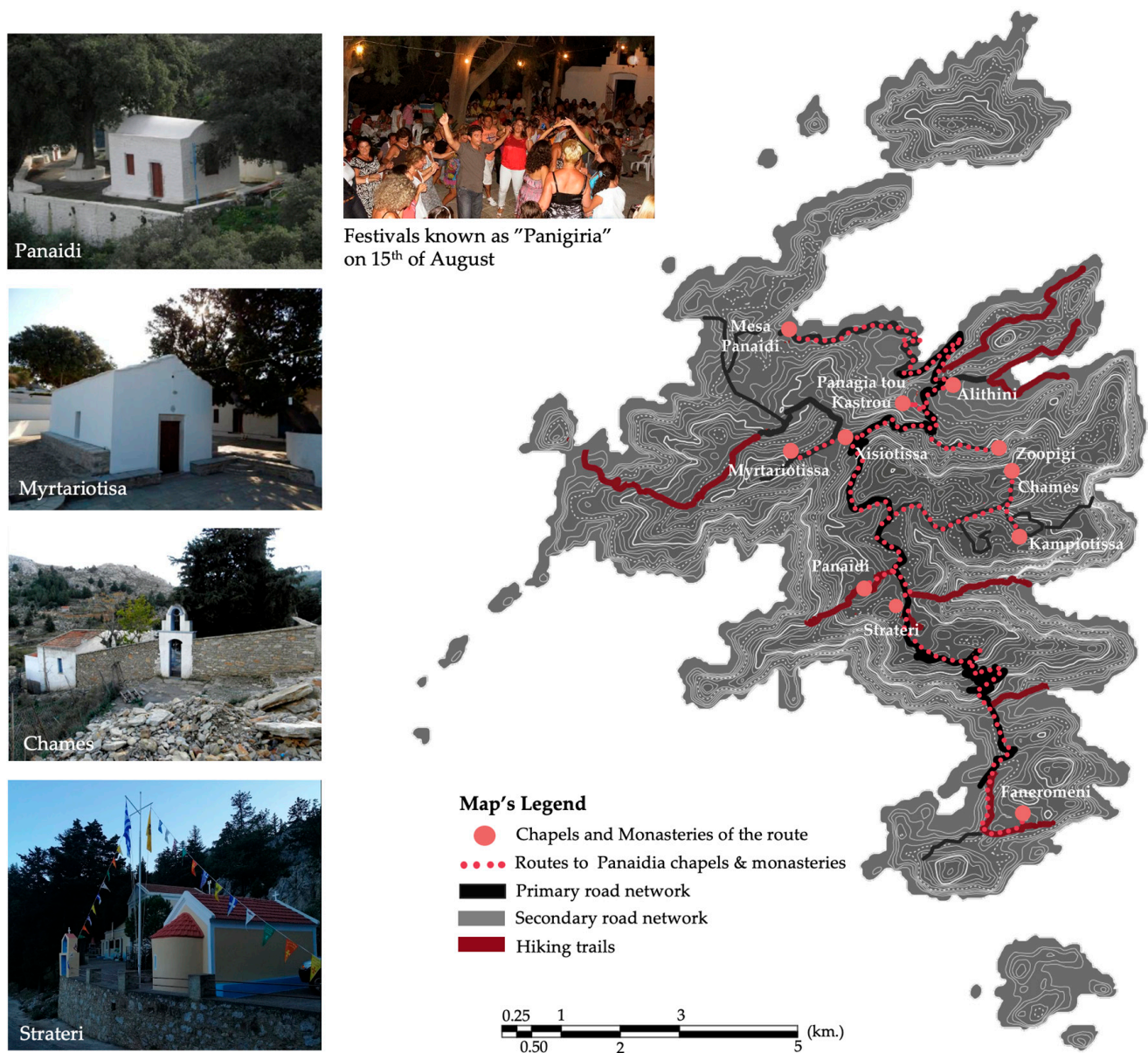
This cultural route connects the Byzantine chapels and churches dedicated to the Virgin Mary, called by locals “Panaidia”. This route adjoins eleven chapels and churches and is proposed by the locals as another religious route offering different assets of the cultural and environmental heritage of the island (Figure 21).

The proposed cultural route connects (1) the Chapel of Panagia Alithini on the road from Symi to Pedi; (2) the Church of Panagia tou Kastrou in the district of Chorio in the settlement of Symi; (3) the Mesa Panaidi in Emporios; (4) the Chapel of Panagia Xisiotissa in the district of Xisos; (5) the Chapel of Panagia Myrtariotissa in the Roukouniotis district; (6) the Chapel of Panagia Zoopigi; (7) the Chapel of Panagia Chames; (8) the Chapel of Panagia Kampiotissa; (9) the Panaidi chapel near the Savros tou Polemou; (10) the Chapel of Panagia Strateri near the cypress forest; and (11) the Chapel of Panagia Faneromeni in the homonymous bay.

Many cultural events are organized in the courtyards of these chapels. Located in the countryside and places of special natural beauty, the route highlights another aspect of the topography of Symi. The route passes through protected environmental areas with sclerophyllous vegetation, and parts of it pass through coniferous forests and areas with sparse vegetation.



The route is also a moderate route of 26 km, one accessed through the road network and paths leading to the points of interest. The cultural route extends throughout the summer, with August being a peak month for festivals celebrating the “Koimisis of Theotokos” on the 15th of August.



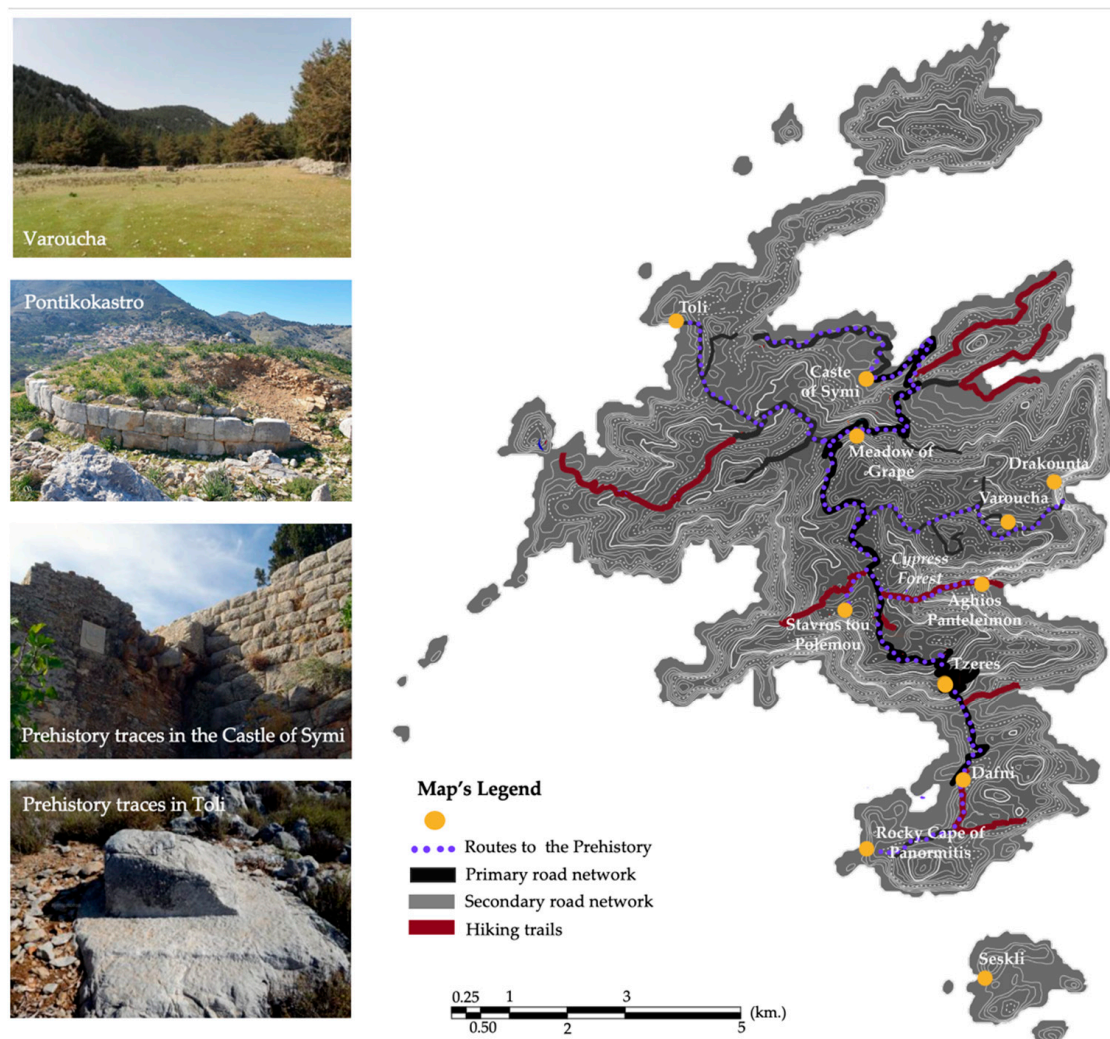
**Figure 21.** The cultural route of “Panaidia” chapels.

### 5.3. The Cultural Routes of the History of Symi

Based on the analysis of the study area, it is evident that Symi’s history encompasses various historical periods, each holding significant interest. While the island’s history from prehistoric times to the present is rich, certain periods, particularly prehistoric and ancient times, have not received adequate emphasis. To address this, two thematic routes are proposed to highlight these periods and their historical importance. The first route is that of prehistory, one that stretches along the island, revealing the important footprints of that period. The second route concerns ancient times and extends to the northern part of the island, with a strong footprint near the traditional settlement of Symi and the west of the island, towards Agios Aimilianos.

### 5.3.1. The Cultural Route of the Prehistory of Symi

The fourth cultural route on the island of Symi is designed as an educational pathway, linking together various points of interest that shed light on the island's prehistory (Figure 22). These locations, although significant, are often less known and require further protection. This route aims to showcase unique archaeological sites, highlighting the island's rich cultural heritage. By exploring these sites, visitors can gain a deeper understanding of the historical context and significance of Symi's prehistoric past. This route, therefore, represents an invaluable opportunity for scholarly research and education and serves as a reminder of the importance of preserving and protecting our cultural heritage for future generations.



**Figure 22.** The cultural route of the prehistory of Symi.

The proposed cultural route connects: (1) the rocky cape of Panormitis in the South; (2) Seskli Islet, which has been declared an archeological site; (3) the Dafni of Panormitis; (4) ruins in the Stavros tou Polemou (a Byzantine church complex); (5) the Varoucha district accessible via the cypress forest; (6) the Aghios Panteleimon in the Nanou district; (7) the Tzeres district; (8) the Meadow of Grape; (9) Toli Bay; (10) the south side of the castle in the Chorio district, part of the Symi's traditional settlement; and (11) Drakounta Bay.

Most of the prehistoric ruins are located in unique environmental sites such as the cypress forest, the topography of the Seskli Islet, and Drakounta Bay. The combination of large and significant points of interest (e.g., the archaeological site of Varoucha) with small-sized architectural assets (e.g., the castle ruins at Chorio), as well as scenic routes (cypress



forest and bays), enhances the visitors' experience but also brings socio-economic benefits to the local community. Visitors interested in both history and nature will be drawn to explore Symi's prehistoric ruins and immerse themselves in the island's captivating landscapes. This increased tourism engagement can contribute to the local economy through visitor spending, supporting local businesses, and generating employment opportunities. Also, the locals, by actively participating in the preservation, maintenance, and interpretation of the sites, become ambassadors of their history, fostering a sense of ownership and stewardship over these assets.

It is estimated that the route of 37.6 km is easy and can be accessed through the road network and the existing hiking trails.

### 5.3.2. The Cultural Route of the Ancient History of Symi

The cultural route of the ancient history of Symi (Figure 23) is also an educational route, promoting another asset of the island's history which is also important and needs to be protected. The traces are located in (1) the Church of Agios Ioannis in Gialos; (2) the Pontikokastro and the Path of the Windmills, which are unique samples of the fortifications of the era, although they are not declared monuments; (3) the castle in the traditional settlement of Symi; (4) Drakounta Bay; (5) Theologos; (6) the tower-shaped buildings in the Maroni district; (7) Agios Aimilianos Bay; (8) the Tsangria district; (9) the necropolis (burial complex) in Lieni near the Windmills' Path; (10) Toli Bay.

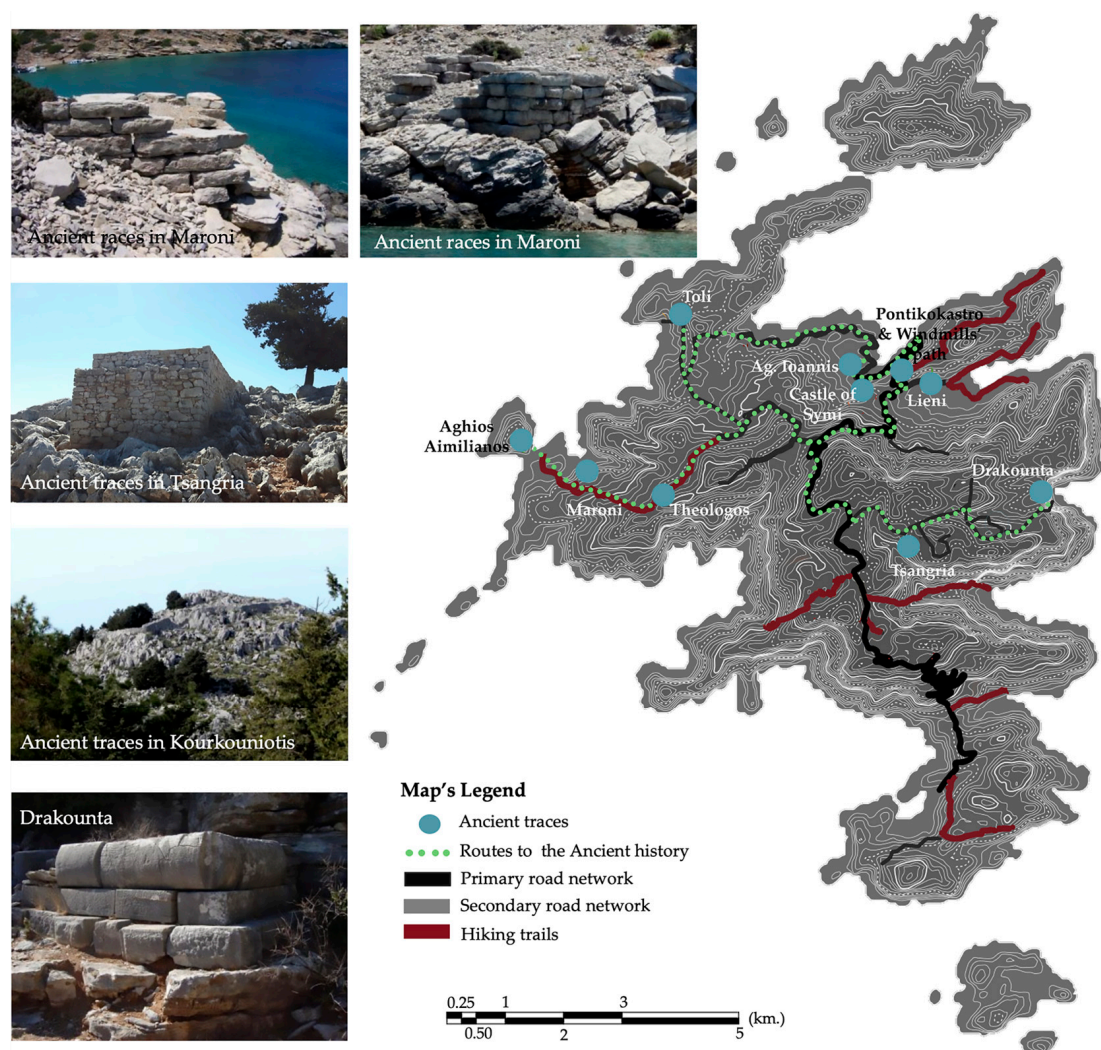


Figure 23. The cultural route of the ancient traces of Symi.

This cultural route has a strong archaeological character, but also provides the visitors with the environmental assets of the island. The compilation of these two groups of points of interest serves to highlight the interrelationship between the natural environment and the cultural heritage of the region. The integration of environmental sites and scenic routes into the thematic routes should promote sustainable tourism practices such as responsible visitor behavior by raising awareness of the cultural and environmental reserves of the route, eco-friendly infrastructure, and nature conservation efforts while promoting the exploration of the less-explored historic assets of Symi. Visitors can learn about Symi's ancient heritage, architectural styles, and historical significance through interpretation materials, guided tours, or interactive exhibits. Locals, in turn, have the chance to share their knowledge, stories, and traditions, fostering cultural dialogue and creating meaningful connections with visitors, while exploring another aspect of their local history and preserving it for future generations.

It is estimated that the route of 33.6 km is moderate and can be accessed through the road network and the existing hiking trails starting from Gialos.

#### 5.4. Reviving the Route of “Kali Strata” in the Traditional Settlement of Symi Island

Kali Strata, a street consisting of 500 steps (Figure 24a), connects Skala Square in Gialos—the “official” square of the island in the 18th century- to “Syllogos” Square in Chorio—where the community pharmacy and the Reading Room of the Association are located (Figure 25). This street is one of the most distinctive on the island and an important part of its everyday life history, according to residents. During the island's prosperous era, the settlement that had gradually developed around the Castle expanded towards its seaport, as there was no longer any fear of pirate attacks. Wealthy Symians and merchants constructed their residences between the two areas, and a new district, known as Kali Strata, emerged. This district connected the Village with Gialos and developed over time, sprawling across the slope and creating a cohesive residential landscape.



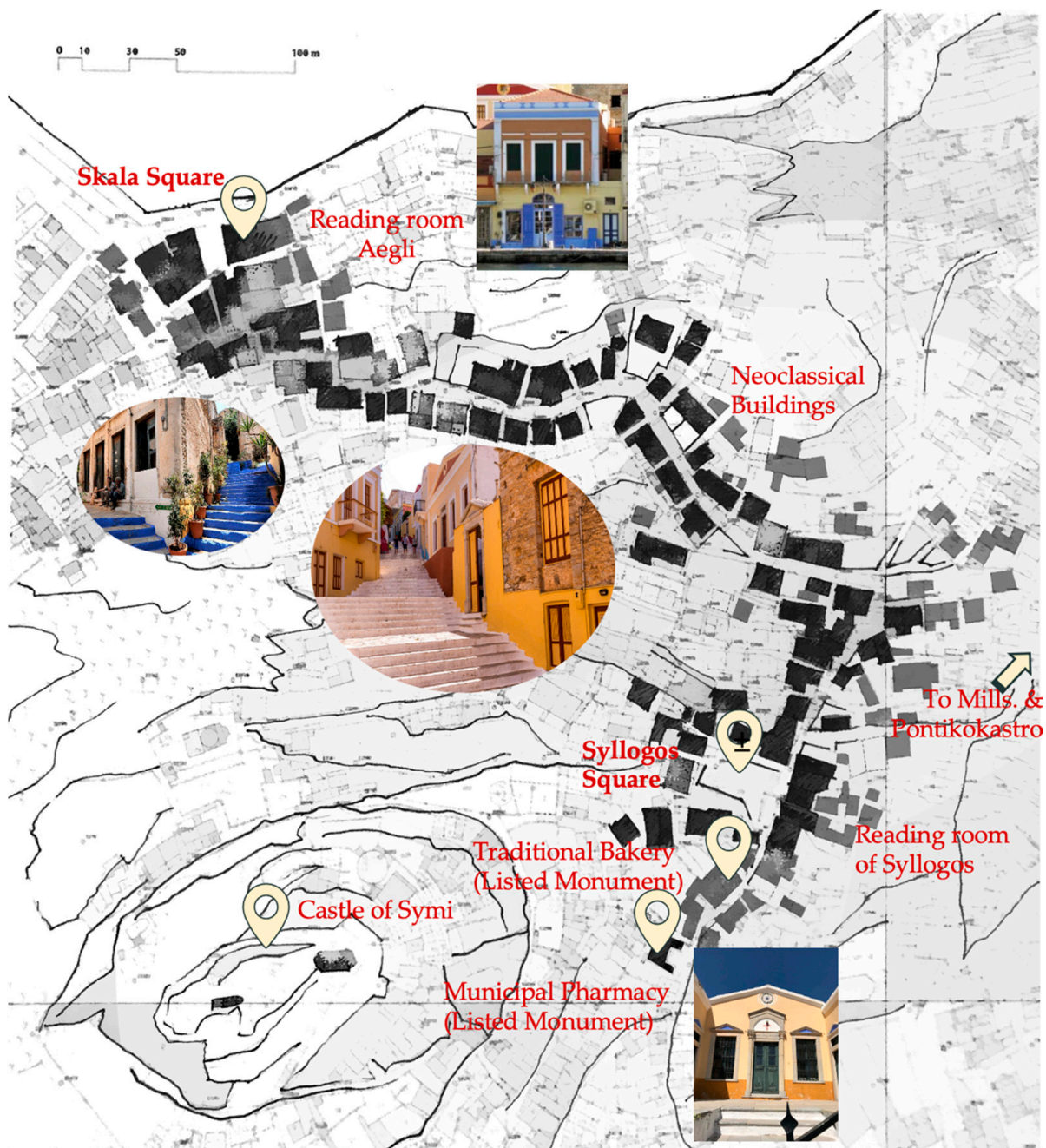
(a)



(b)

**Figure 24.** Kali Strata in Symi: (a) the characteristic steps of the route; (b) abandoned houses.





**Figure 25.** The traditional commercial and social path of Kali Strata in Symi.

The route is delineated by the continuous lines of the mansions' facades, with its width ranging from 2 to 10 m. It is a completely built environment, with vegetation limited to the courtyards of certain houses or the dilapidated structures nearer to Gialos. Beginning at the Skala Square, located at sea level in Gialos, the visitor can follow the route, which runs parallel to the contour lines and heads towards the east (Figure 21). Upon approaching Syllagos Square, the route's direction shifts noticeably towards the south. From this point onwards, the steps become more numerous and steeper, culminating in the central square of the Village.

The route was primarily recognized for its vibrant commercial and social character, but in recent years, the construction of a ring road linking the two regions and the increased availability of buses and cars has significantly transformed the appearance and nature of the road from that of the 1970s and 1980s. Furthermore, the effects of the Second World

War bombings, combined with the migration of the population from the Kali Strata district to areas closer to the ring road, have resulted in the abandonment of the once-magnificent neoclassical buildings (Figure 24b).

As part of the proposed regeneration and revitalization of the neighborhood, the following actions are proposed. Firstly, the organization of cultural events such as laser projection mapping (Figure 26) is proposed on the characteristic neoclassical buildings of Kali Strata. These projections can showcase images and videos from the island's history, as provided by the locals, adding to the cultural experience of visitors. Additionally, the use of QR codes, which will be discreetly placed on significant buildings in Kali Strata, can inform visitors about both the building and the cultural heritage of Kali Strata, when scanned with a mobile phone. These interventions aim to redirect the attention of both visitors and locals toward the Kali Strata route. They also seek to create events that highlight the social character of the area, particularly in the northernmost part of the settlement, which is located away from the cosmopolitan port of the island.



**Figure 26.** Concept of QR codes and projection mapping on the buildings of the Kali Strata.

For the successful implementation of this project, essential actions for the revitalization and habitation of the neighborhood of Kali Strata are also proposed. The Municipality, in collaboration with the Technical Chamber of the Dodecanese, educational institutions, and scientists, should initiate a project to prepare studies, mapping, and documentation of the built environment of the Kali Strata and promote commercial and residential uses, through integrated urban planning, to regain the neighborhood's original character.



The cultural and economic revitalization of the Kali Strata district could lead to the repopulation of the area by permanent or seasonal residents. To facilitate this, the Municipality should develop guidelines and financial tools for building restoration in Kali Strata, prioritizing affordable housing options for potential residents. Moreover, apart from the mansion buildings, the urban residences of Kali Strata in which the ground floor housed commercial activities must be strengthened to recreate a general market in the area. Such efforts would promote the reuse and preservation of the district's historic mansions while also attracting new permanent residents. Ultimately, the success of such initiatives will depend on the support and cooperation of residents, as well as partnerships between local government, educational institutions, and relevant experts.

#### 5.5. Promotion and Maintenance Aspects

To promote the new cultural routes network, the Clock Tower (Figure 27)—the most distinctive landmark of Skala, the port of Symi—is proposed as an exhibition and information space for visitors, focusing on the content—events, routes, points of interest—and work of the proposed cultural routes network of Symi.



**Figure 27.** Clock Tower in Skala, the port of Symi in Gialos.

Investments are limited to signage, local community outreach, social media promotion, and the creation of an application to facilitate the exploration of each route. The installation of signage at the points of interest, featuring QR codes that visitors could scan to access detailed information about the site, is proposed. Most of the information is organized in databases created during the documentation of the analysis of the area, and can be used by local authorities to create such an application to inform visitors about the available routes, activities, and relevant cultural and environmental information of the cultural network of Symi.

Finally, the proposed approach of cultural routes network incurs minimal costs, as it leverages existing trails and road networks, although the cleaning and marking of paths are crucial aspects of the cultural routes project. Thus, mild interventions that do not compete



with the natural landscape are proposed. The Mediterranean landscape of the island should be highlighted by using natural materials that are easily available, and by having a low installation cost, which is considered necessary for the project's viability.

## 6. Discussion

Nowadays, in the context of development planning in island areas, the imperative for sustainability becomes paramount [90]. Islands are often characterized by fragile ecosystems, limited resources, and a delicate balance between nature and human activities [7–9,91]. Therefore, it is essential to ensure the long-term viability and resilience of its environment.

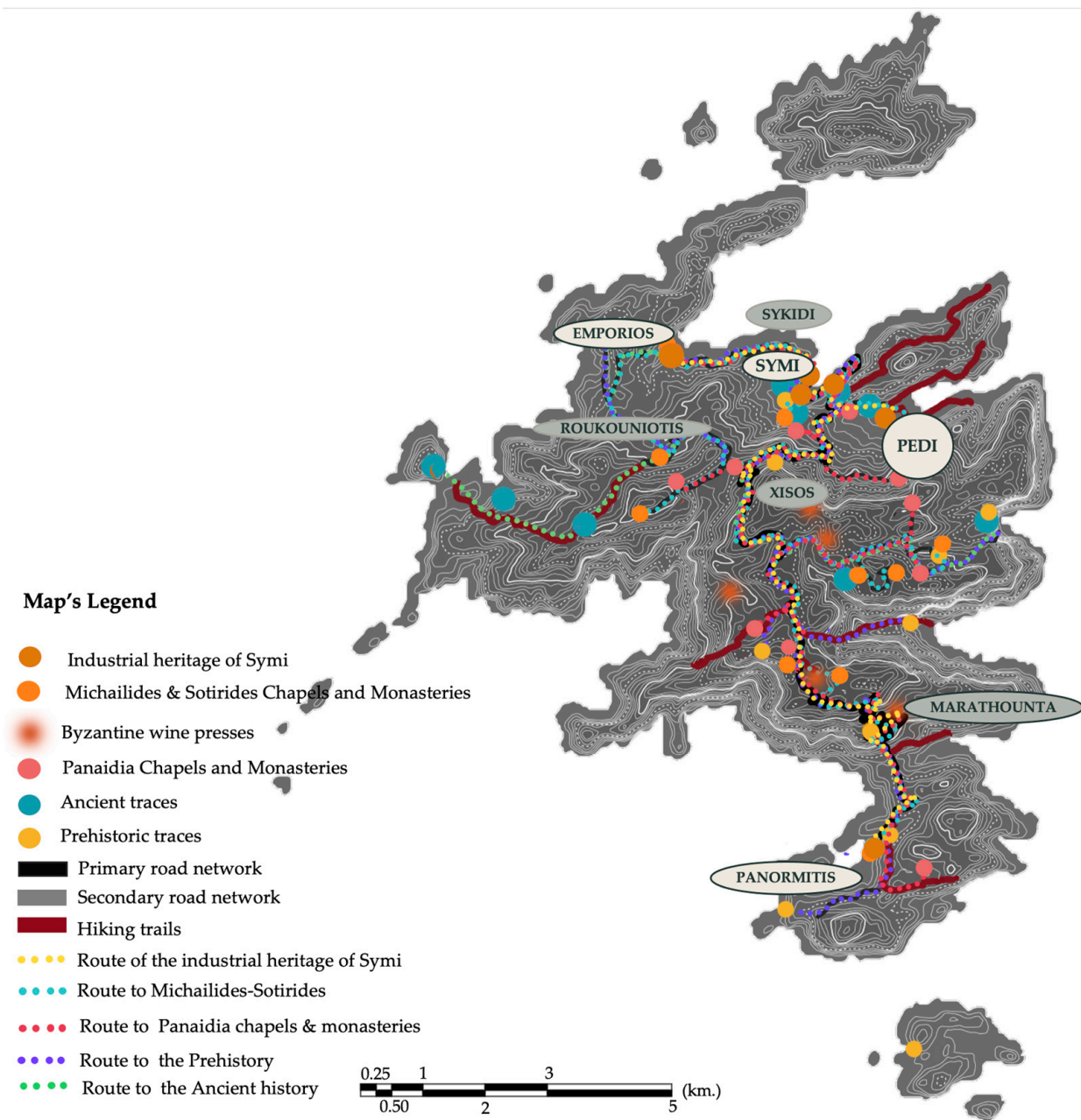
Recognizing the challenges and negative impacts that can arise from the increasing tourism on the island of Symi, effective management of tourism's benefits can help overcome issues such as over-tourism [68,86]. It is crucial to plan and implement tourism development with suitable and sustainable policies that consider the well-being of both visitors and the local community [92,93]. Tourism can contribute to addressing urban and social problems, fostering economic diversification, and promoting social equality in the region, especially in remote islands [94,95].

Cultural reserve plays a significant role in driving sustainable development in island areas by encompassing both tangible and intangible cultural assets that embody the identity and traditions of local communities [96,97]. One effective approach to showcase the cultural reserves of an island is through the design of networks of cultural routes [79–81]. These networks integrate existing road networks, hiking trails, and thematic routes to create immersive experiences for visitors, experiences that celebrate the island's history, traditions, and natural beauty [56].

The present study proposes a strategic plan for developing cultural routes on Symi Island through a series of targeted interventions. These interventions aim to intensify the existing hiking trails by giving thematic axes based on the history and the cultural assets of the island and unifying the traditional settlements of the island, thereby augmenting their cultural and historical significance. The study advocates for the creation of an open-air museum network on the island, a network which comprises six different routes of varying scales. These cultural routes feature points of interest from all aspects of Symi Island's tangible and intangible cultural heritage, incorporating both the existing hiking trails and the road network as a means of integrating larger-scale routes.

The design and selection of the cultural routes on Symi Island are not limited by a simple coverage criterion but rather incorporate a more comprehensive and nuanced approach. The aim is to establish a meaningful "dialogue" among the cultural heritage assets, the natural environment, and the paths of culture in the region. This approach emphasizes the dynamic relationship and interconnection between cultural elements and their surrounding environment. Locals, through providing information and participating in the process of designing this network, play a vital role in safeguarding their cultural sites, historical landmarks, and natural environments [98,99]. This sense of ownership fosters responsible practices, as communities take pride in preserving their cultural heritage and conserving their environmental resources.

As such, the design of the thematic routes of Symi reflects a sophisticated perspective that acknowledges the inherent relationship between cultural and natural heritage, aiming to promote a deeper appreciation of the tangible and intangible cultural assets and the environment in which they are situated. Each proposed thematic route traverses all the settlements of Symi, as well as unique monuments of each historical period. The entire network (Figure 28) lays the groundwork for the development of a future open-air museum, utilizing Symi's abundant cultural and environmental resources.



**Figure 28.** The proposed network of cultural routes, which functions as an open-air museum of Symi.

To avoid mass tourism [100], the easiest solution for the island's economic prosperity, the adoption of cultural route practices emerges as a promising alternative for Symi. The proposed network of cultural routes encourages the attraction of a diverse range of visitors, extending beyond religious tourism to encompass other aspects of the island's history, such as its industrial heritage or history. At the same time, there is a need to disperse the island's local population and tourists throughout the region, fostering balanced development opportunities beyond the overcrowded settlements of Gialos and Panormitis. By providing alternative points of interest and distributing tourism activities across a region, the proposed cultural routes network offers equal prospects for growth and prosperity across different areas of the island. Nevertheless, the proposed implementation of a cultural routes network covers multiple destinations on the island which could be accessed during different seasons. This can help distribute tourist flows more evenly throughout the year, reducing the pressure on the small island of Symi during peak tourism seasons. Additionally, new employment opportunities related to the revealing of Symi's cultural and environmental

reserve could arise for the island's permanent residents, opportunities that do not relate only to seasonal tourism.

A key aspect of this endeavor lies in fostering responsible tourism practices that minimize environmental impact, conserve natural resources, and preserve the rich cultural heritage inherent to island areas [28,33]. By embracing responsible tourism, the island of Symi can achieve sustainable development by harmonizing tourism activities with the preservation of natural landscapes and cultural traditions, as well as social well-being [30–32,101]. First of all, promoting cultural routes as a sustainable and responsible way to explore Symi's heritage can attract a more conscientious type of traveler, who is more likely to respect the local culture and environment. Through the heritage conservation that is proposed for important assets of the island, the proposed network aims to maintain the authentic traditional identity of Symi and ensure the continuity of local customs, traditions, and craftsmanship for future generations. Also, utilizing the existing cultural and historical sites under the framework of an "open-air museum" reduces the need for new infrastructure, minimizing the environmental footprint of tourism-based development of the island, while promoting eco-friendly transportation options encourages visitors to reduce their carbon footprint during their travels.

In order to ensure the successful implementation of the project and its sustainability, local authorities should carry out further studies based on the proposals of this work and promote actions ensuring the active participation of the local community.

The proposed practices in the framework of the cultural routes are aligned with some of the United Nations Sustainable Development Goals (SDGs), to achieve the island's sustainability [101,102]. Developing a network of cultural routes, conservation, and environmental protection is proposed, as previously analyzed, responding to the Life on Land goal (SDG 15) by protecting the island's ecosystem and rich environmental heritage. Moreover, the proposed actions of cultural reservation and the protection and revitalization of the island's settlements through the actions of adaptive reuse of significant industrial buildings respond to the Sustainable Cities and Communities goal (SDG 11). The same goal is also achieved by the cultural route centered around the traditional road of Kali Strata. Its landmarks not only foster commercial growth, preventing gentrification with the proposal of local market use for the reused buildings, but also facilitate social development by creating new gathering points in a historically significant area of the settlement, thereby revitalizing its former livelihood and offering an alternative to the overcrowded coastal area of the traditional settlement. Moreover, the introduction of signage and the promotion of lesser-known chapels, monasteries, and monuments across the whole cultural network through QR codes, and also the proposal of an innovative application for guidance, play a crucial role in ensuring access for both the local community and the visitors, achieving low-impact infrastructure and accessibility and responding to the Industry, Innovation and Infrastructure goal (SDG 9).

The revitalization of traditional settlements beyond the beachfront, such as the regeneration of Kali Strata, and the promotion of lesser-known industrial heritage and religious traditions also contribute to a diversified tourism product. This creates new economic opportunities, such as increased visitor spending and job creation, while respecting and revealing the authentic traditional identity of Symi. The community-centered approach, involving local authorities and residents in the planning and design of the routes, ensures sustainability, responds to the Partnerships for the Goals goal (SDG 17), and addresses the needs of the locals. By fostering community involvement, preserving cultural heritage, and promoting a holistic cultural experience, the proposed practice aims also to enhance the quality of life for locals.

Overall, the proposed strategy promotes economic viability and environmental, cultural, and social benefits for the local community, responding to the Decent Work and Economic Growth goal (SDG 8). By utilizing modern technologies and involving the local population, this initiative can foster economic growth, preserve cultural heritage, and enhance the overall visitor experience, while also benefiting the locals.



## 7. Conclusions

The proposed cultural routes of Symi present an integrated approach toward the sustainable development of the island. The objective of the study was to establish and promote a responsible tourism model that contributes to the island's long-term sustainable development. While islands rely on external economies like tourism for economic and social growth, it is crucial to ensure that such development occurs in a sustainable manner that preserves their cultural and environmental resources. Therefore, the creation of a network of cultural routes is proposed as a responsible tourism tool, utilizing and revealing Symi's abundant cultural and environmental reserves.

As demonstrated by the analysis, Symi is a remote island with unique cultural and environmental assets that require careful preservation to support sustainable development. By conducting a thorough analysis of the area, documenting its assets, and communicating with local stakeholders and residents, the study provided a comprehensive understanding of Symi's current profile, the impact of tourism on its growth and prospects, and challenges that need to be tackled.

Therefore, the cultural routes network of Symi aims to establish a comprehensive network of cultural routes that serve as a valuable asset not only for the island's tourism industry, but also as a destination in and of itself. The proposed network of cultural routes, —creating the conditions for the creation of a future open-air museum of Symi island—is designed with the potential to contribute to the preservation and promotion of the island's cultural identity and environmental integrity by providing visitors with the opportunity to explore the island's history, traditions, and natural wonders through a curated selection of cultural routes.

Also, the implementation of the proposed network of cultural routes brings several benefits to the local community. It leads to the creation of new employment opportunities, increasing the local workforce. Additionally, it raises awareness among locals about the significance of their cultural and environmental heritage, encouraging their active involvement in its preservation and protection, rather than its exploitation. Furthermore, the preservation of customs and traditions fosters symbiotic relationships and strengthens the sense of community. These cultural practices serve as a means of communication with the visiting population, allowing them to better understand and appreciate the island's rich heritage.

The concept of cultural routes has the potential to raise awareness among both visitors and inhabitants. The creation of such a network can serve as a powerful tool for sustainable development, aiding in the protection of the local environment, managing tourism activities, and promoting economic growth responsibly.

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