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Unburying Hidden Land and Maritime Cultural Potential of Small Islands in the Mediterranean for Tracking Heritage-Led Local Development Paths

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Abstract: Small islands in the Mediterranean Sea, although endowed with exquisite land and maritime natural and cultural resources, are in most cases lagging behind areas, mainly due to insularity. Through their long history, many of them are strongly interwoven to events of European or even global significance, e.g., World War (WW) I and II. Such events have left in their "bodies" important remains, largely conditioning their socio-economic trajectory. Preservation and sustainable management of this Cultural Heritage (CH) is, in this work, perceived as a two-sided coin, serving endurance of European identity, memory, and CH for future generations on the one side; and leveraging future cultural tourism trails of these disadvantaged areas on the other. The *goal* of this article is to 'unbury' land and maritime, tangible and intangible, cultural remains and use them to unveil heritage-led development paths of small Mediterranean islands. This is demonstrated through a specific case study, a distinguishable insular territory and WW II battlefield scenery, *Leros Island*, Greece; and is accomplished by a participatory spatial planning framework, embedding scenario planning, spatial data management, and e-participation technologies (Web-GIS, social networks) for community engagement. The latter is valued for assessing options available for an integrated, sustainable, and resilient exploitation of land and maritime CH; and raising awareness of local population as to the role of CH as enabler for the transition from past failures to more promising, culturally-driven, and locally-adjusted future development trails.

Keywords: insularity; (underwater) cultural heritage; integrated participatory planning; spatial data management; scenarios; Web-GIS and social networks

1. Introduction

'Oceans have more historical artifacts than all museums of the world combined'

The above statement, articulated by Snyder [1], attempts to illuminate the, partly overlooked or underestimated in terms of its richness, diversity, distinctiveness, and precious value, Underwater Cultural Heritage (UCH). Indeed, in most people's mind, the term 'Cultural Heritage' (CH) has strong connotation with elements of the cultural environment that are located inland. Research efforts so far also seem to have placed much more attention to study and document, preserve and protect inland CH monuments; and put them in a spatial planning context, compared to UCH [2]. As a result, UCH such as remnants of cities and civilizations, sites of archaeological interest, sunk martial equipment, ancient harbors, and ship or plane wrecks that are associated with important historical or war events (e.g., WW I and II) [3,4], although encompassing remarkable social, cultural, environmental, and economic values, remain in many cases largely unknown, unexplored, and unprotected as well as unexploited,

in a sustainable way, for fulfilling purposes of historical remembrance and local development. This is due, among others, to a variety of difficulties that UCH identification, exploration, and protection implies; and results in a certain knowledge deficit as to their location, current condition, potential risks these are exposed to, or opportunities that can emerge from them for the society as a whole.

This situation seems, nowadays, to be gradually reversing and UCH appears to gain interest from a variety of disciplines, including spatial planning [5]. Thus, apart from the interest in pure documentation and preservation of UCH, its sustainable exploitation also gains ground [6] and its integration with land CH in order to establish coherent and challenging narratives that are capable of keeping alive the past for future generations [4], but also serving long standing local development objectives.

The main reasons for such a cultural turn can be indicatively mentioned as follows:

- Necessity to protect and preserve UCH that, in several cases, is threatened to loss due to both natural (e.g., climate change) and anthropogenic (e.g., fishing, looting) dangers to which UCH is exposed [7,8].
- Technological and scientific progress that supports exploration, documentation, preservation, content development, and visualization of UCH [9,10].
- Community engagement for imbuing a UCH narrative with meaning, stories, and identity for communities and/or persons.
- Evolutions in the tourism market, e.g., diving community, signaling a rapidly emerging and distinguishable trend towards underwater cultural tourism [11]; and forcing tourism supply and destinations to explore and deliver new, diversified, and experience-based products that integrate land and underwater CH.
- Comprehension of the role UCH can play towards the sustainable, heritage-led local development [12], especially in less privileged insular communities.
- Significance attached to maritime resources and economy [12], explicitly articulated in the blue growth strategy of the European Union (EU); and motivating interest, among others, in the exploration and sustainable exploitation of UCH.
- Maritime Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM) set up by the EU, which offer a new glance and open up new opportunities for regulating maritime uses [13] and demarcating UCH protected areas.

In response to the above needs, the focus of this paper is on the development of a strategic planning framework in support of the sustainable and integrated exploitation of land and underwater (ships and plane wrecks) CH, both tangible and intangible. This has a specific spatial concern in geographically handicapped, small- and medium-sized islands of the Mediterranean Region; and is implemented in such an island, namely *Leros*, Greece.

Beginning with the spatial scale of concern of this work, i.e., the Mediterranean Region, it should be stressed its natural diversity, but also the spectacular historical, cultural, linguistic, and socioeconomic peculiarities of this area. It is also important to note its role as a top tourist destination on a global scale, with tourism being considered as a major pillar of local economies, especially in coastal zones and insular communities [14]. Moreover, the Mediterranean nowadays is considered a hotspot from multiple perspectives, such as environmental and climate change, water scarcity and biodiversity loss, natural risks and urbanization, economic recession, and brain drain [4,14–17]. Finally, a distinct attribute of this area is the large number of island complexes, floating in the Mediterranean Sea, with the majority of them being located in the Aegean and the Adriatic Sea; and almost half (50.7%) belonging to the Greek state [14].

Islands in the Mediterranean are considered as land parcels disposing quite valuable natural and cultural characteristics, which render them important nodes for tourist development. Actually, islands exert a major appeal on the tourism/leisure market, being by far the most attractive and highly appreciated tourist destinations in the world. Consequently, tourism nowadays constitutes a remarkable pillar of

island economies, but also a sector that causes significant stress in social, cultural, and environmental terms [18]. Islands are also marked by the confined geographical space and the lack of economies of scale; various types of developmental bottlenecks due to their geographical peculiarity, poorly developed infrastructure, and lack of accessibility to services (transport, health, education, etc.); limited economic resources; small number of inhabitants, usually digitally illiterate and of low educational profile [14]; all resulting in a certain deficit in terms of effectiveness of their developmental endeavors.

Finally, the focus of this work on UCH artifacts—WW II ships and/or plane wrecks—derives, mainly, from the abundance of this type of UCH in the Mediterranean. Indeed, the Mediterranean region has some of the most important WW I and II UCH that serves as memorials or graves, commemorating some of the most well-known maritime disasters or famous near-shore naval and/or air battles and landings. While this UCH remains largely unexplored, there are many key issues associated with its protection, preservation, and sustainable management and, in several cases, its integration into coastal cultural settings [19], closely related to such historical events. The latter is the main issue explored in this paper, seen from a planner's perspective that seeks to open up new development potential for lagging behind, of small- and medium-scale insular regions on the ground of this CH; and embed in this planning endeavor local community expectations [20] through community engagement by use of mature tools and technologies, i.e., Web-GIS (Geographical Information Systems) and social networks.

More specifically, the goal of this article is to streamline an integrated methodological framework that builds upon well-established, mature planning tools and technologies already successfully implemented in terrestrial/sectoral planning exercises, for serving heritage-led local development objectives of insular lagging behind Mediterranean communities. To this end, the structure of the article is as follows: first, the steps of the methodological approach are shortly presented; this is followed by the exploration of the external decision environment, aiming at identifying trends and opportunities and sketching current policy frameworks, relevant to the studied issues; then comes a short presentation of the study area and a GIS mapping of its land and underwater cultural heritage ((U)CH), in order for local socio-economic and cultural peculiarities to be ascertained; this step is followed by a scenario planning exercise, delineating two distinct, spatially delineated, potential cultural development trails; while outcomes of participatory assessment of these trails are next presented, outlining the power of Web-GIS and social networks for community engagement in assessing the planning outcome and supporting decision-making; finally, some conclusions are drawn as to the experience gained from this research endeavor.

2. The Methodological Approach

The proposed methodological approach consists of the following six steps (Figure 1):

- *Step 1: Setting the goal and priority axes*. The main goal to be achieved is set at this starting point. In the context of this article, this is associated with the sustainable heritage-led development of isolated small- or medium-sized Mediterranean islands through the sketching of spatially defined cultural heritage trails that are largely grounded on the integrated management of tangible and intangible WW II (U)CH. Additionally, a number of priority axes are outlined in this step that correspond to identified key challenges of the particular case study; and trace out key directions of policy action in order for the goal to be achieved.
- *Step 2: Exploration of the external decision environment*. It attempts to shed light on the current trends and policy arsenal at the global, European, and national level, sketching in particular the decision-making environment and policy directions as to the cultural and tourist sector, the maritime policy, and the protection framework of (U)CH.
- *Step 3: Exploration of the internal environment*. It incorporates an in-depth spatial analysis and GIS mapping of the area of concern, elaborating on natural and cultural resources, socio-economic status, infrastructure, etc. This analysis supports the full comprehension of peculiarities of the particular socio-economic and cultural environment, which in turn facilitates the structuring of appropriate heritage-led future development paths.

- *Step 4: Structuring alternative future heritage-led development scenarios*. This step elaborates on the structuring of distinct scenarios that are grounded in the work carried out in Steps 2 and 3. A scenario planning exercise is conducted in this respect, targeting the sustainable exploitation of (U)CH in the study area, with emphasis being given on the spatial pattern of cultural development trails and the handling of land and maritime CH in an integrated manner.
- *Step 5: Web-based participatory assessment of scenarios and priority axes*. It aims at digitally engaging local community as consultants in this step of the planning exercise so as to evaluate and rate proposed scenarios and related priority axes for their implementation. The step is grounded on mature tools and technologies for information sharing and community engagement, such as Web-GIS platform, Web-GIS visualization of scenarios and their content, Web-based questionnaires, social networks etc. These are used for spreading information with regard to planning choices and engaging local community in their assessment.
- *Step 6: Development of a Strategic Heritage-Led Plan*. It constitutes the final outcome of the proposed framework that rests upon the most preferred scenario and the prevailing priority axes for its implementation, as perceived by the local community. The latter are further expatiated on policy paths, i.e., policy directions, measures, and actions, best serving the goal set.

Below the implementation and outcomes of this framework in the specific case study of this work, the small island of Leros, Greece, is presented.

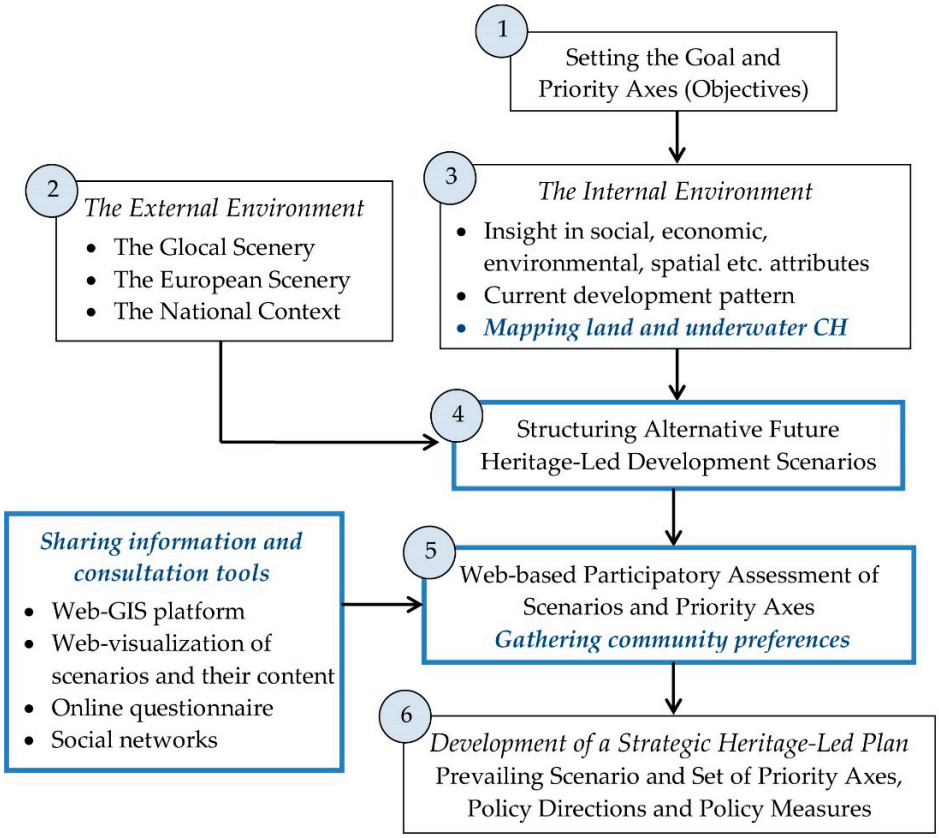


Figure 1. The methodological framework (in blue are the elements that form the core of the present work).

3. The External Decision Environment

As any planning endeavor is conducted within a certain decision environment, i.e., a scenery that is framed by noticeable trends and current policy frameworks holding at the international, European, and national level, this section attempts to explore key drivers of this scenery that need to be taken

into consideration for the empirical part of this work. Actually, the focus is on shedding light on two distinct and intimately related sectors [21], namely culture and tourism, taking for granted that a heritage-led development plan, especially when dealing with small- and medium-sized insular territories, is largely shaped by these two strongly interwoven sectors.

3.1. The Global Scenery

Small- and medium-sized islands, as cultural tourism destinations, are competing in a rapidly evolving global environment, which is marked by trends such as globalization, escalating demographic changes, evolving demand patterns and leisure time management, expansion of transport network and travel facilities, and rapid technological developments and their diffusion in both tourism and cultural sector. Within this environment, demand for more personalized and experience-based products seems to be a prevailing trend in customers' preferences, reflecting the gradual shift of motivation to travel from the need to 'escape daily routines' to a desire to 'experience and learn'. Based on this trend, consumers nowadays are increasingly seeking new, meaningful, and authentic experiences [22–26]. In fact, today's tourists are well-travelled and sophisticated, and demand quality and value, i.e., theme-based tourist products and services that are broadly oriented to one or a combination of three e-words: entertainment, excitement, and education/experience [27]. This constitutes a noteworthy global trend of tourist demand, transforming the old-fashioned mass tourist to a *traveler*, an *adventurer*, a *volunteer*, an '*exploraholic*', etc. [28]. This type of tourist is fully aware of environmental and social values, acts in a conscious and respectful way with regard to these values, and seeks to deepen interaction with local social, natural, and cultural capital of a destination [29].

In alignment with the environmental concern and the pursuit of more responsible trails of tourism development, alternative forms of tourism, as a means for coping with sustainability objectives in the sector, are flourishing; and are rapidly gaining ground in a large number of regions that undertake efforts to gain prosperity through placing themselves in the expanding geography of sustainable and environmentally responsible destinations. *Cultural tourism* is, among others, a remarkable alternative tourism form and a major segment in most tourism destinations (over 39% of cultural tourism arrivals in 2014, as pointed by UNWTO) [11]; a quite important form in demarcating travelers' choices; but also an essential feature of tourist destinations' profiles and competencies. Flourishing of cultural tourism is largely conditioned by the preservation of natural and cultural resources, forming the backbone of this alternative tourism form [30–32].

At the international level, this preservation is safeguarded by the *"Protection of the World Natural and Cultural Heritage"*, an important Convention institutionalized by UNESCO (1972) [33] and providing significant guidelines that shape national preservation policies. It also highlights the strong linkages of CH with local communities, with the latter construed as major defenders of cultural assets. Raising awareness of local communities, capitalizing on the benefits of the educational background and technological progress, and promoting synergies' creation among different actors are comprehended as key determinants for the protection and preservation of natural and cultural resources.

Speaking of the UCH in particular, a cultural resource that gains interest during the last decade from both the demand and the supply side, the core protection framework is the UNESCO (2001) [34] *"Convention on Underwater Cultural Heritage"*. With UCH being defined as *"every cultural, historical or archaeological trace of human presence that has been submerged partly or totally, periodically or forever at least 100 years ago'* [34] (Article 1, p. 51), this framework embraces the protection of sites, structures, buildings or works, and remnants of human activity; and ships, planes, and other objects or parts of them (warships or other vessels used for governmental or non-commercial purposes) and their content, both placed in an archaeological or natural space. UNESCO's Convention recognizes the value of UCH as an indispensable part of the world's cultural heritage and evidence that complements historical trails of nations through time. It also acknowledges the steadily rising interest in UCH for educational/cultural purposes, but also the risks inherent in its protection, being of both anthropogenic and natural origin. It brings to the forefront issues like UCH governance, awareness-raising, potential

of technology for preservation/management, and limits of governmental responsibility, to name a few. The directions of this Convention are in harmony with the terms of other International Conventions, such as the *United Nations' Convention on the Law of the Sea* [35] delimiting, inter alia, the borders of state and international territorial waters.

3.2. The European Scenery

The importance attached by Europe to culture, tourism, and cultural tourism is directly or indirectly captured in a number of policy contexts all elaborating, in one or the other way, on the challenges ahead and providing policy guidelines for dealing with them; while also highlighting the critical contribution of the cultural and tourism sectors for reaching sustainability and competitiveness objectives. The most important of them are articulated in the following documents:

- *"European agenda for culture in a globalizing world"*—explores the relationship between culture and Europe in such a world in order for the objectives of a new EU Agenda for Culture to be articulated; and new models of cooperation and partnerships to be sketched [36].
- *"Agenda for a sustainable and competitive European tourism"*—addresses sustainability and competitiveness objectives as decisive drivers for long-term prosperity of the European tourism sector, accomplished by ensuring the right balance among tourists' welfare, health of the natural and cultural resources, and development and competitiveness of destinations and businesses [37].
- *"Europe, the world's No 1 tourist destination—a new political framework for tourism in Europe"*—identifies directions for action that are focusing on the promotion of a sustainable, responsible, competitive, resilient, and high-quality European destinations' image [38].

Speaking about the preservation of the European CH, some important directions are provided by the Council of Europe through [2]:

- The *"European Convention on the Protection of the Archaeological Heritage"*, also known as *Valetta or Malta Treaty (1992)*—an international legally binding Treaty within Europe, setting the ground for preservation, conservation, and management of land and underwater archaeological heritage as a source of the European collective memory and an instrument for historical and scientific study [39]. Signed on 16 January 1992, it came into force on 25 May 1995. With 45 signatures and 45 ratifications, it is one of the most successful Conventions of the Council of Europe.
- The *"European Landscape Convention"*—also known also as the Florence Convention, it is the first International Treaty that is exclusively addressing all aspects of European landscape [40]. It aims at the protection, management, and planning of these landscapes, by establishing suitable cooperation on relevant issues. Today, 39 member states have ratified this convention (Status as of 15/02/2019), [41].
- The *"Convention on the Value of Cultural Heritage for Society"*—known also as the *Faro Convention* [42], it attempts to delineate issues at stake, general objectives, and possible fields of intervention with respect to CH. It stresses the importance of individual and collective responsibility with regard to CH management and enrichment aspects; while it also emphasizes the mediating role of CH in building up peaceful and democratic societies. Adopted in 2005, it came into force on June 1, 2011. To date, 17 member States of the Council of Europe have ratified this Convention and 5 have signed it.

In managing UCH, additional policy constraints need to be taken into consideration, emerging from relevant directions of Europe regarding the marine environment. The interest of EU in this environment dates back to the 1970s and is expressed through policies addressing the restrain of marine ecosystems' degradation. Reflection on this topic has raised the foundations for the Barcelona Convention (1976) [43], modified in its current form since 2004 and serving the goal of Mediterranean marine ecosystems' protection. In 1992, the issue of "Integrated Coastal Zone Management" (ICZM) came to the forefront in order to address significant pressures exerted on coastal areas; while in

1994, the *"Law of the Sea"* was published as the legal instrument, defining the rules of maritime space exploitation.

At the EU level, the new millennium is characterized by the intensive activity towards the creation of a European vision for 'oceans and seas' and the design of appropriate policies for implementing it [44]. Of crucial importance in this respect is the creation of new, innovative, and effective ways of sustainable exploitation of maritime resources; the mediation of conflicts; and the establishment of synergies among different sectoral stakes. For reaching these objectives, a range of decisive policy frameworks have emerged, formulating the EU *Integrated Maritime Policy (IMP)* [45], *Blue Growth Strategy* [46], and *Maritime Spatial Planning (MSP)* [47].

Inspection of IMP and Blue Growth Strategy reveals that UCH has not gained adequate attention, taking into consideration its potential contribution to local development and growth. On the contrary, activities related to UCH are dealt with in the MSP Directive, while also addressed in the ICZM Protocol (Article 13) in terms of its protection [48]. Both establish a more promising decision-making environment for tackling sectoral competition in the sea and relieving pressure exerted by various maritime activities on UCH (e.g., fishing, transportation).

3.3. The National Context

Greece is considered as a pioneer with regard to the protection of cultural heritage, since it is the only country that has had a strong legislative framework for antiquity protection, dating back to 1834 and incorporating both land and underwater cultural heritage concerns [49]. In the dawn of the new millennium, important legislative decisions as to the protection and preservation of (U)CH have been taken. These refer to:

- The Law 3028/2002 [50] *"For the Protection of Antiquities and Cultural Heritage in general"* integrating into one law all partial legislative actions holding through time; and addressing the protection of (U)CH. With respect to UCH, Articles 1 and 2 of this Law refer to the ancient archaeological sites, located at the seabed or the bottom of lakes or rivers [49]. The same articles state that "cultural objects within the boundaries of the Greek territory, including territorial waters, as well as in other maritime areas, where Greece has jurisdiction under the international law of sea" are subject to legislative protection [51]. Furthermore, in accordance with Articles 2d and 16, protected historical marine sites may be declared as areas where historical naval battles took place; while in Article 20 (paras. 1d and 6), it is stated that contemporary newer shipwrecks may also be considered as monuments.
- A Ministerial Decision of 2003, according to which shipwrecks are recognized as cultural goods and as monuments, in case they lie in the Greek seas for more than 50 years. This further enhances protection of shipwrecks as UCH, in contrast to the UNESCO Convention, which declares shipwrecks as monuments when they lie underwater for more than 100 years.
- The Law 3409/2005 [52] predicting the establishment of diving parks for recreational diving, diving training, scientific research, etc. This has resulted in the disengagement of diving throughout the Greek coastline, as opposed to the previous regime, where diving was permitted for 620 out of the 10,000 miles of this coastline [53].
- The Law 4179/2013 [54] establishing access to Maritime Archaeological Sites. According to this Law (Article 44), it is possible to make cultural development contracts, specifying cultural projects, programs, and related services within Maritime Archaeological Sites.

Greece has ratified the 1972 UNESCO Convention on the *"Protection of the World Natural and Cultural Heritage"* under the Law 1126/1981 [55] and the *"European Convention on the Protection of the Archaeological Heritage"* under the Laws 1127/81 [56] and 3378/2005 [57] (revised version); while it has also undertaken the initiative to incorporate the principles of natural and cultural protection in the constitutional revision of 1975.

Taking into consideration the cultural wealth of the Greek state as well as its position in the global tourism map, cultural and tourism policies in Greece are of strategic importance and are defined at the national level by relevant Ministries (Ministry of Culture and Tourism, respectively). Policies that have an impact upon these two critical sectors are also defined by the Ministry of Shipping and Insular Policy, having responsibility for the surveillance of the seas and policies affecting insular communities; the Ministry of Environment and Energy, responsible, among others, for urban and regional spatial planning and policy in general as well as Maritime Spatial Planning in particular; and Ministry of Agricultural Development and Food, responsible for the design of sectoral policies with a spatial impact on land and maritime environment (e.g., fishery).

4. The Internal Environment—Leros Island/Greece

In this section, the study region, the goal and priority axes of the cultural planning endeavor, as well as the GIS mapping of available natural resources and (U)CH are shortly outlined.

4.1. The Study Region

Leros, although part of the island complex of the south-eastern Aegean Region (Figure 2), i.e., an area in which mass tourism is the prevailing economic activity, has not followed development pathways of many islands of this region, being globally recognized tourist destinations (e.g., Rhodes, Kos). On the contrary, over time, various historical and other events have rendered Leros a place of isolation and abandonment, and a lagging behind small island compared to other Aegean or Dodecanese counterparts.

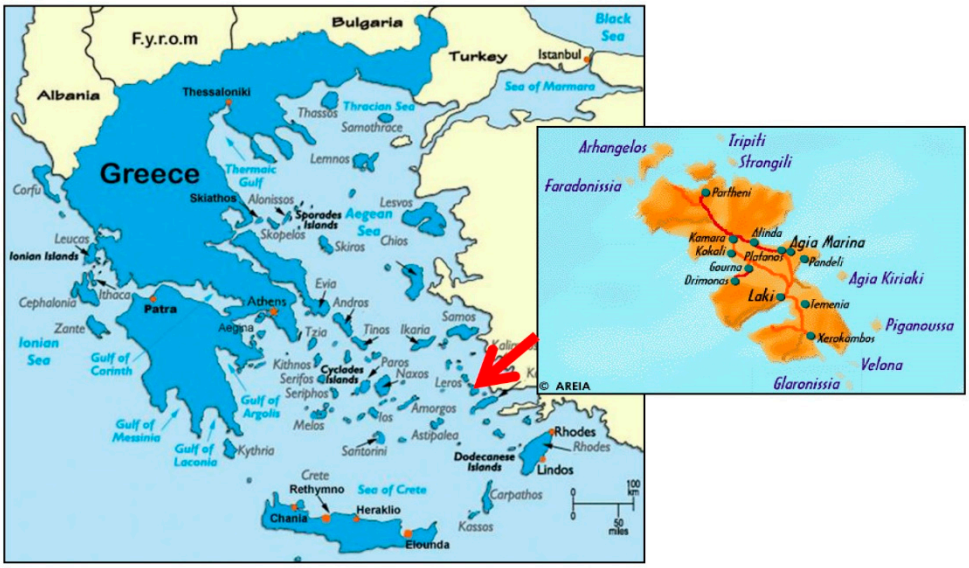


Figure 2. Geographical position of Leros Island [58,59].

The historical trajectory of Leros is marked by foreign occupation (Figure 3), mainly due to its strategic location as a natural fortress in the Aegean Sea, and is fraught by many traumatic events.

Figure 3. Leros as the crossroad of various civilizations—Foreign occupation time slots.

Leros was under Turkish control for more than one and a half centuries, and in its more recent history, i.e., the first half of the 19th century until WW II period (1912–1943) remained under the Italian occupation. The island was transformed by the Italians into a heavily fortified aeronautical base for serving Italian dominance over the Mediterranean Sea due to its excellent, deepwater port of Lakki (known as Porto Lago during the Italian occupation in the 1930s), the largest natural port in the Eastern Mediterranean. As a base, it had a catalytic effect on the island's spatial organization and development pattern. Across the island, fortifications, firearm locations, gun emplacements, and other military installations were constructed. The Lakki harbour was built as a base for the Italians' supremacy in the Mediterranean in general and the Dodecanese island complex in particular to be best served.

Italian occupation has left behind important land remains. Many of them are still accessible today, constituting an outstanding ensemble of history and culture of importance for cultural tourism interests, even though they are not adequately preserved and promoted to attract visitors. Large infrastructural projects were also accomplished in this period, such as the central road network, linking diverse areas of Leros Island and serving transportation needs even today. Of great cultural interest are also the particular architectural buildings in the city of Lakki, exuberantly exuding the scent of Italian architecture in the island [60].

The Italian occupation comes to an end through a war event in the history of WW II, notable for its human and arms' loss and known as the "*Leros Battle*" or 'Operation Leopard'. Lasting 22 days, Battle of Leros resulted in a significant amount of land and, especially, underwater cultural and historical remnants, many of which still lie underexploited or fully unexploited. Indicative remains of these wrecks are presented in Figure 4.

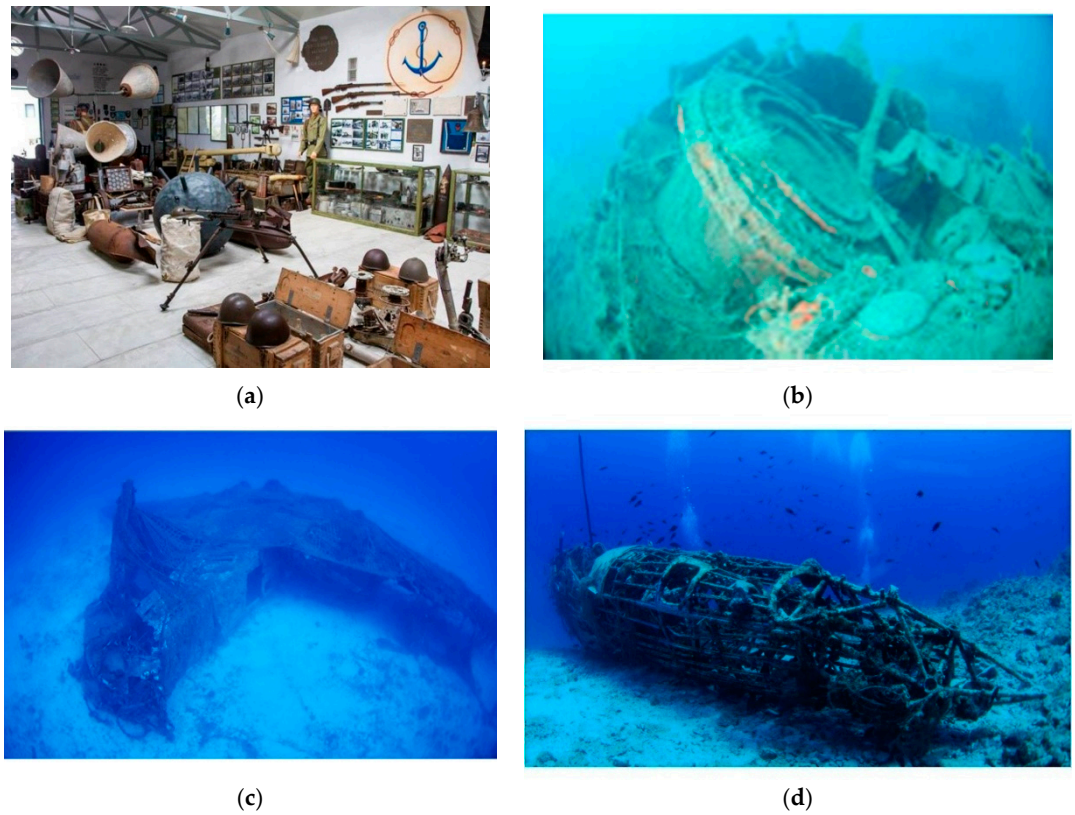


Figure 4. Indicative land and underwater cultural heritage ((U)CH) in Leros Island—WW II remnants. (**a**) War museum "Deposito di Querra" [61]. (**b**) Destroyer 'Queen Olga', sunk in 26 September 1943 in Laki Bay [62]. (**c**) JUNKERS JU 52, sunk in the Battle of Leros, 13 November 1943 [62]. (**d**) ARADO 196, German hydroplane [62].

Leros Island constitutes a distinguishable example of the Mediterranean Region in terms of its rich WW II land CH and especially UCH—fourteen well-recognized ship and plane wrecks, all connected with WW II fatal events, are located in its maritime environment (see Figure 5)—and a unique historical example, disposing significant land and maritime, tangible and intangible cultural remains of glocal (global and local) importance.

In its more recent history, i.e., the second half of 19th century, Leros Island has been characterized as a "Soul House", mainly due to its very peculiar image as a concentration camp for mentally disturbed people (1957–today); an exile camp for dissidents during the Greek dictatorship period (1967–1974); and a 'hot spot' for hosting part of the current refugees wave arriving at the Easter Aegean islands' complex (2016–today). These events have significantly traumatized the image of the island, negatively influencing, among others, its development perspectives and smooth trajectory as a wealthy tourist destination, as is the case of many Dodecanese islands. They have also affected local economic structure, with a large percentage of local employment being active in the tertiary sector (67% in 2011) and more specifically in the health sector; while primary and secondary sectors are lagging behind (5% and 12%, respectively). Unemployment in 2011 is rather high (16%), while permanent population in the same year counts for 7.917 inhabitants.

Coupled with consideration of all drawbacks and constraints, but also comparative advantages, emerging from insularity [63], planning the future development of Leros Island, undertaken in this work, sets two equally important challenges that address the: preservation of cultural remains and the meanings these convey for future generations, preserving thus European history, identity, and memory; and sustainable and resilient exploitation of these resources for reversing the destiny of this island. In seeking to achieve this transition, the goal and priority axes of this strategic cultural planning exercise are described shortly in Section 5.

4.2. Mapping Cultural and Natural Resources of Leros Island

The issue of cultural heritage mapping as *" . . . a process of collecting, recording, analyzing and synthesizing information in order to describe the cultural resources"* [64] and as a prerequisite for serving cultural planning objectives and creating value-adding cultural products is brought to the forefront by various researchers [65]. UNESCO has also defined cultural mapping as a means to transform tangible and largely intangible cultural resources into a medium that can be embedded into heritage management exercises [66]. Cultural planning as a process capitalizes on a variety of research methods, tools, and techniques that are capable of identifying, describing, portraying, promoting, and managing cultural resources so that their preservation to be assured [65]. Furthermore, cultural mapping can be perceived as a supportive tool, broadening communities and stakeholders' potential to identify and record cultural resources, and map their own way of sensing the place and the social values [67].

Identifying, quantifying, and geographically locating cultural assets (facilities, heritage, points of interest, etc.,) sets the ground for building strategies and effective policies in order to create value out of specific forms of tourism and related activities [65]. Of great help in this respect is the enhancement of spatial data management and visualization potential in a GIS environment, coupled with Web developments that allow interactive Web-based GIS exploitation as a bidirectional interactive tool [68]. Utilization of Web-based GIS can ensure equal access to information and thus create new perspectives for social inclusion, render participation more wide and substantial due to the better grasping of spatial data and problems, and strengthen democratic procedures that support more efficient spatial decision-making [65,69].

Moreover, interactive visualization and (Web-)GIS applications can be adopted/used in order for various pieces of information to be presented in an understandable way, thus enabling investigation of spatial relationships/problems and broadening apprehension of such problems as well as essential and value-adding public engagement [70].

In the present study, GIS mapping and content creation of cultural and natural resources is conducted, in order for a twofold goal to be served, namely to: provide geospatial information as to

the distribution of these resources in the land and maritime part of the study area and thus facilitate the planning endeavor; and form the ground for the development of a Web-GIS platform and related application for engaging Leros local community in the assessment and prioritization of the planning outcomes of this exercise. GIS mapping of natural resources and (U)CH is presented in Figure 5.

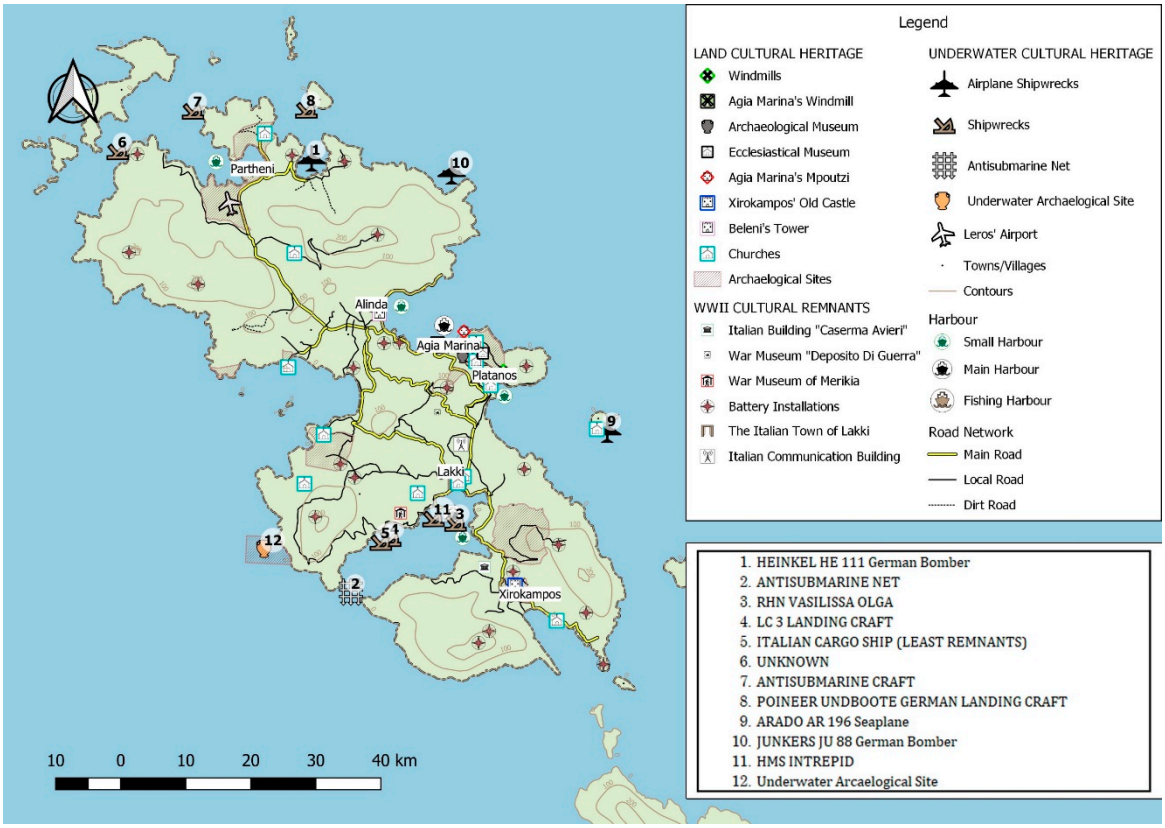
5. Structuring and Participatory Assessment of Future Development Scenarios for Leros Island

The main context of the Leros planning exercise is discussed in the following by elaborating on the goal and priority axes set in this exercise, the rationale for building future cultural development scenarios, as well as the context/outcomes of the participatory assessment of these scenarios by the Leros local community.

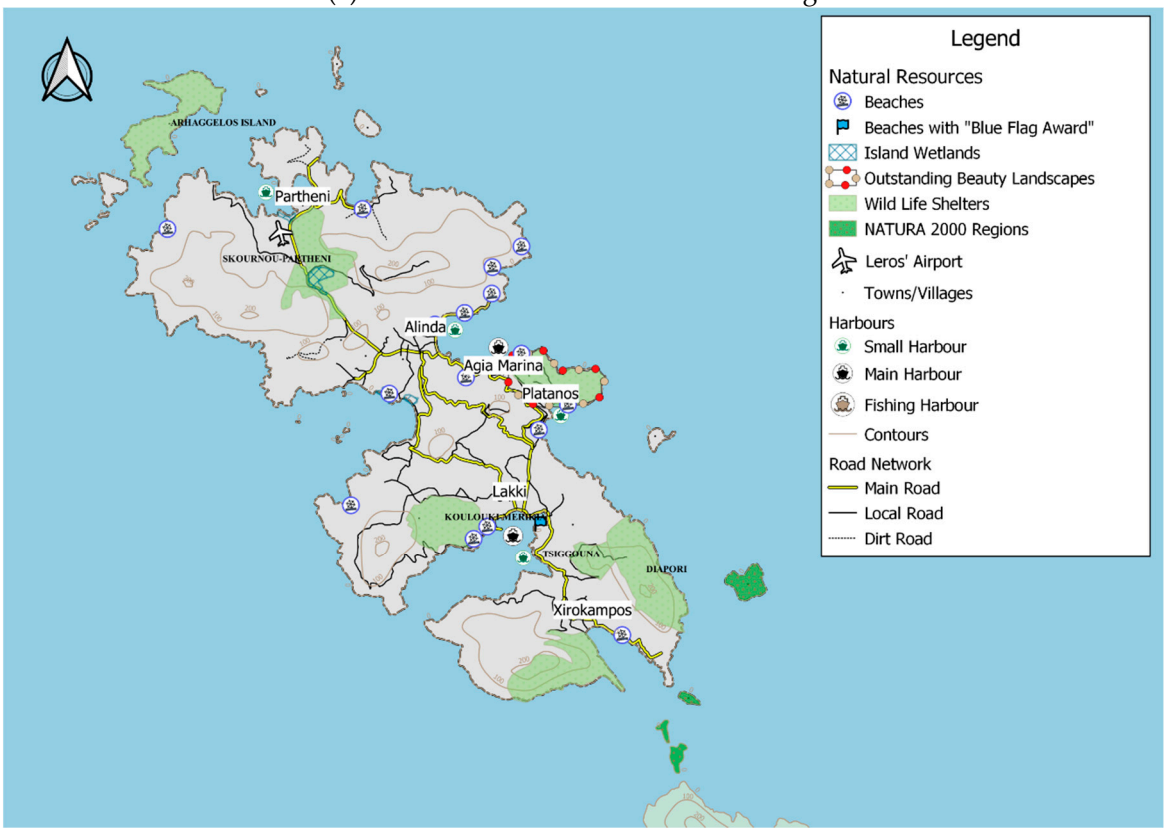
5.1. Goal and Priority Axes of the Leros Planning Exercise

As a starting point of every planning exercise, the goal and priority axes for planning interventions have to be defined. The main goal of the Leros planning exercise is delineated as the shift of the island's image from a place of isolation, abandonment, underdevelopment, and social banishment to a place of multi-nature, experience-based cultural tourism activity through the sustainable and resilient exploitation of land and underwater—tangible and intangible—cultural heritage. This is further analyzed into a number of priority axes or objectives, which are in compliance with European, national, and regional policy priorities, and are focusing on the:

- *Designation of the local cultural identity as a pillar for economic development and social cohesion*—refers to the strengthening of local identity and its power for serving local development purposes through mapping natural resources as well as (U)CH; and realizing their very essence, value, and spatial distribution.
- *Treatment of (U)CH in an integrated way*—a vital objective for the case study concerned, as considerable parts of both the land and underwater—tangible and intangible—CH have a common origin, i.e., WW II fatal events, and thus are parts of the same narrative.
- *Integrated approach of natural and cultural resources*—as both types of resources co-exist in many parts of the study region, an integrated approach in their handling is perceived as further enriching the value and experience gained out of them.
- *Development of alternative, experience-based, cultural tourism products*—in alignment with the globally noticeable trends as well as the European, national, and regional policy priorities, cultural tourism, pursued by this priority axis, is perceived as a remarkable developmental pillar in insular regions, being important repositories of natural and cultural resources.
- *ICT-enabled promotion of land and underwater cultural heritage*—use of technological advances is a key factor for dealing with restrictions faced by geographically isolated areas, such as the small- and medium-sized Mediterranean islands; and an indispensable means for effectively marketing local cultural tourism products in a globalized era.
- *Enhancement of local entrepreneurship and creation of value chains*—it aims at enabling networks' creation and clustering of local businesses for strengthening value chains' creation and boosting extroversion of local products and services.
- *Raising awareness of local community on the value of natural and cultural resources*—an essential priority axis, targeting the realization of value of local natural and cultural resources, their decisive contribution to local development, and the need for their preservation and sustainable exploitation.
- *Balanced cultural tourism development—removal of inequalities*: It attempts to reverse the current spatial pattern of mass tourism development, which depicts a certain concentration in the central-eastern part of Leros Island, in contrast to the more evenly dispersed natural and cultural resources.



(**a**) Land and Underwater cultural heritage



(**b**) Natural heritage

Figure 5. Leros Island—GIS mapping of (**a**) cultural and (**b**) natural resources [71].

5.2. Setting the Scenario Building Rationale

Building up the image of an attractive, sustainable, and competitive cultural tourist destination is not an incidental event, but the outcome of a successful planning endeavor [72]. Such an endeavor aims to capitalize on local assets and promote sustainable forms of tourist development that are consistent with local aspirations and, at the same time, are well adjusted to global tourism but also other prevailing trends [25]. Planning, in such a context, aims at identifying those strategic policy options ahead that are capable of effectively establishing the 'link' between the local and the global context, assuring that communities and regions can compete, in a successful way, in the evolving global scene [73,74]. The latter is of crucial importance for long-term success and is an issue that has not, up to now, gained much attention from many tourist destinations [75]. This is especially true for regions such as small- and medium-sized islands, which, apart from isolation, have to cope with limited capacity of human resources to accomplish that kind of long-term foresight and planning exercises.

Taking into consideration the current global sustainability challenges, planning the sustainable tourist development of a specific region is certainly a complex issue; a target that needs to be achieved by properly balancing economic, social, cultural, and environmental objectives [76] within a globalized, competitive, and technology-driven environment. It also implies a meaningful balance among different stakes and expectations of various stakeholders' groups [30], while embodying in the planning outcome the current social and environmental concerns, as tourism is an industry heavily capitalizing on nature's endowments and society's cultural heritage [4,73,77,78].

Such a multi-objective balance is sought in the following, by means of structuring alternative scenarios for the sustainable cultural tourist development of Leros Island, taking into consideration opportunities and threats emerging from the external decision environment, as these were sketched in previous sections; and advantages and weaknesses stemming from the study region (internal environment).

Scenarios, as a foresight technique, are used as a means for medium- to long-term strategic analysis and planning, for possible alternative futures to be explored [79]. They intend to envision plausible and internally consistent future states that are based on rigorous analysis. They are setting the ground for robust, resilient, flexible, and innovative strategic policy making [80], thus turned into useful management tools for both private and public institutions [25,81].

Structuring of scenarios can be accomplished by the use of a range of alternative methodologies. Selection of a specific methodology is guided by the particular context of the study. However, irrespectively of the methodological approach adopted, one should bear in mind that scenarios represent a portfolio of possible and plausible future states, which are capable of fulfilling goals and objectives of the planning issue at hand and the specific study region within different decision environments [82]. They complement and inform planning and policy making processes [83], while they can also contribute to risks' identification and provide a more robust way of testing strategies [80].

The Leros alternative future scenarios, structured in the following, attempt to provide sustainable and resilient ways for handling, in an integrated manner, natural and cultural, and tangible and intangible resources, resting in both the land and the maritime environment; and end up with well documented cultural tourism pathways, capable of mobilizing local development processes in this small island of the Aegean Sea. In structuring these scenarios, the "two uncertainty axes" methodology was applied. As key uncertainty axes were perceived the: (i) spatial pattern of the proposed cultural tourism development, where uncertainty relates to whether this will follow a concentrated or a de-concentrated pattern; and (ii) thematic approach of the proposed scenarios, being either a mono-thematic one, exclusively linking the island's cultural tourism narrative to WW II events and remains, i.e., building up a 'story' that presents a sort of specialization in WW II cultural tourism, or a multi-thematic one, integrating multiple cultural themes inherent in the study area, which represent the multifarious past of the island—various occupations through time—and reveal trails left in the built and social environment. Implementation of this scenario building approach leads to the creation of four distinct scenarios (Figure 6).

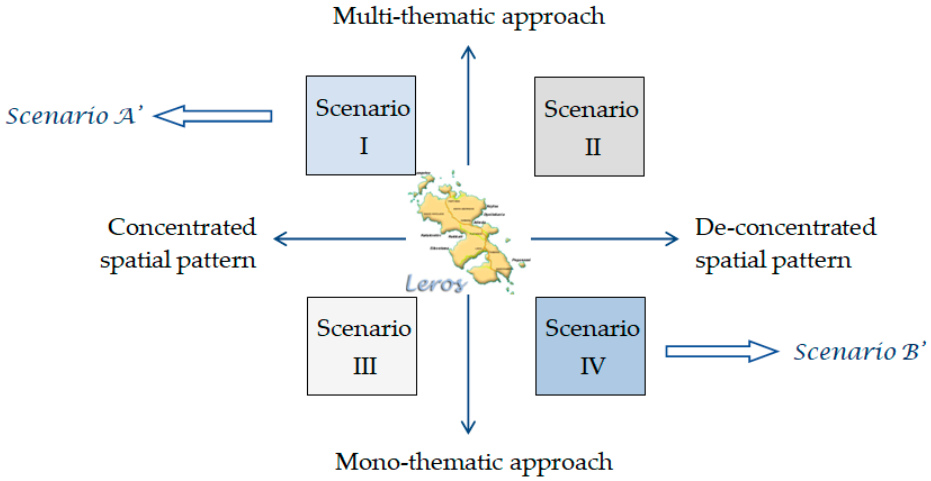


Figure 6. Scenarios emerging from the "two uncertainty axes" approach for Leros' cultural tourism development [71].

At this step, a rough pre-evaluation of the four distinct future images of Figure 6 was carried out, taking into consideration the following ascertainments:

- Leros is a small isolated island of Dodecanese, in the neighborhood of Greek islands that are global, mostly mass, well-established tourist destinations. In order to be able to compete, but also act in a complementary way to the rest of Dodecanese Island destinations, a diversified and challenging narrative should be in place. This should, furthermore, act in a beneficial way for the island as a whole, i.e., serve equity aspects too.
- Tangible and intangible land and maritime cultural resources of the island are strongly associated with the Italian possession and especially with the WW II events.
- Tangible cultural resources are rather evenly dispersed in the study region, both in the land and maritime part.
- In the global tourism market, there is a growing interest in experience-based cultural tourism products in general and UCH activities in particular (e.g., an exponential rise of certified diving community); and a large number of tourist destinations that are placing efforts in building up such products and marketing themselves as qualitative, culturally-driven, worth-visiting places.
- Competitiveness of tourist destinations is, among others, grounded on the variety but also quality and authenticity of cultural tourism products these offer.
- There is a need to further elaborate on a small number of challenging narratives (scenarios) and related policy directions to effectively communicate them to the local community and gather information on their preferences as to the most prevailing one. In this respect, two contrasting scenarios were perceived as a reasonable choice and easy to handle by Leros local community.

Based on the degree to which the four scenarios, presented in Figure 6, are complying with the above ascertainments, scenarios I and IV are selected as the most challenging options.

The spatial deployment and the narratives accompanying the two prevailing scenarios towards the sustainable cultural tourism development of Leros Island are shortly outlined below. For simplicity reasons, in the following text Scenario I is referred as Scenario A' and Scenario IV as Scenario B' (see Figure 6).

Scenario A'—"Leros: From a 'Soul-House' to a place of Multiple-Opportunities"

During the second half of the 20th century, but also in the dawn of the 21st century, Leros Island follows a downward trajectory that is largely marked by underdevelopment and abandonment. Such a trajectory is mostly defined by the island's role as a place of marginalization of socially vulnerable groups—mentally disturbed people since 1957, immigrants during the last few years of the large

migration wave noticed in the Mediterranean; or victims of the political instability of the Greek state during the dictatorship (1967–1973). As such, it can be characterized as a 'Soul House', a new political term, appearing during the last few years, to illustrate 'hot spot' areas, hosting refugees from the Middle East in the European, and especially the Greek, territory.

As stated in its title, this scenario aims at altering this image and shifting Leros from a 'Soul House' to a place of multiple opportunities. To this end, it attempts to build up a multi-thematic, spatially concentrated model of future cultural tourism development of the island, placing emphasis on balanced, heritage-led, local development concerns. Speaking of its spatial expression, this scenario predicts a polycentric spatial deployment through the establishment of four distinct nodes, evenly dispersed throughout Leros Island (Figure 7); and sending out positive development impulses in their areas of influence. The scenario follows a multi-thematic cultural tourism development perspective that aims at integrating, in a structured way, aspects of the strong WW II cultural heritage profile into other important natural and cultural attributes of the study area.

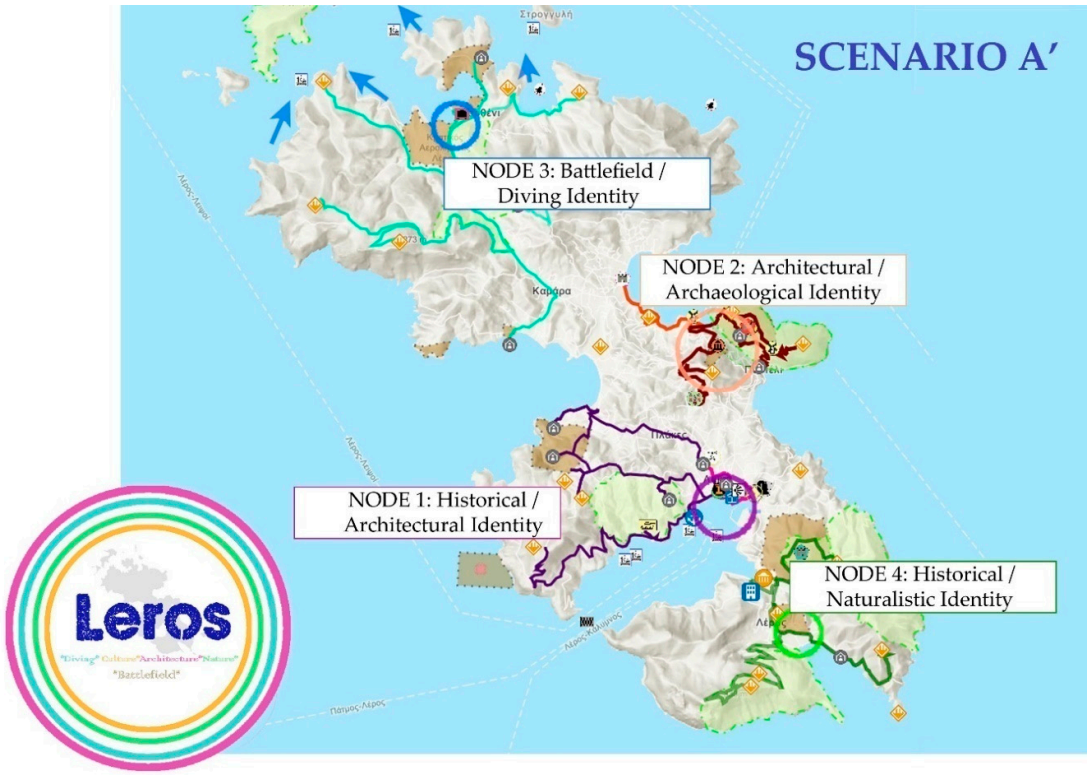


Figure 7. Spatial delineation of cultural tourism development of Leros Island, as predicted in Scenario A'. Four cultural tourism nodes and related routes surrounding each node [71].

Each of the four prevailing nodes, perceived as 'vehicles' for spreading cultural development in their surrounding spatial entities, is crosscut by respective cultural routes, each of which links and promotes tangible and intangible cultural heritage attributes of both land and underwater parts of the island. The aim of this scenario is to promote different alternative tourism forms, such as religious tourism, nature tourism, cultural tourism, diving tourism, etc., i.e., to open up a range of cultural tourism opportunities that contribute to the shift of the island's image. Wandering along these routes provides the chance to encounter a wide range of diversified cultural tourism experiences.

The four cultural tourism nodes are shortly outlined in the following, while cultural routes developed in each one of them are depicted in Figure 7 (cultural poles and respective colored routes, largely connected through the road network developed during the Italian occupation):

- *Node 1*: Located in the Lakki settlement, it holds a historical/architectural identity. This is largely conditioned by the Lakki settlement and the large number of buildings with an exceptional

architectural design, but also a number of fortification installations and churches, museums, etc., lying in the land part. In the maritime part, a number of globally well-known ship wrecks are also located, most of which were sunk on 26 September 1943, during the fierce bombing of the area from the Germans. UCH is complemented by a buoy and a defense net, both remains of WW II military activities.

- *Node 2*: It is deployed in Saint Marina settlement (current capital of the island) and its surroundings; and holds an architectural/archaeological identity. The whole area is characterized by landscape of outstanding beauty due to the combined archaeological, architectural, religious, naturalistic, and social interest it disposes. The traditional settlement of Platanos, the very important archaeological site 'Castle of Virgin' and a number of churches inherent in it, the Belenis Tower Museum, the War Museum 'Deposito Di Guerra', traditional windmills, WW II gun emplacement sites, and the Patella Telecommunication Center, feature the very specific identity of this node.
- *Node 3*: Expanding in the northern part of Leros Island, in the surrounding area of Partheni settlement, it holds a battlefield/diving identity. The area is closely related to the Italian occupation and WW II, constitutes an important scene of the Leros Battle, and is full of battery sites in the land as well as ship and plane wrecks in the marine part.
- *Node 4*: Located in the southern part of Leros Island, it expands in the neighborhood of Xirokampos settlement and holds an historical/naturalistic identity. The historical identity is associated with the location of a large number of batteries and the aeronautical base 'Gianni Rosseti', all playing an important role in WW II military operations. The naturalistic identity is due to the extraordinary landscape and two areas of outstanding beauty falling in the surroundings of this node.

Scenario B'—"Leros: An 'Open Museum' of European Cultural Heritage and Identity"

The backbone and the prevailing feature of this scenario (mono-thematic approach) is perceived to be the Italian occupation (1912–1943) and the WW II historical events. Such a consideration lies on the strong and decisive influence these have had on the socio-cultural, economic, but also spatial development of the island through time. Important remains of this period rest intact in both the land and marine environment, witnessing trails of the foreign occupation, important military actions of the European but also global history, and, ultimately, the confrontation of different political ideologies and civilizations on the land of Leros.

The scenario focuses on the sustainable and resilient exploitation of these tangible and intangible, land and maritime WW II cultural remains. It actually attempts to place Leros in the rapidly evolving geography of "Battlefield/Dark" tourism destinations, a remarkable node in the Aegean, but also in the Mediterranean Basin and Europe as well. The narrative of this scenario has, at its heart, the development of Leros as an 'Open Museum' of the European Cultural Heritage and Identity'. This 'Open Museum' tale is realized through the establishment of a "History and Culture Route", traversing the island as a whole, both in the land and maritime environment. This route incorporates particular locations and places, where historical facts took place; and represents, at the same time, a painful but also constructive trajectory for Leros Island per se, and a 'lessons learnt' footprint of the European and world's history.

Having mapped cultural land and maritime cultural remains (Figure 5a) and natural resources (Figure 5b), and analyzed the role of each particular area during the Italian occupation, Leros island was divided into four distinct zones, which comply with the narrative of the island's history. These are sketched in Figure 8 and are as follows:

- *Zone 1*: Operational and social center and main place of residence of Italian officers during the WW II. It incorporates the settlement of Lakki, a port town and a distinguishable architectural entity, and the wider area at the north-western part of Leros Island. The place was sealed by the Italian possession in the sense of buildings' architecture, spatial organization, etc. Many important remains, such as the Building of Italian Nautical Administration, constitute important landmarks

of contemporary times of the island. Moreover, the Military Museum of Merikias settlement falls into this zone, being the only restored tunnel from the very many that are tracked down in the island. In this museum, findings exhibited relate to the Battle of Leros, discovered either in land or marine parts of the island. Finally, in the Lakki bay 'rest in peace' in the bottom of the sea the "Queen Olga" and the British frigate "Intrepid HMS D10", opening up the land cultural tour of Zone 1 to the surrounding marine environment.

- *Zone 2*: This extends to the central-eastern part of Leros, where lies the capital and the main port of the island today, Saint Marina. A number of past fortification installations can be encountered in this area, coupled with troops' settlements and the exceptional Patella Telecommunication Center, serving communication needs of Italian troops. Additionally, two very important museums with private collections of findings from either land or the maritime area of Leros are located in this zone, namely the "Depisito Di Guerra" and the Belenis Tower.
- *Zone 3*: Constitutes the heart of the Leros Battle (26 September 26–16 November 1943) and the Leopard Operation, one of the most important WW II events in Eastern Mediterranean, ending up with the occupation of Leros Island by the Germans (1943–1948). Important remains of this dramatic instance of the European history are a number of battery installations in the land part as well as important remains (ship and plane wrecks) sunk in the surrounding marine area.
- *Zone 4*: Hosts the industrial zone of the occupying period, the catholic cemetery, the important aeronautical Italian base 'Gianni Rosseti' that has played an important role in WW II, as well as important battery installations of the Italian occupancy.

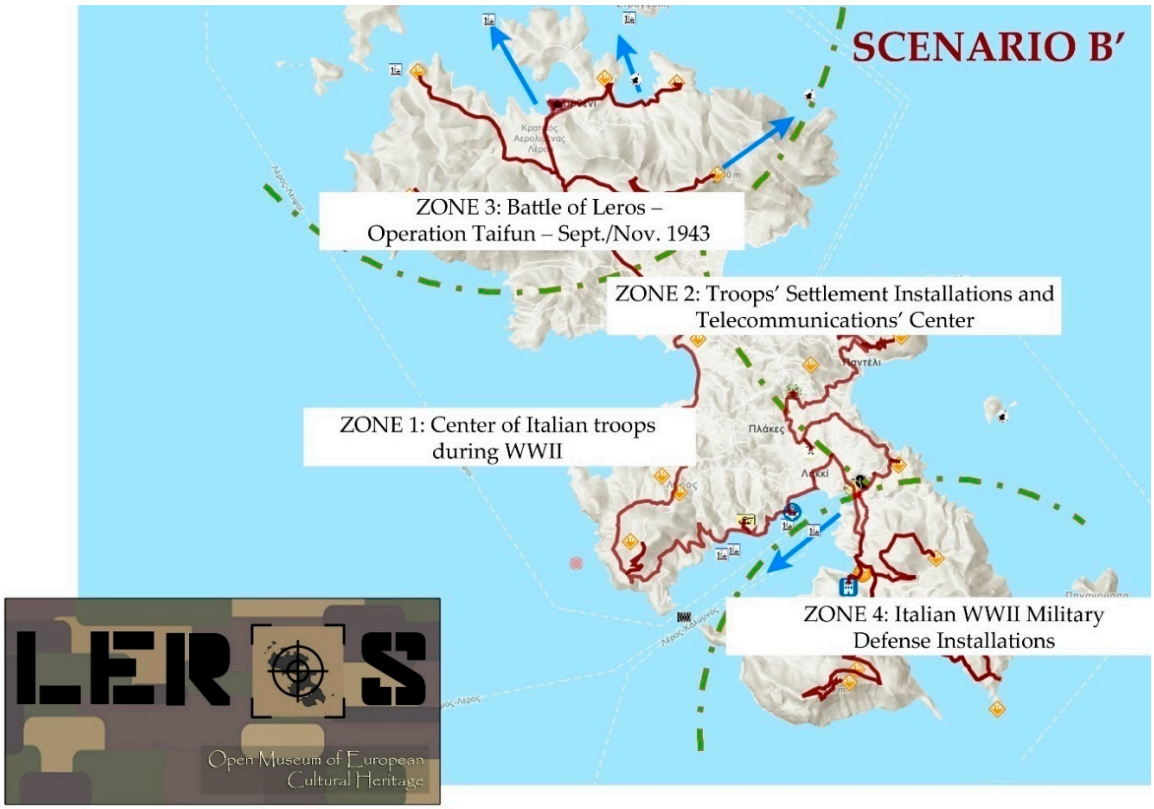


Figure 8. Spatial delineation of the future cultural tourism development of Leros Island, as predicted in Scenario B'. Zones (green lines) and the Unified Cultural Route (in dark red) crossing Leros as a whole [71].

5.3. Participatory Assessment of Alternative Scenarios—Digitally-Enabled Engagement of Leros Community

Remarkable changes and innovations are currently evolving in the political, economic, technological, cultural, and social sceneries that are, among others, due to the penetration of

technological advances and their applications into decision-making processes in various fields and at different decision-making spatial levels [69]. Within this digitally-enabled environment, decision makers and planners are confronted with new challenges, but also exciting opportunities with respect to their duties. These emerge from the [65,69]: (i) range of tools and technologies at their disposal for collecting, storing, managing, digitizing, and visualizing massive data sets that emerge from a multiplicity of sources and enhance the ground upon which more informed planning and policy decisions are made; and (ii) potential offered by the advent of Web 2.0, providing access to planning information and processes by a wide spectrum of actors through a variety of effective digital communication channels (e.g., mobile internet, smart phones) and visualization techniques. The latter contributes to information diffusion for awareness raising and maturing of local societies; while it has also broadened direct digital interaction potential between policy makers and planners on the one hand and local communities on the other, thus facilitating articulation of communities' aspirations and their integration into the spatial planning outcomes [65].

As a result, technological advances in general, and ICT and Web 2.0 developments in particular, have offered local communities the chance to become parts of more collaborative spatial planning approaches, thus strengthening their role and influence on problems' identification and prioritization as well as elaboration and implementation of planning outcomes, i.e., (spatial) policy decisions and strategies and related policy paths [69,84]. Particularly in CH planning, community engagement is of critical importance, since this is grasped as an overarching and underpinning element, having a catalytic role for durable socio-economic development and cohesion; and an element that carries intrinsic spiritual and unique values of societal knowledge and identity that need to be protected and handed over to future generations [65].

Community engagement, in the present work, was planned to take place at the stage of scenarios' assessment (Figure 1) in an effort to validate and eventually improve the proposed scenarios in order to better reflect laypeople values and future expectations. Engagement of local community groups, in this respect, was accomplished through digitally-enabled interaction between the research team and the local community. In support of this participatory assessment process, a Web-GIS[1] application was deployed (Figure 9) [71] by use of the ESRI "Story Maps". This aimed at fully delineating the scenarios' narratives, the natural and cultural resources addressed to each narrative (location, type, content, etc.,), and the way these resources were integrated into cultural tourism routes.

A network analysis was also carried out by use of the road network of the study region, resulting in the structuring of additional information to those interested in taking a certain tour, such as distance by car, traveling time, etc. Potential for map zoom in and out, use of GPS, and exploration of cultural heritage content was also provided. The scope of this Web-GIS application was to diffuse information on the narratives and spatial development of respective scenarios so that these could be better grasped by Leros community, and could guide judgment and prioritization of planning choices by local population, i.e., rating of scenarios and priority axes. The Leros Web-GIS application was also deployed in a mobile phone environment, used in this work in a supplementary way for increasing impact with regard to community engagement.

Potential participants of the Leros Web-GIS application, after taking a tour in the proposed scenarios and related cultural routes, were invited to interact with the research team and express their views and preferences though an online questionnaire (Google Docs' form). Through this questionnaire, they were asked, among other things, to: evaluate the current state of the island's cultural development; rate their preference with respect to proposed scenarios, i.e., select the most preferable one according to their view; and select three out of the eight priority axes which, according to their personal opinion, were the most relevant for implementing the proposed scenarios. Furthermore, respondents had the

[1] https://goo.gl/tM1Nny.

chance (open question) to make suggestions for improving the proposed scenarios and narratives attached to them.

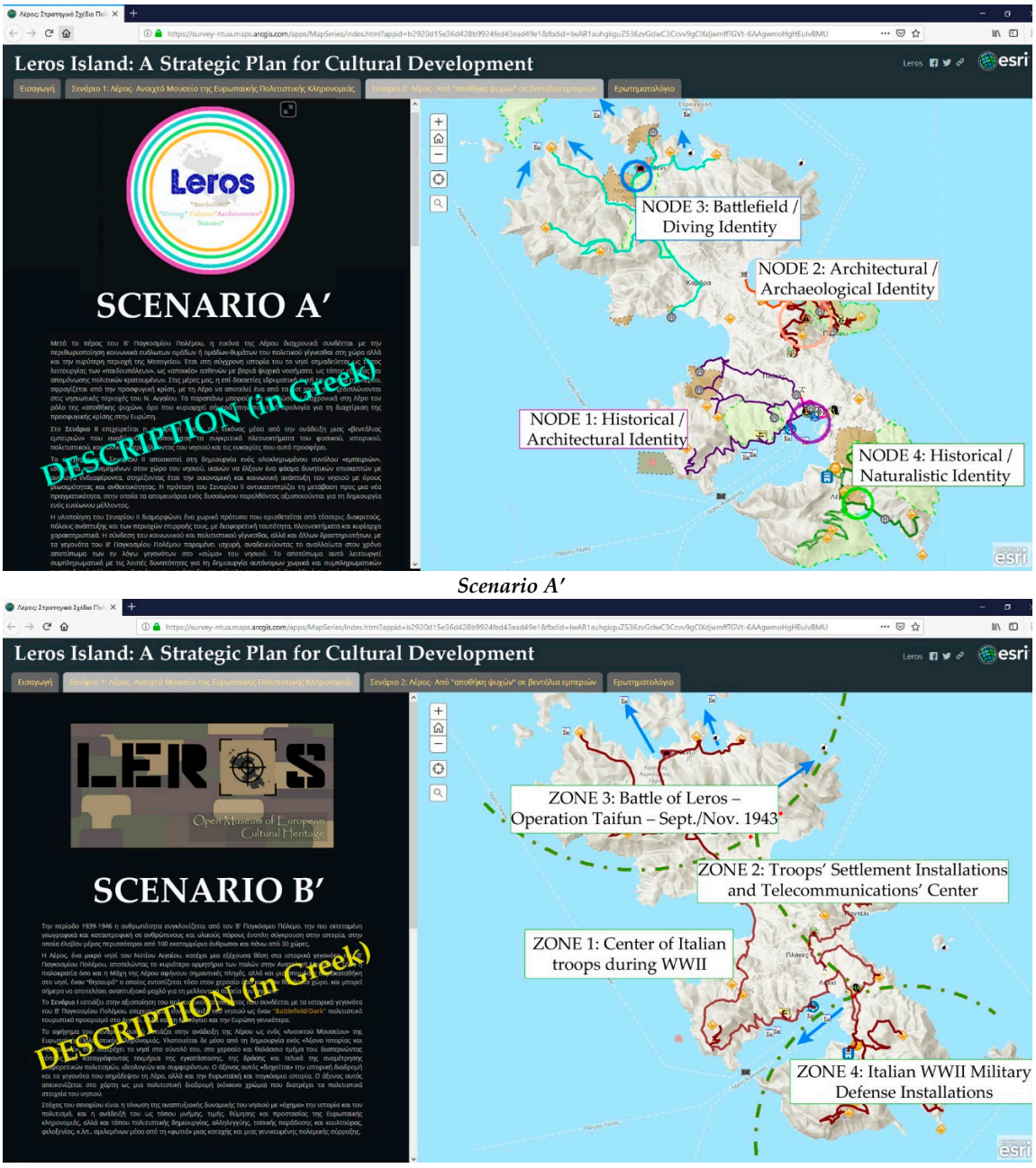


Figure 9. Web-GIS platform—Visualization of Leros cultural development Scenarios A' and B' and related content [71].

A range of promoting actions were undertaken, so as to notify Leros community of this research effort and attract local people to engage. These involved targeted communication of the Web-GIS application to cultural associations, local press (E-Leros and Leros news), diving schools, and travel agencies, to name a few. A targeted campaign was also carried out through Facebook and Instagram, addressing an audience that fulfilled the following prerequisites: residents of Leros Island or persons originated from there; fall into the 18-65+ age groups; and be interested in themes associated with WW II, diving, Leros island, cultural tourism, wrecks, tourism, Aegean Sea islands, and/or alternative tourism.

The online questionnaire was available on the Web for three months (June to August 2018); while the targeted campaign through Facebook and Instagram was carried out for the time span 17 June–17 August 2018 and attracted 799 interactions/likes and 8038 views. Out of this Web interaction, 204 questionnaires were reaped, a number that was perceived as satisfactory by the research team, taking into consideration the profile of population of the study region (educational and communication skills as well as experience in relevant e-participation endeavors).

Respondents' profile demonstrates the following attributes: it is balanced with respect to gender (both in total and within age groups considered), with a slight precedence of women (54%); the majority fall into the 18–35 (52%) and 36–50 (30%) age groups, i.e., groups that exhibit a greater familiarization and skills for handling internet applications and social media; people engaged had a high (57% possess PhD, MSc, or University Degree) or medium educational profile (42% are high or technical school graduates); while 11% of respondents were unemployed and 9.8% university students.

As far as the very essence of responses is concerned, this can be summarized as follows:

- In a scale ranging from 1 (completely unexploited) to 5 (fully exploited), 22%, 38%, and 32% of respondents' replies fall into rates 1, 2, and 3, respectively, i.e., a large share of respondents' views perceived (U)CH as largely underexploited.
- Respondents realize the uniqueness of Leros Island in terms of its WW II CH and especially UCH and the role these can play for serving sustainable development objectives of the area.
- The majority of them seem to converge on the necessity to adopt a more systematic and integrated cultural planning and (U)CH management approach for serving long-term prosperity of the area in a sustainable and resilient way.
- In planning a sustainable cultural tourism future development of Leros Island, highest priority was given to three priority axes, namely "designation of local cultural identity as a pillar for economic development and social cohesion", "development of alternative, experience-based, cultural tourism products", and "balanced cultural tourism development—removal of inequalities"(Table 1). This choice reflects the willingness of local community to keep a distance from current massive and commercialized pattern of cultural resources' exploitation, as a means for preserving (U)CH, respecting the island's carrying capacity, ensuring benefits for all, and following future development pathways that are keeping intact local identity, social values, and traditions of the study area.
- Towards such a development, respondents appraise the narrative presented by Scenario B'—a narrative of local but also European and global reach—as more relevant (Table 1), revealing the value attached by the local community to WW II events and their remnants, sealing the 'body' (land and maritime), the history, and the people of Leros in the past and present, and eventually in the future, in case this plan is successfully implemented. Scenario B', according to the local community's view, seems to be a more promising option towards a sustainable, resilient, spatially balanced, qualitative, and longer-term future. This, among other things, can sustain a unique identity and a competitive advantage of this small island in the Aegean Sea, in alignment with globally evolving cultural tourism trends and demands (dark/battlefield and/or diving tourism or cultural tourism in general).
- Finally, of great importance, although small in number (nine replies), are replies of people in the open question requesting suggestions about how to improve the designed narratives. All were very enthusiastic and reacted positively to this research, adding value by means of additional cultural content; provision of sources of historical information that highlight the significance of Leros events; articulation of remarks on the existence of a multitude of unexploited cultural elements, scattered around the island; narration of personal stories of respondents; provision of suggestions as to how to promote the island's cultural heritage; etc. Reactions in this part of the questionnaire reveal the passion of people for their history, identity, and values; and their concern for keeping them alive for the future generations.

Taking advantage of the results of the participatory process, a Heritage-Led Local Development Plan is developed, accompanied with a policy path, i.e., a set of policy directions, measures, and targeted policy actions for implementing on this plan. This policy path aims to achieve a sustainable, integrated, durable, and innovative exploitation of available natural and cultural resources, coping with obstacles imposed by the geographical and social isolation of Leros Island.

Table 1. Rating of scenarios and priority axes by Leros community [71].

Rating of Scenarios	%	Rating of Priority Axes	%
	36	*Designation of local cultural identity as a pillar for economic development and social cohesion*	*45*
		Treatment of land and underwater cultural heritage in an integrated way	27
		Integrated approach of natural and cultural resources	21
Leros Island in Scenario A' "From a 'Soul -House' to a place of Multiple Opportunities"		*Development of alternative, experience-based, cultural tourism products*	*35*
		ICT-enabled promotion of land and underwater cultural heritage	16
	64	Enhancement of local entrepreneurship and creation of value chains	19
		Raising awareness of local community on the value of natural and cultural resources	28
Leros Island in Scenario B' "An 'Open Museum' of European Cultural Heritage and Identity"		*Balanced cultural tourism development—removal of inequalities*	*30*

6. Discussion and Conclusions

While the sustainable exploitation of land-based CH is a widely researched topic with a huge number of empirical studies around the globe, the same does not hold when one comes to UCH. Moreover, there is a definite gap with regards to planning approaches that perceive, in an integrated way, land and underwater cultural heritage—*(U)CH*—in order for coherent and challenging narratives, paving heritage-led development trails, to emerge.

Having this in mind, research conducted on the topic of this article and experience gained from Leros case study, mainly addressing a strategic spatial planning exercise that pursues regional development objectives, have brought to the forefront a number of gaps, challenges, and inefficiencies. These need to be dealt with for effectively protecting and managing land CH and particularly UCH; and using this as a 'vehicle' for heritage-led local development of Mediterranean insular communities. The most critical of them can be outlined as follows:

- Apart from the highly appreciated land CH in the Mediterranean region, there is a great interest in UCH research. This reflects the abundance of sunk remnants in this area (e.g., ancient cities and harbors, archaeological sites, ship or plane wrecks), which is due to its protagonist role through centuries as a crossroad of various civilizations and a main scene of commercial sea traffic and cultural exchange from ancient years, but also as a 'Mediterranean Theater' in WW I and II operations. It is worth noting in this respect that from the 62 state parties included in the UNESCO Convention on the protection of UCH, 13 of them lie on the border of the Mediterranean Sea [85], partly justifying the spatial focus of the present article on Leros Island.

- UCH per se attracts the interest of a variety of disciplines, being a highly interdisciplinary theme. However, research endeavors and empirical evidence on the topic do not, so far, reflect such interdisciplinary approaches, in order the various perceptions to be properly accommodated.
- UCH also attracts the interest of a range of sectoral stakeholders, activating in the coastal and marine space; and having a stake with regards to any decision as to the way this cultural heritage is handled. This raises the necessity for effectively engaging them in relevant decision-making processes.
- UCH protection and preservation is a highly complex planning issue, a "wicked problem" [86], in the sense that it needs to balance technical (e.g., archaeological and heritage management practices), environmental (UCH as sources of pollution or beneficial artificial reefs), social and ethical (human remains), technological (progress in technologies addressing UCH research), but also jurisdictional aspects (national and international laws and Conventions); and adjust actions undertaken to a continuously changing environment—the marine one—affected by global challenges, such as climate change.
- Community outreach and involvement are also issues of critical significance for UCH protection and preservation [87], taking into account that UCH builds in social, ethical, environmental, economical, and historical etc., values of local communities. Any planning endeavor of CH in general and UCH in particular has to respect the self-evident right of local societies concerned to become parts of relevant decision-making processes and respective policy choices. Such a community engagement approach can also act as a learning platform for increasing awareness and cultivating responsibility of all those concerned, by engaging them in the process of co-defining the way this UCH will be managed for paving future sustainable, culturally-driven, and inspiring development trails that embed expectations, indigenous knowledge, and visions [88]. Furthermore, for an effective preservation and protection to be achieved, the role of community volunteerism is essential as a means for spreading interest in UCH and inspiring a sense of ownership, but also contributing to active engagement in research on the topic as well as identification, monitoring, and promoting of UCH sites.

The last point of the above list, being highly appreciated in the Noto's[2] workshop (2013) as an area of concern that has not gained much attention so far, represents partly the glance of the Leros planning exercise, in seeking to adopt an integrated view in managing (U)CH for heritage-led development purposes. In this exercise, it is taken for granted that CH in general and UCH in particular constitute value for local development, but also vulnerable and non-renewable resources. They embrace memories that need to be respected and preserved; they build up identity and sense of belonging; and they keep track of the pace of the specific society through time and space that needs to be delivered intact to future generations.

The spatial context of concern for this article is small Islands of the Mediterranean. As commonly admitted, such areas are less privileged, constituting spatial parcels disposing certain geographical handicaps that are mainly due to insularity, while being endowed with extraordinary natural as well as land and, in many cases, underwater CH. Such an example is the case study region of Leros Island being, among others, a distinguishable WW II scenery, a fact evidenced by the abundance and yet untapped remnants in both the land and maritime part of the island.

In setting up heritage-led development pathways for Leros Island, the present article proposes a digitally-enabled participatory planning framework that builds upon contemporary spatial planning developments (e.g., scenario planning, spatial management tools for UCH mapping, public participation) for sketching cultural planning future options; and interactive Web-GIS 'environments' for empowering local community and fostering digitally-enabled participation in an effective way.

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[2] Noto's workshop: held in Sicily/Italy, 17–19October 2013 and titled 'EUPLOIA: Implementing Underwater Cultural Heritage 'Best Practices' in a Mediterranean Context'.

Implementation of this framework results in the structuring of a strategic cultural plan that attempts to render Leros an "An Open Museum of European Cultural Heritage and Identity" and place it in the geography of cultural tourism and diving as well as WW II 'dark or battlefield' destinations.

In carrying out this work on the Leros study, a number of challenges or gaps emerged that enriches or further stresses the importance of elements encountered in the previously presented list by aspects emanating from empirical evidence, as these are perceived from a planner's view. These are summarized as follows:

- A first challenge or gap that needs to be properly addressed is the adoption of an integrated planning approach, setting up a shared view of land and marine parts of a region in general and (U)CH in particular. It has to be understood that both constitute parts of one system and one legacy, with (U)CH and other resources having a complementary role in building up a diversified local development perspective. This is crucial for harmonizing relevant (spatial) policies, and broadening their impact to the benefit of both the maritime and the land part and related stakeholders' groups. Various structured planning approaches and tools can be adopted in this respect (see reference [44]).
- A major challenge in the sustainable management of (U)CH relies on the establishment of substantial communication and interaction among the multidisciplinary and interdisciplinary qualities and expertise required for accomplishing such a task. Indeed, a variety of different perspectives and relative scientific backgrounds need to be incorporated in such an effort (legal, cultural, environmental, social / ethical, economic, spatial, technological), rendering this a cooperative endeavor. As this is not usually the case in practice, it constitutes a considerable barrier in order for the different perspectives and respective technical knowledge to be fully integrated in each specific case study context. This is further hampered by the reluctance of specific research groups (e.g., marine archaeologists or biologists) to open up (U)CH aspects to the research and stakeholders' communities, leading to a knowledge gap with respect to (U)CH information (location, attributes/documentation, constraints, etc.,) that affects options available and quality of planning outcomes.
- The prevailing, so far, model of hiding (U)CH from public view, although properly justified by relevant researchers, has deprived the diffusion of information to local communities on the value of this heritage, its role for serving local development objectives, and the need to handle it in a responsible, sustainable, and resilient way that safeguards historical memory and evidence and ensures its transmission to future generations. That given, it also impedes motivation for the collection of important evidence, stories, and personal experiences with respect to this heritage (e.g., eye-witnessed WW II incidents in the island of Leros). This fact, apart from depriving the whole planning exercise and narrative emerging out of it, it also threatens to loss this evidence, since people owning this information are quite old. It is, thus, of crucial importance the cultivation of an open and fertile ground for creating win–win end states for both the research and the local community. The Leros exercise has revealed the eagerness of people to engage, share information, and become part of this systematic and integrated planning effort for bettering future perspectives of their land.
- Managing (U)CH in an integrated way implies the need to accommodate the diversified stakes of local community. Indeed, coastal/maritime stakeholders and community actors do not share the same values and do not dispose similar perceptions with regard to local (U)CH and their exploitation. Actually, in certain cases, the two groups can represent rather conflicting stakes. Bridging these differences and establishing a fruitful and creative dialogue among completely different groups (in terms of knowledge and objectives but also power to influence policy decisions), seems to be a real planning challenge and a considerable barrier to overcome. Wisely structuring the participatory planning process and selecting the most appropriate participation tools can provide ways out of these difficulties. Both of these require knowledge that should not be taken for granted in the planning community, while they are essential for collaboratively

accomplishing a (U)CH planning exercise. Of importance in this respect is MSP as a means for compromising conflicting to UCH maritime uses, crucial for its protection and preservation. This, as a rather recently policy direction, has not, so far, progressed with a decisive pace, at least as far as arrangements of maritime uses at the local level, like Leros Island, are concerned.

- The use of the Leros Web-GIS application, perceived as a suitable environment for establishing digitally-enabled interaction of local community with the research team of this work, seems, in hindsight, not to be the wisest choice in the specific case study context. This is mostly justified by the skill profile of the local population and the lack of previous engagement experiences. Face-to-face participation tools or a combination of both ICT- and non ICT-enabled (face-to-face) tools would be a more relevant tools' mix for community engagement, a fact that is also justified by other empirical results in similar types of regions [89]. However, this application is positively evaluated in terms of its communicative power and potential to present the proposed planning choices in a map form, which is more graspable and clearer to those navigating in this environment. Additionally, it incorporates low-cost and mature technologies, meaning that it can be easily replicable to other examples.
- Finally, one crucial issue for effectively implementing planning exercises like the one of Leros is availability of reliable spatial data of mainly maritime origin. Indeed, while gathering of terrestrial data is a rather trivial task, since, traditionally, a variety of data sets are collected from various organizations, the situation is quite different in the case of maritime data. These appear to be scarcer, scattered to various institutions and researchers, and are not always freely accessible or relevant to the study purpose. Both aspects, i.e., availability and quality of data, but also their accessibility, can largely affect the smooth handling of the planning process and the validity of the results obtained; while can also deprive planners from grasping the very details of the marine environment and define, in a transparent way, uses in it that are in favor of UCH protection.

Sustainable and resilient exploitation of (U)CH in geographically handicapped communities, such as Mediterranean islands in general and Leros Island in particular, is, all-in-all, framed by a number of issues that address the: support of local economies and creation of added value for ensuring long-term social and economic cohesion, while preserving quality, diversity, and resilience of (U)CH; capacity building of local population and promotion of responsible behavioral patterns through the deployment of culturally-inspired development trails and narratives; and contribution to the upgrading of regions' competencies though attaching high priority to aspects such as identity and quality of life of local population. The Leros case study is, in alignment with the local wishes, planned to deal with these issues and render Leros "An Open Museum of European Cultural Heritage and Identity", a lighthouse in the Mediterranean, and a challenging place for all willing to commemorate those who strived in the WW II fatal events for freedom and solidarity of the European people.

Supplementary Materials: The Web-GIS application developed in the Leros case study for participatory assessment of planning choices is available at https://goo.gl/tM1Nny (in Greek).

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