

CO-EVOLVE

Promoting the co-evolution of human activities
and natural systems for the development of
sustainable coastal and maritime tourism

Deliverable 3.16.1

Building a common approach in tourism sustainability evaluation

Activity 3.16

Tourism Sustainability at local scale through
Sustainability Index - System implementation

WP3

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1. *Introduction*

This activity of WP3 focuses on establishing a common method of defining and evaluating tourism sustainability. The activity will build on previous efforts in order to create a conceptual model for assessing the level of sustainable development of tourism in the Mediterranean. The model will then be composed by an indicators' system which will assess sustainability in terms of criteria corresponding to the four dimensions of sustainability: environment, society, economy and governance.

The traditional type of mass tourism in the Mediterranean region which is mostly related to the 'sun and beach' model has been creating increasing pressures on the coastal and maritime environment and, therefore, it is considered as a less sustainable option for tourism development. The need for redefining the types of tourism development (e.g. high profile, niche tourism) is essential in order to better address the socio-economic and environmental pressures and added value generated by tourism activities. The aim is to generate higher social and economic prosperity while ensuring better sustainability of the sector.

The objective of this chapter is to create a solid typology based on the dynamics of the tourism sector, the approach of the project and the distinctive characteristics of the pilot areas, as representative case studies of tourism development in the Mediterranean. The use of a common typology for the analysis of the Mediterranean region (WP3 tasks) can contribute to:

- the identification of the basic issues of planning
- the identification of goals and objectives
- the highlighting of trends, problems, conflicts and opportunities of development
- the improvement of the decision making process
- the implementation of alternative scenarios for each type of tourist area.

2. Building a common typology of tourist coastal areas in the Mediterranean

2.1. Review of existing typologies of tourism development

According to Coccossis and Constantoglou (2006), there are two basic typologies for tourism: the first based on the characteristics of tourist demand and the second on the destination's characteristics. In the second typology (supply typology), destination areas are categorized according to geographic, economic, demographic etc criteria in order to better understand their structure and dynamic in terms of development and to identify their spatial and developmental particularities. The table below includes a general model and some examples of supply typology criteria for coastal regions.

Table 1: General model of supply typologies

Destination	Criteria	Types	Life cycle stage	Impacts intention	Participation of the local community in tourism growth
Coastal areas	the power of the local society the rate of development	extensive development	Stagnation	High	Low
		local development with extensive trends	Development	Medium	Medium
		slow localized development	Exploration	Low	High

Source: H. Coccossis and M.E. Constantoglou (2006)

In the context of 20 small Caribbean islands and yields, a composite indicator called Tourism Penetration Index (TPI) was developed which could be calculated using an unweighted average of three dimensions based on data for tourist expenditure per capita (an economic measure), density of tourists per 1000 population (a social measure) and the number of bed spaces or rooms per square kilometre (an environmental measure) (McElroy and de Albuquerque, 1998) and later for 36 islands in the Pacific and Indian Oceans (McElroy, 2006). The same index was calculated for the ESPON 2006 project 1.4.5 on Spatially Relevant Aspects of Tourism only at the national level (due to the lack of available data).

According to the produced map, the smallest countries seem to have the highest TPI (Cyprus and Malta in the case of the Mediterranean) while Greece, Spain and France are considered mature destinations.

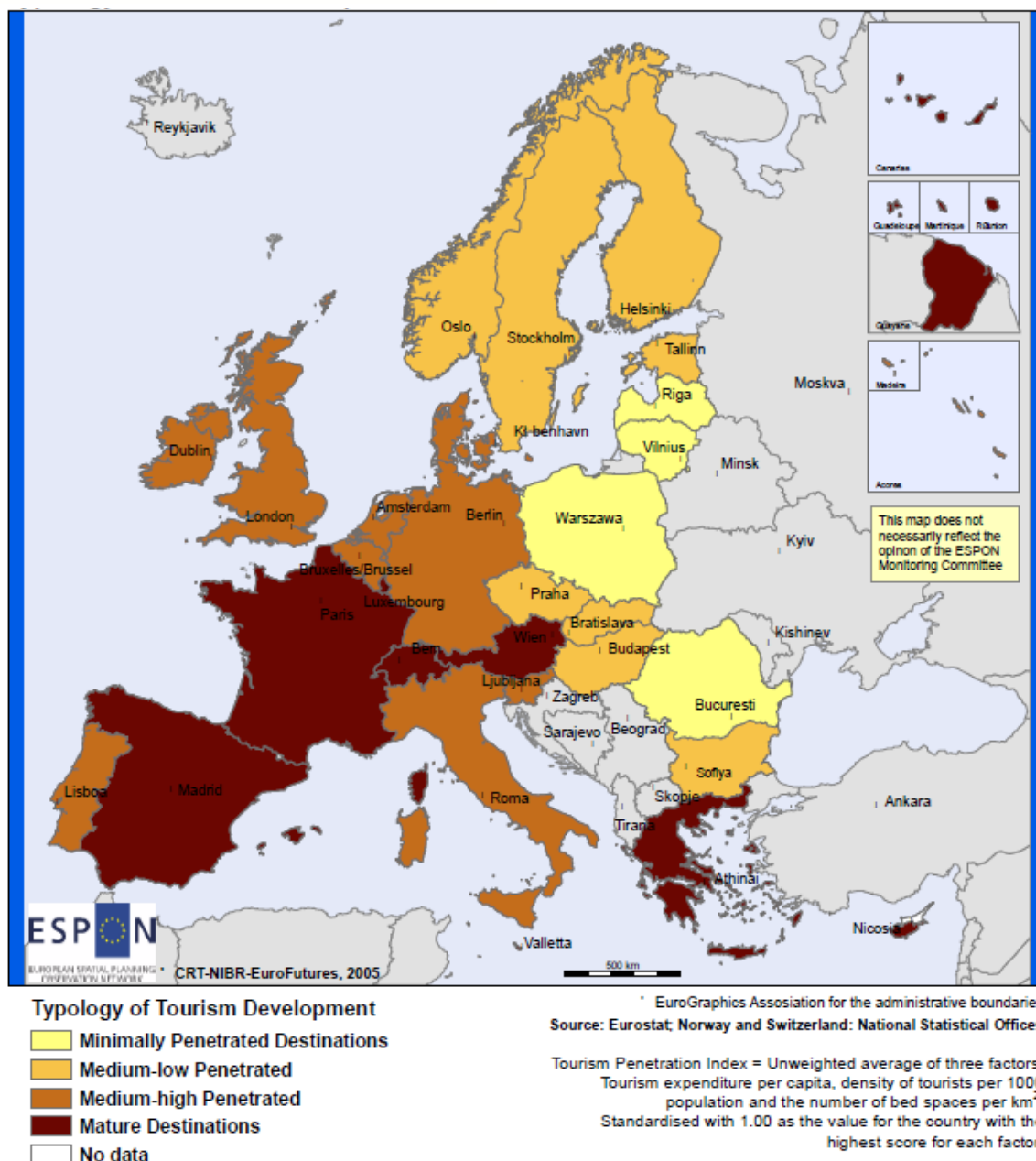


Figure 1: Typology of tourism development based on classes of the Tourism Penetration Index

Source: ESPON (2006)

As an additional index focusing more on regional results, the project has developed the Tourism Function Index, using Eurostat's sub-national data for accommodation (bed spaces). The Tourism Function (TFI) Index is calculated as follows:

$$TFI = (N \times 100) / P \text{ where}$$

N = number of bed spaces and

P is the population or area in km²

The range of the TFI extends from 0 to infinity.

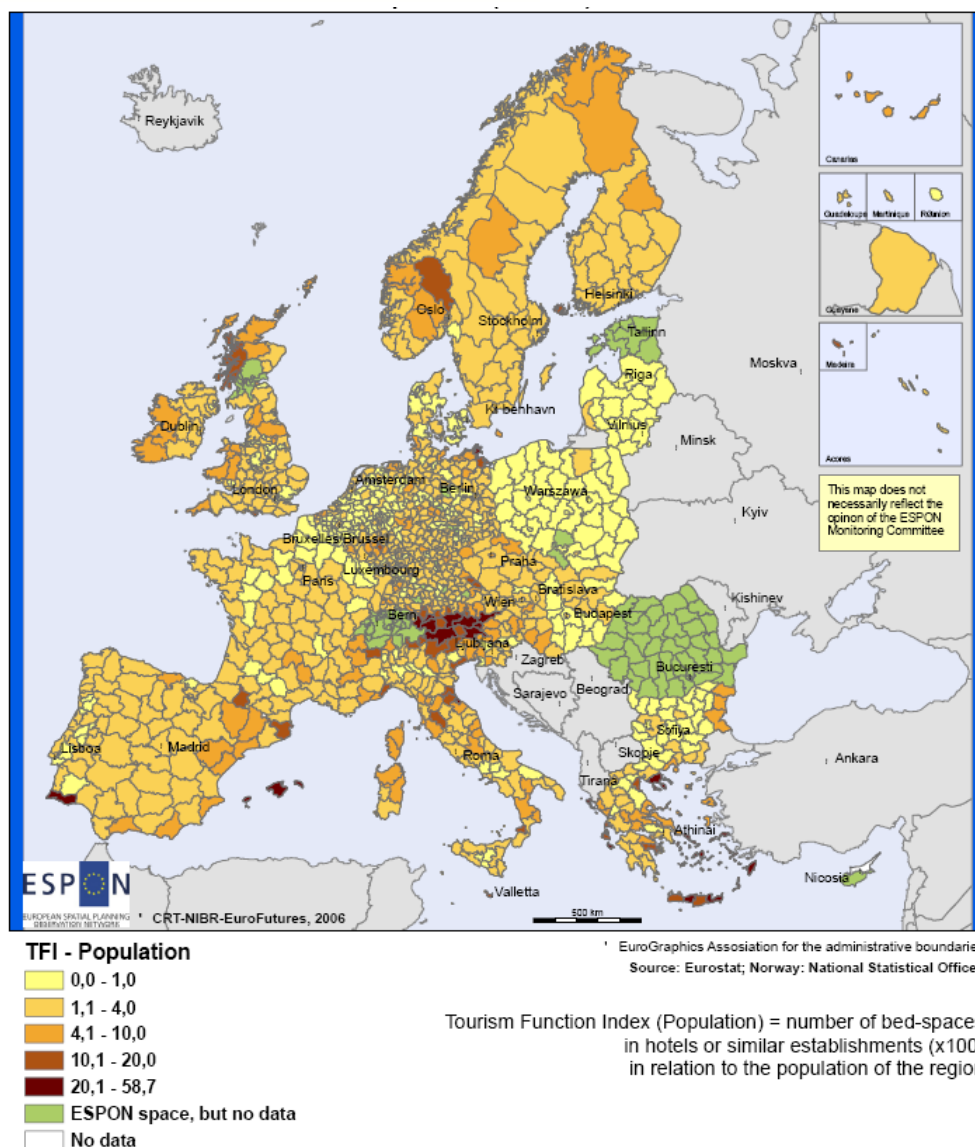


Figure 2: Tourism Function Index 2003 – Population (NUTS III)

Source: ESPON (2006)

According to the map, at NUTS II level in the Mediterranean coast, the highest rates of TFI based on the population can be found in the case of the Greek islands and the Balearic Islands. However, when examining TFI based on the area, a higher degree of regional variation can be found.

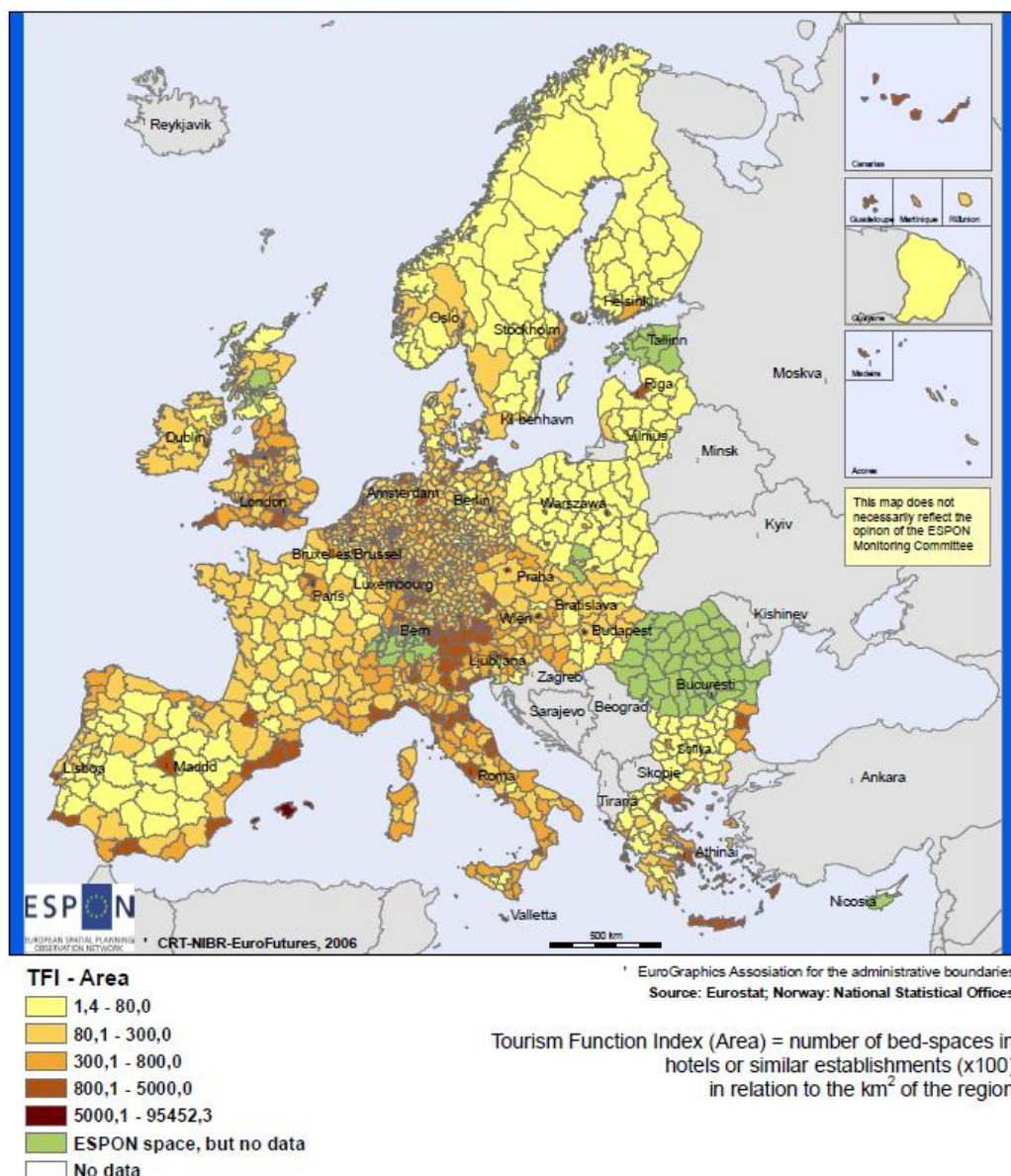


Figure 3: Tourism Function Index 2003 – Area (NUTS III)

Source: ESPON (2006)

More specifically, in the case of measurement based on the area, the tourism intensive regions extend to include large parts of Italy, southern France and eastern Spain proving that these areas, although small geographically, are very tourism intensive in terms of bed-spaces in hotels.

More recently, another method, based on Butler's (1980) Tourism Area Life Cycle (TALC) model, was developed in order to identify different stages of tourism evolution for 67 regions (NUTS 2) from Portugal, Spain, France and Italy, over 6 years (2003–2008) (Romao et al, 2013). The TALC model defines five stages for the evolution of tourism destinations: involvement, exploration, development, consolidation and stagnation. According to the first stages of development of a tourism area (involvement and exploration) there is a slow

growth rate of tourism activities with no particular impacts on local daily life. Here tourists can be characterized as allocentric, adventurers, explorers, non-institutionalised. During the third stage (development) there is a growing number of visitors that reached a destination in the previous stages. The increase in tourism services' growth rate and activities, is followed by the provision of new services are provided with some notable impacts on daily life. Here tourists are regarded as psychocentric, more institutionalized, drifters. After the stage of development, there is the period of consolidation and stagnation characterized by lower growth rates of tourism activities, larger efforts for tourism products and services, presence of more tourists than local people in the destinations.

Romao et al (2013) have used a simplified version of the TALC model taking into consideration only three stages (out of the five) of evolution (exploration, development and stagnation) due to the limited period under analysis (6 years).

The synthesis of their results has produced the following map showing the regional position according to the TALC model.

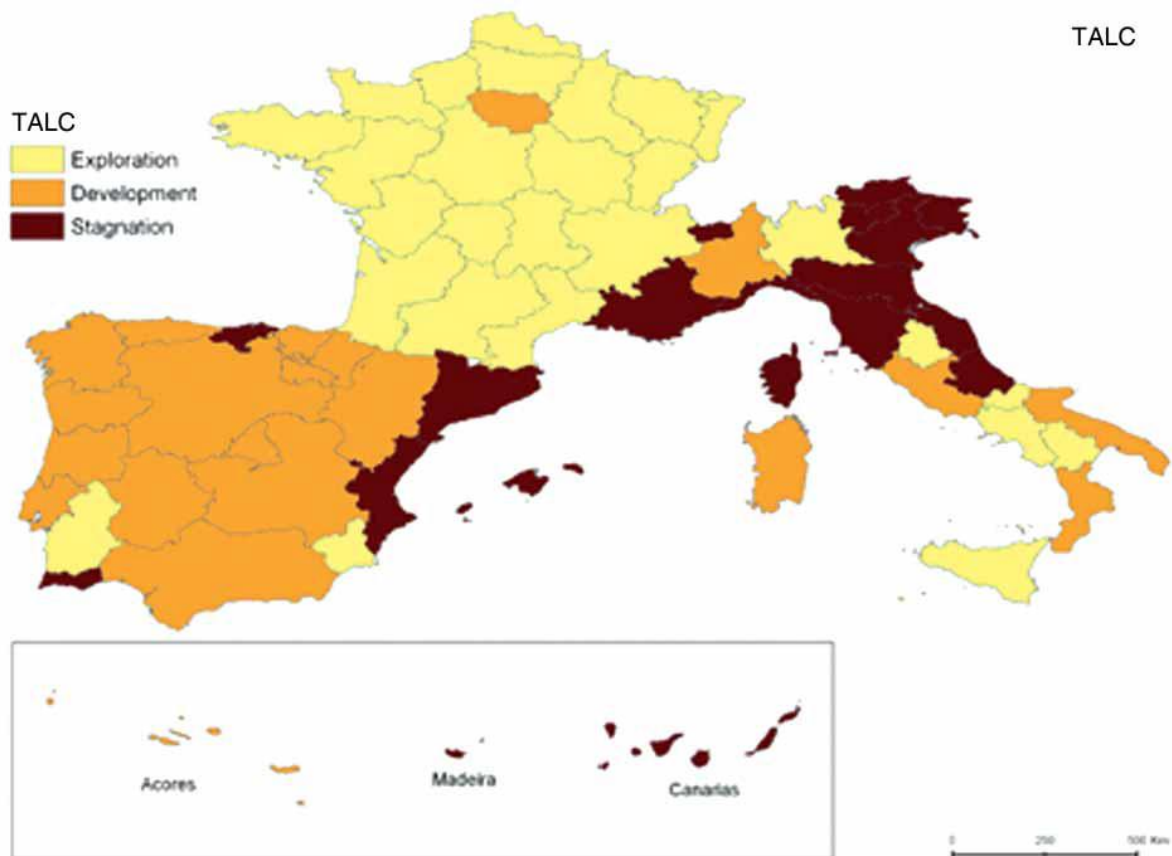


Figure 4: Mapping the regional position according to the TALC model

Source: Romao et al (2013)

Also in NUTS II level, four types of coastal and maritime tourism have been developed (Ecorys, 2013) based on two dimensions:

- Volume of tourists: the total number of tourists per year.
- Amount of value: referring to the economic value or the total spending per year by those tourists. However, it also refers to the social and environmental values at stake.

Based on these two dimensions, four types can be identified as illustrated in the figure below.

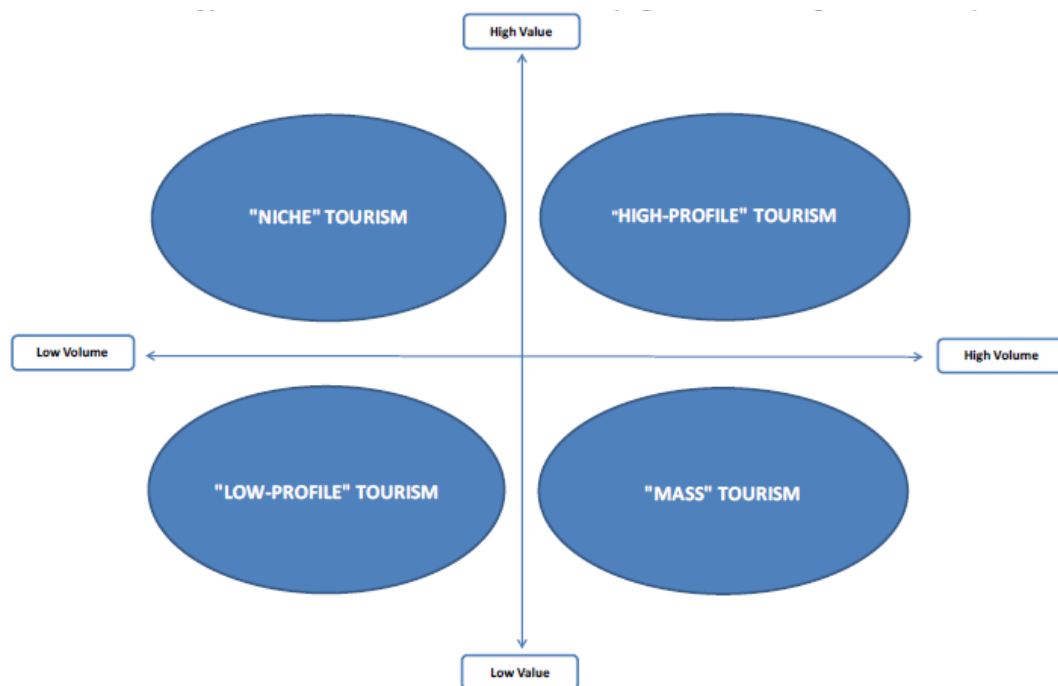


Figure 5: Four types of maritime and coastal tourism

Source: Ecorys, 2013

'Mass tourism' type refers to the locations or the services offered which tend to target or attract high volumes of visitors with a relative low average spending potential while 'high-profile tourism' type is linked to offering a high level of quality and relatively unique value. Examples of 'mass-tourism' locations/services could be mostly found at the Spanish coast (e.g. Costa Brava), the Italian "Riviera" (e.g. Romagna, Toscana) and some Greek islands (e.g. Ios) while examples of 'high-profile tourism' include the French coasts, some Italian coastal regions or islands and some regions in Croatia. 'Niche tourism' type is related to location and provided services which bring an added value through a better quality of services attracting a potential lower volume of visitors. This type is not only based solely on economies of scale but also on the exploitation of alternative markets (e.g. adventure tourism, ecotourism, gastronomy tourism etc.). 'Low-profile tourism' type is linked to low

density and a low average impact on the environment and an interest in natural areas as destinations (e.g. nature camping, scouting and youth camps, small-scale boating and recreational fishing). This type is characterized by low volume of visits and a relatively low amount of average spending per visitor, and is mostly distributed across the Mediterranean (e.g. some Greek islands) and at large rivers' deltas.

2.2. Proposed definition of tourism destination typology

Although the target of the aforementioned approaches could be considered as common in the sense of developing a typology for tourism destinations, nevertheless each approach employs different criteria in order to classify the destinations into different types. Bearing this in mind, it is evident that the methods incorporating the TFI and TPI indices (McElroy and de Albuquerque, 1998; McElroy, 2006; ESPON, 2006) could be considered as resulting into different types of tourism destinations according to tourism pressures. The rationale of Romao et al (2013) who employed the TALC theory leads to a classification of destinations according to their tourism activities' maturity level, whereas the classification of Ecorys (2013) defines four types of destinations according to their market segment orientation.

Despite the usefulness of these approaches their direct incorporation within the analysis of the CO-EVOLVE project could prove to be inefficient in providing to a typology which would facilitate the targets of the project which call for a comprehensive analysis of tourism destinations' challenges and potential at the lowest possible spatial scale taking into account all the dimensions of sustainability, namely economic, social, environmental and governance. More precisely, the TFI approach could be effective in providing a measurement of tourism pressures, however, the volume of tourists is not incorporated into the estimations and it does not provide information about the scale of tourism activities at each region. This means that a region of 10.000 inhabitants and 100.000 overnight stays and a region of 1.000.000 residents and 10.000.000 overnight stays are included in the same type of destinations. Moreover, both the approaches of the TALC theory and the TPI are heavily dependent on data availability, which renders their application on small spatial scale, such this of destination level, rather impossible. This is testified by the fact that the study of Romao et al (2013) focused on NUTS II level whereas the application of the TPI by the ESPON study (2006) targeted on the national level. Finally, the approach of Ecorys (2013) is also characterised by high data sensitivity and lack of applicability and relevance to lower spatial scales, considering the large number of assumptions made by authors in order to transform national data sets into the regional and sub-regional level.

Building further on the previous efforts, and having in mind the data availability restrictions and the overall scientific context of CO-EVOLVE project, a typology is developed based on

two indicators as the basis for the classification. The first indicator refers to the average share of overnight stays at each destination against the total overnight stays in the Mediterranean destinations' sample. The second indicator refers to the average annual growth of overnight stays at each destination. Under the scope of the present analysis, the destination level corresponds to the lowest spatial scale for which data for the two indicators is available, namely the NUTS III level for the period 2010-2015 (average). The total NUTS III regions included in the sample are 149. The integration of the two indicators has led to the creation of a Growth-Share Matrix (GSM) on which the estimations for all the NUTS III regions of the sample are depicted. The classification of the regions into the different types is conducted by setting thresholds emanating from the sample's data.

More precisely, the regions are classified into two different types of overnights' share according to the average overnight share of the sample (0.68%). Additionally, regions are classified into three different types according to their annual growth rates. The first type is composed by the regions that present negative growth trends during the period 2010-2015. Then, the regions with positive average annual growth trends are classified into two types taking as the threshold the average annual growth rate (3%). The abovementioned thresholds return 6 main destination types which are depicted on the GSM of Figure 6.



Figure 6: Types of destination using average tourism market share and annual growth

In the matrix below the Tourism Share-Growth Matrix of the Mediterranean NUTS III Regions for the period 2010-2015 is presented.

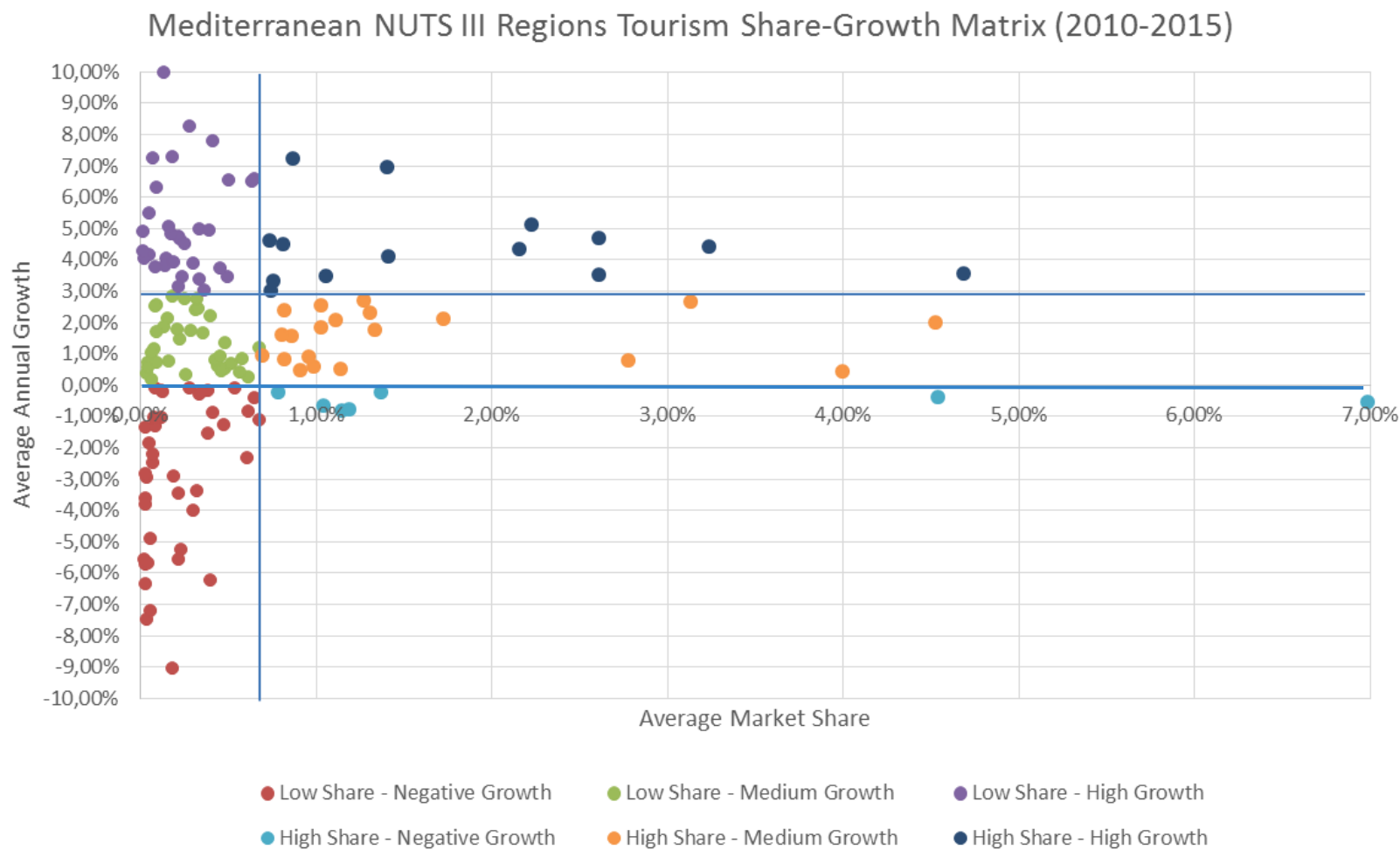


Figure 7: Tourism Share-Growth Matrix for Mediterranean NUTS III regions (2010-2015)

In the table below the detailed classification of the regions at the six levels of tourism development types is presented.

Table 3: Classification of tourism destinations

Low Negative Trends	Share - Low Medium Trends	Share - Positive Trends	Low High Positive Trends	Share - High Negative Trends	High Medium Trends	Share - Positive Trends	High High Positive Trends
Evros	Xanthi	Rodopi	Savona	Cyprus	Zakynthos		
Drama	Imathia	Kavala	Salerno	Chalkidiki	Attiki		
Pella	Pieria	Thessaloniki	Ravenna	Kerkyra	Dodekanisos		
Serres	Thesprotia	Kilkis	Forli-Cesena	Barcelona	Irakleio		
Larisa	Lefkada	Kefallinia	Rimini	Girona	Lasithi		
Magnisia	Aitolokarnania	Ileia	Lucca	Alicante/Alacant	Rethymni		
Arta	Lakonia	Fokida	Roma	Valencia/València	Chania		
Preveza	Samos	Argolida		Hérault	Tarragona		
Achaia	Chios	Messinia		Alpes-Maritimes	Balears, Illes		
Voiotia	Castellón	Lesvos		Bouches-du-Rhône	Granada		
Evvoia	Almería	Kyklades		Var	Málaga		
Evrytania	Cádiz	Melilla		Genova	Istria		
Fthiotida	Murcia	Primorje		Lecce	Napoli		
Arkadia	Gard	Lika		Palermo	Malta		
Korinthia	Šibenik	Zadar		Messina			
Ceuta	La Spezia	Split		Olbia-Tempio			
Aude	Caserta	Dubrovnik		Venezia			
Pyrénées-Orientales	Foggia	Brindisi		Padova			
Corse-du-Sud	Bari	Potenza		Udine			
Haute-Corse	Crotone	Matera		Livorno			
Imperia	Vibo Valentia	Reggio di Calabria					
Teramo	Trapani	Catania					
Pescara	Caltanissetta	Ragusa					
Chieti	Rovigo	Siracusa					
Campobasso	Gorizia	Sassari					
Benevento	Ferrara	Nuoro					
Avellino	Massa-Carrara	Oristano					
Taranto	Pisa	Ogliastra					
Barletta-Andria-Trani	Grosseto	Treviso					
Cosenza	Pesaro e Urbino	Trieste					
Catanzaro	Ancona	Gozo and Comino					

Agrigento	Macerata	Primorsko-notranjska
Enna	Ascoli Piceno	
Cagliari	Goriška	
Medio Campidano	Obalno-kraška	
Carbonia-Iglesias		
Pordenone		
Fermo		
Viterbo		
Latina		
Frosinone		

Finally, the distribution of the six types of destinations can be depicted in the figure below (Figure 8).

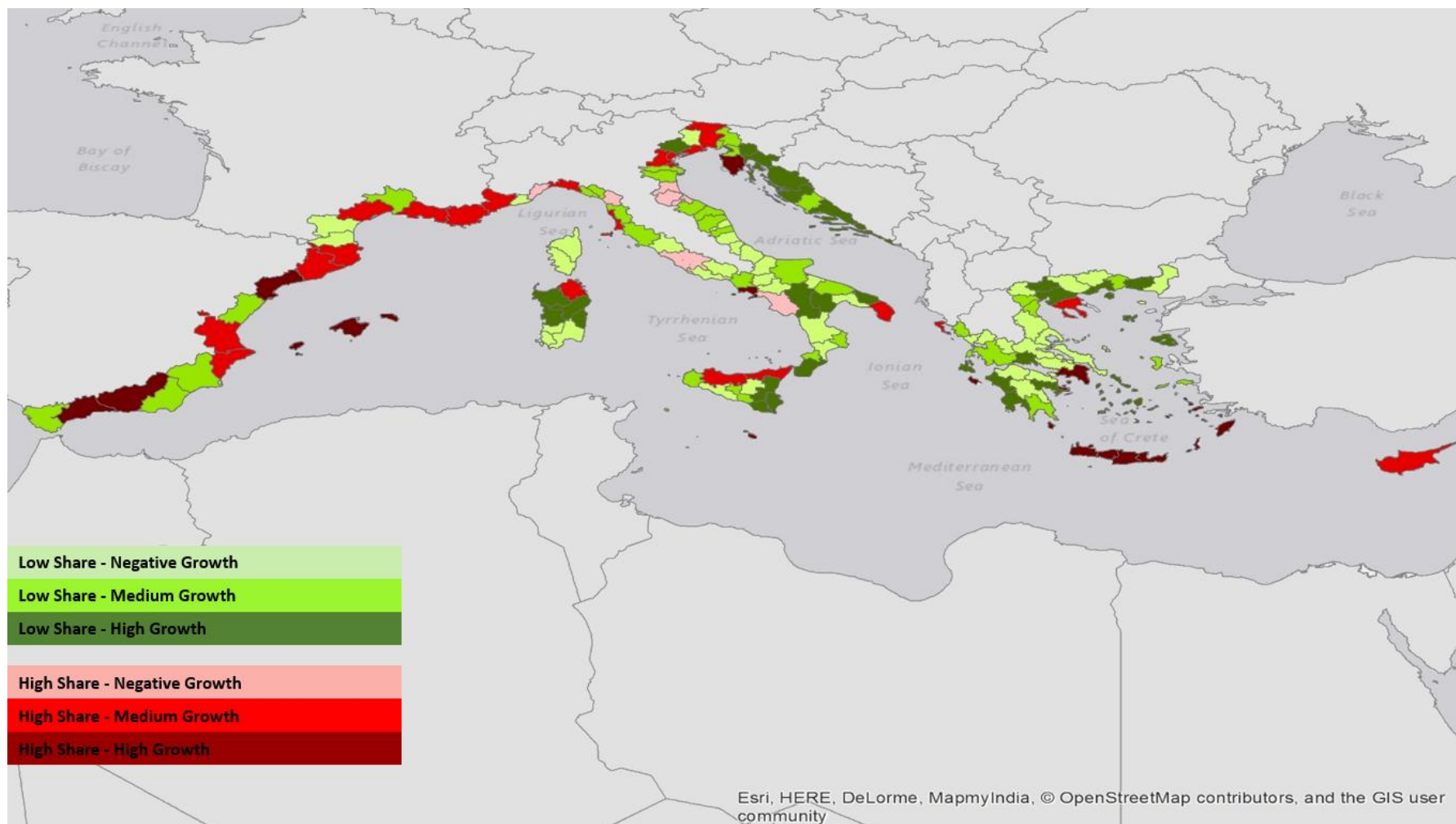


Figure 8: Distribution of the six types of destinations for the NUTS III regions of northern Mediterranean (n= 149)

The classification deriving from the GSM provides useful insights about the state and prospects of the tourism sector in the Mediterranean regions also allowing its interpretation to be directly or indirectly linked to aspects of economic, social, environmental and governance nature. Within the following lines, the general commonalities of the destinations for each of the six types of destinations are presented and discussed.

Developing destinations with low prospects in tourism development (Low Share - Negative Trends)

This type of destinations present low potential for tourism activities. Either because of the lack of tourism assets or lack of effective promotion, these destinations have not managed to attract a capable number of touristic fluxes while the trends of the period 2010-2015 do not provide hints for reversing this state. In general, if this trend is not reversed tourism could not be considered as a major driving factor of environmental pressures since neither the scale of tourism activities nor the future potential of the tourism fluxes seem to pose a serious threat on the environment. On the governance side, this should be mostly targeted on the exploitation of assets in order to enhance tourism development and - to a lesser extent - environmental and protection aspects.

Developing destinations with potential in tourism development (Low Share - Medium Positive Trends)

These destinations, although hosting a relatively low number of tourists in an annual basis than the Mediterranean average, nevertheless they still present a good potential for attracting more touristic fluxes. In general, environmental pressures at these destinations could not be considered as a major threat although if fluxes continue their upward trend then environmental aspects regarding tourist development may arise in the near future. Thus, these destinations should focus on how to strengthen tourism activities whilst setting the basis for promoting more environmentally friendly tourism products.

Developing destinations with high tourism dynamic (Low Share - High Positive Trends)

These destinations are presenting a high potential for tourism development. Despite their low market share, the high positive trends of touristic fluxes render the comprehensive planning of the tourism sector as a priority.

Mature destinations with low prospects for further tourism development (High Share - Negative Trends)

This type of destinations presents negative trends, still possessing a large market share of Mediterranean tourism sector. The priority of these destinations should be focused on reversing the negative trends in a sense of promoting new diversified and sustainable tourism products that will re-enhance tourist fluxes without adding significant pressures on the local natural and built environment.

Mature destinations with further potential in tourism development (High Share - Medium Positive Trends)

These destinations are dealing with both scale and growth effects. Although successful in attracting a large part of demand and presenting a high potential for strengthening their market share, these destinations are also facing or expected to face issues regarding the exceeding of their carrying capacity. Thus, actions should target to the limitation of tourism negative externalities and to the promotion of more sustainable tourism products.

Mature destinations with high tourism dynamic (High Share - High Positive Trends)

The destinations under this type have capitalised their full potential as tourism host regions. Nevertheless, pressures are expected to be intensified as the touristic volumes keep their upward trends. Direct and effective policy actions are considered as essential in order for the tourism sector to keep growing in a sustainable pattern.

Achieving the classification of NUTS III Mediterranean coastal regions¹ according to 6 types of destinations based on their tourism market share and the growth of the relevant activity, the second phase of typology steps further into the analysis of the destinations by examining the threats, enabling factors and tourism characteristics at each of the destination.

¹ The EU's definition of coastal regions is adopted: 'a NUTS 3 region with either a sea border or without a coastline but where more than half of the population lives within 50 kilometres (km) of the sea'

3. *Relation of proposed typology with threats, enabling factors and tourism characteristics*

3.1. *Relation to threats*

When comparing the typology (tourism dynamics in figure 8) with the pressures of **climate change** (example of combined climate change pressure in figure 9) for NUTS III regions, a relation of the most affected regions with tourism development can be obtained. According to figure 9, there is a high land pressure by climate change in the case of Valencia, a region showing a high share and strong potential in tourism development. Therefore, a focus on such a case is essential in order to identify the drivers and impacts of such pressures and understand whether the strong dynamics of tourism development are related to climate change pressure in: a) spatial terms, by identifying the specific areas where the combined pressures from tourist activities and climate change can be found and localize the issue and b) temporal terms, given that the region shows a tourism potential that will continue putting pressure on the region.

A different example can be found in the case of Crete, where the land pressure of climate change is low to medium, however, sea pressures show high levels which need to be taken into account since the entire island of Crete shows a high share and positive growth of the tourism sector.

Therefore, a simplified table of assessing climate change information can be created when taking into account both the type of tourism development and climate change pressure in the Mediterranean NUTS III regions (table 4).

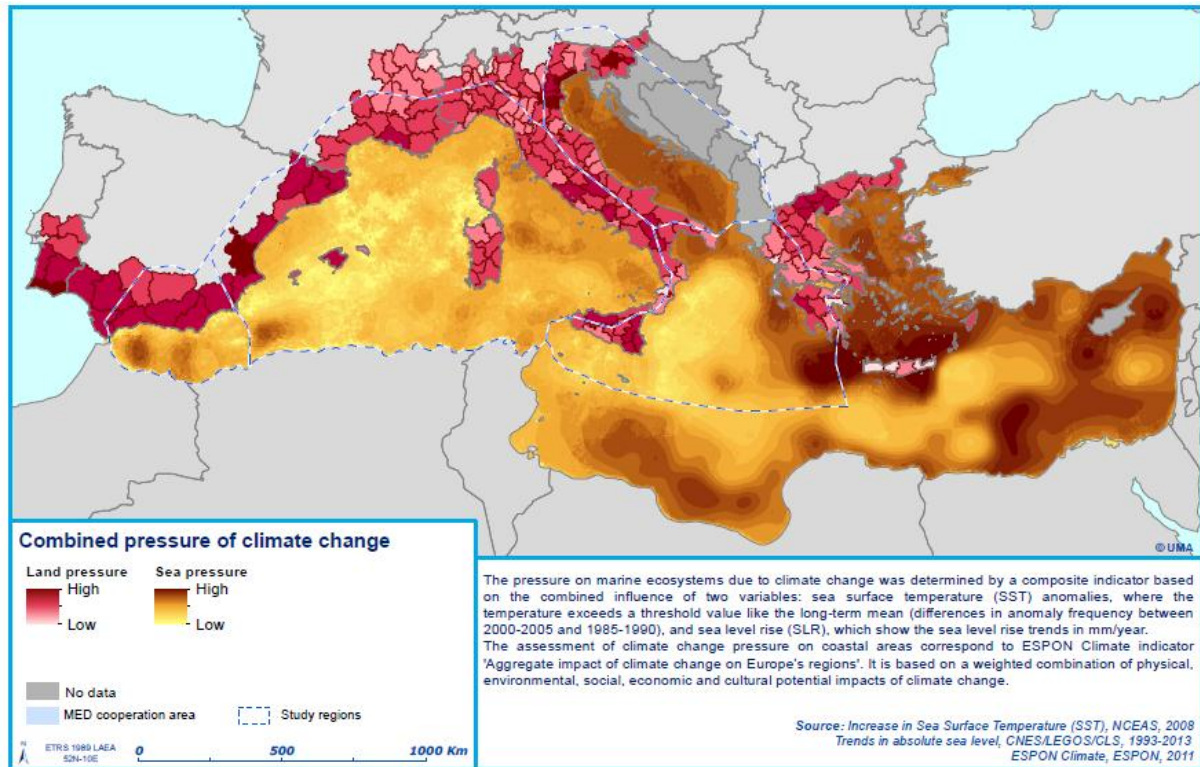


Figure 9: Combined pressure of climate change in the Mediterranean region

Source: Med-IAMER project (2015)

Table 4: Relation of typology to climate change pressures (examples)

NUTS III region	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Valencia					High pressure by climate change	
Heraklion						Low pressure by climate change

When assessing **urbanization** in the Mediterranean region, it is important to identify the distinction among more urbanized, intermediate and rural coastal regions. In this context, the categorization proposed by Eurostat is adopted (figure 10) in order to juxtapose the adopted categorization with the typology of tourism development.

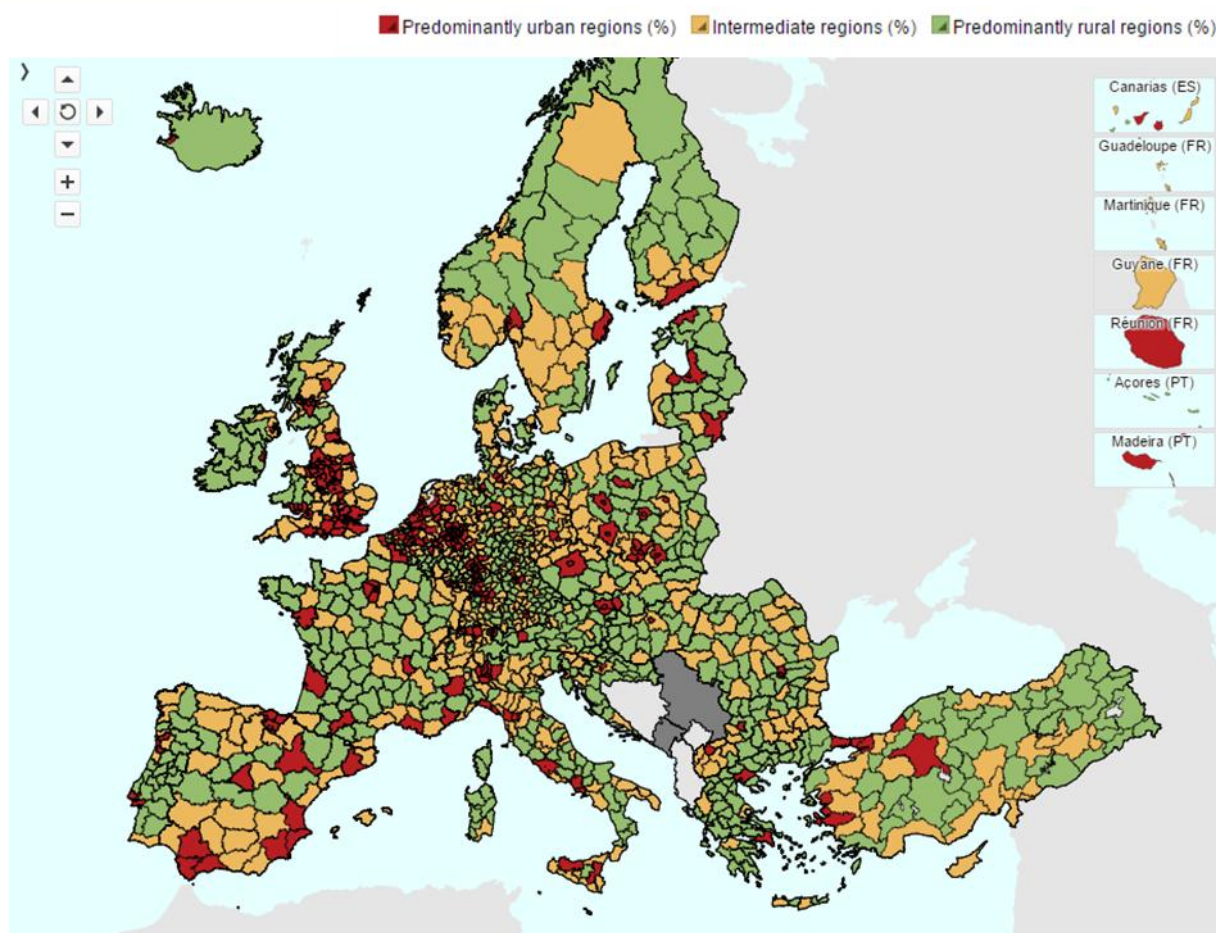


Figure 10: Urban-rural typology

Source: Eurostat (2013)

Taking into account both typologies, the combined pressures by both tourism development and urbanization can be obtained. This will lead to the identification (in spatial and temporal terms) of a) connections between urbanization patterns and tourism dynamics and b) the drivers and impacts of littoralization related to tourism pressures. Here, the existing urbanization patterns can lead to a more specific typology such as this described in the table below (Table 5).

Table 5: Relation of typology to urbanization (examples)

NUTS III region	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Valencia					Predominantly urban	
Heraklion						Intermediate
Cosenza	Predominantly rural					
Gard		Intermediate				

In terms of **tourism fluxes**, aggregated conclusions could be obtained by comparing the proposed typology with indicators providing the existing knowledge on tourism demand and seasonality. An example is provided when assessing both tourism dynamics (figure 8) and the density of tourism demand (figure 11).

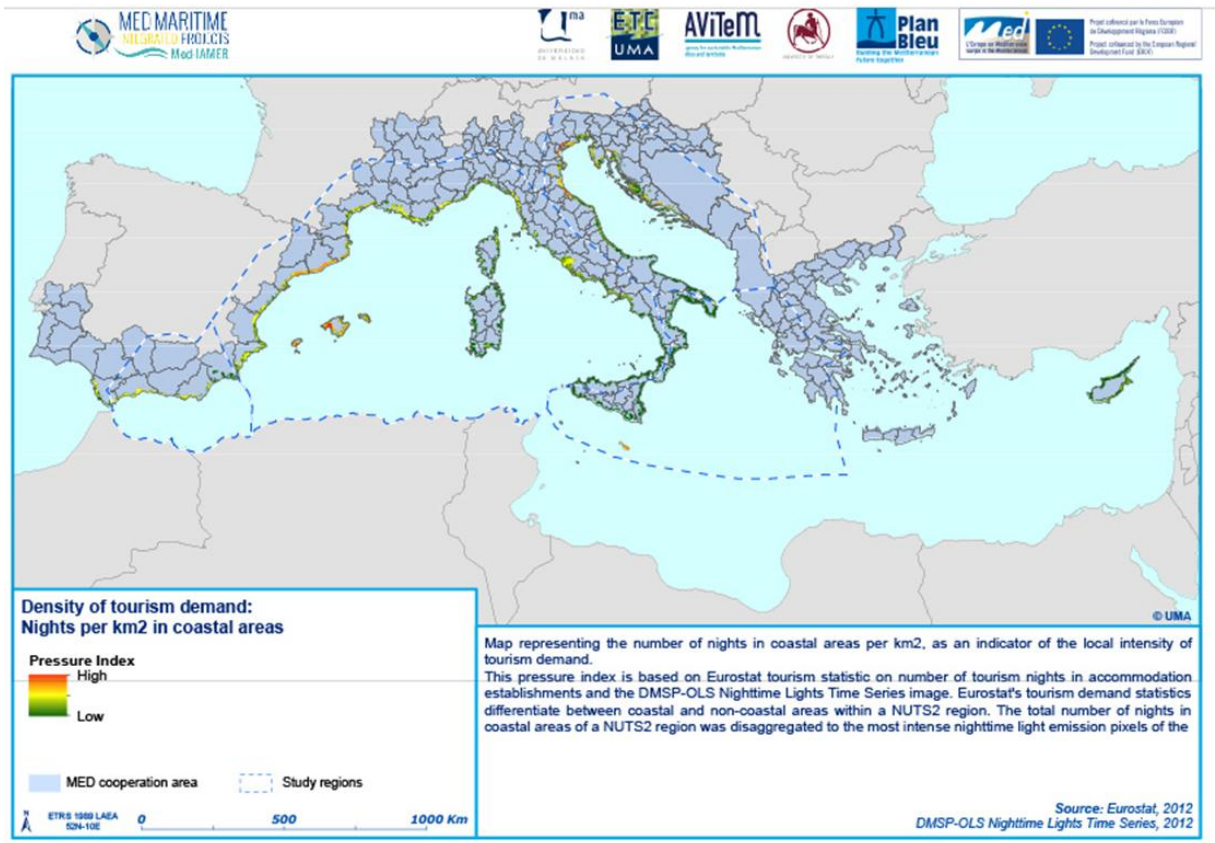


Figure 11: Density of tourism demand

Source: Med-IAMER project (2015)

Comparing both figures, it can be extracted that a high market share and positive growth in tourism sector is not necessarily related to high density of tourism demand at the coast. This is, for example, the case of Sicilian regions, Messina and Palermo, which show a high

market share and growth potential for tourism development, however, the tourism demand at their coastal areas (figure 11) show that these number are not related to the coast. Therefore, a deeper understanding of the internal characteristics of the NUTS III regions is required in order to provide a synthetic table (example in table 6) of typologies related to tourism flows and capacity. On the contrary, the Balearic Islands show trends of high positive growth and tourism market share (figure 8) which seems to in line with the high density of tourism demand in coastal areas.

Table 6: Relation of typology to tourism demand (examples)

NUTS III region	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Messina					Low density of tourism demand	
Balearic Islands						High density of tourism demand

In terms of **pollution**, it is essential to identify its drivers and impacts on the coastal and maritime zones in order to understand the interconnections of tourism dynamics with pollution in terms of spatial specification of polluted tourist areas and future pollution impacts of anthropogenic trends in relation to tourism potential as this characterized by the typology (figure 8). Examples of available knowledge could be obtained by relevant indicators measuring pressures in a land and/or sea level (examples of marine litter by population influence and oil spills density in figures 12 and 13).

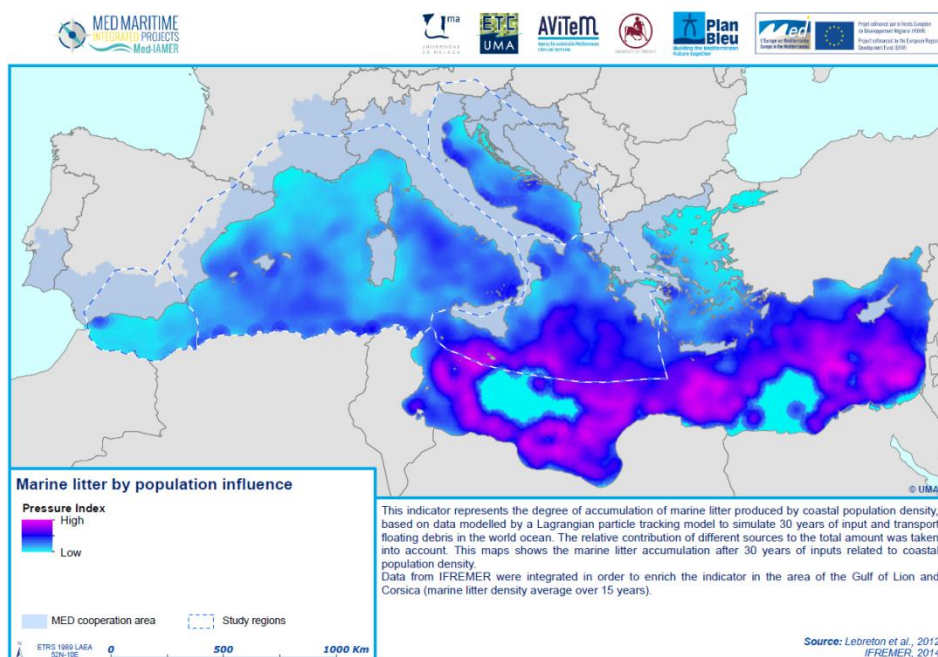


Figure 12: Marine litter by population influence

Source: Med-IAMER project (2015)

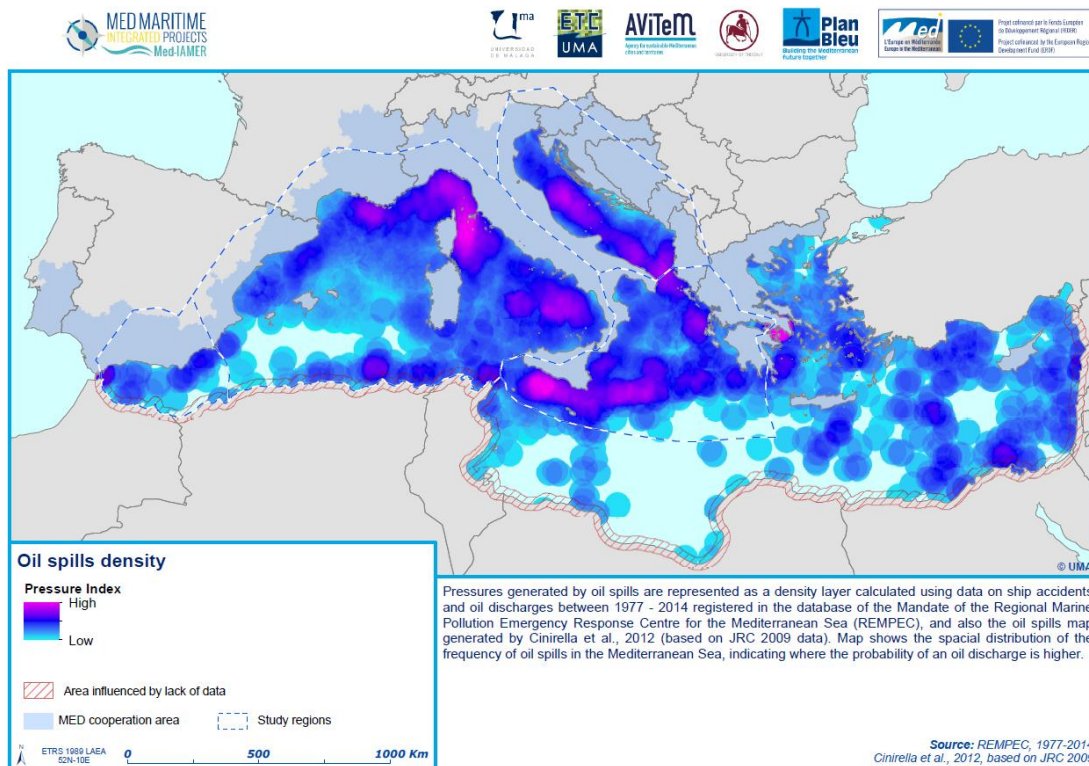


Figure 13: Oil spills density

Source: Med-IAMER project (2015)

Table 7: Relation of typology to pollution (example)

NUTS III region	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Heraklion						Medium pressure

When assessing **land-sea interactions** in terms of the different human activities taking place in coastal and maritime regions, the analysis of the different uses (namely tourism, agriculture, fishing-aquaculture, transport, energy) identified in NUTS III regions is essential in order to better understand the synergies and conflicts among them and their cumulative pressures (example in figure 14). Comparing the information stemming from figures 8 and 14, a special emphasis could be dedicated to regions with high cumulative pressures and high tourism dynamics in order to examine the interactions of tourism activities with the uses taking place in those regions and understand whether the pressures are generated by the co-existence of such activities, creating conflicts.

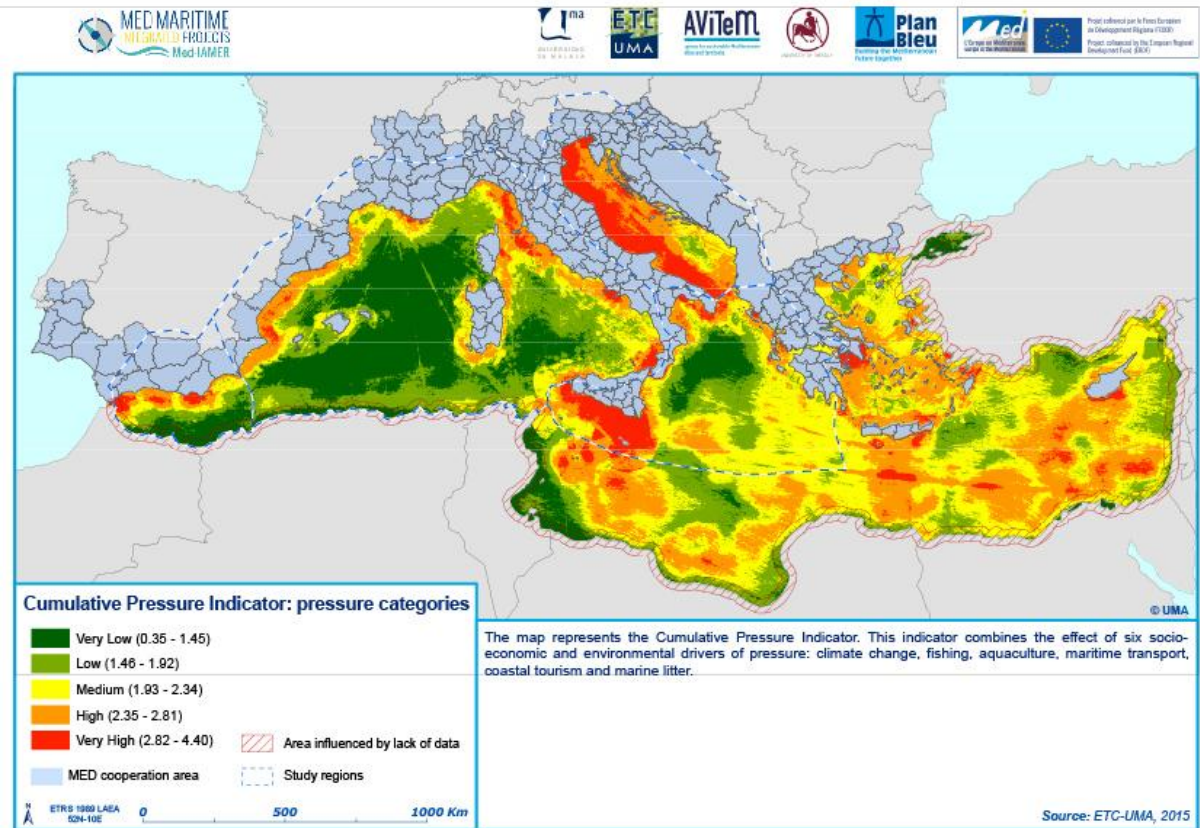


Figure 14: Cumulative socio-economic and environmental pressures

Source: Med-IAMER project (2015)

In this context, several examples can be identified, such as the case of Napoli, where both tourism dynamics and cumulative pressure show high levels (table 8) or the case of Olbia-Tempio (Sardegna), where a high tourism share and potential is evident, however, with very low to medium cumulative pressures, proving a more harmonised co-existence of coastal and maritime activities.

Table 8: Relation of typology to cumulative socio-economic and environmental pressures

NUTS III region	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Napoli						Very high pressure
Olbia-Tempio					Very low to medium pressure	

3.2. Relation to enabling factors

Regarding the enabling factors, the tasks dedicated to their analysis will be able to incorporate the information generated by the specific typologies coming from the comparison of tourism dynamics (figure 9) and the assessment of the types of areas identified through the analysis of threats.

More specifically, for the assessment of **coastal protection measures** related to task 3.8 of the project methodology, taking into account the proposed typology at NUTS III level, the task would be to identify the NUTS III regions, where coastal protection plans are put in place. Through this assessment, the project will be able to examine whether the most touristic regions have developed plans related to coastal defense and assess the need for coastal protection measures stemming from tourism development pressures. The same approach applies for the case of **ecosystems protection**, specifically in terms of policy measures.

Through the analysis of **water supply and depuration**, the regions with minimum/low infrastructure for water resources management, with water supply issues and with low quality of bathing water will be identified. When comparing these outputs with the typology of tourism dynamics (figure 8), it would be easier to define the regions that, on the one hand, are showing an increasing tourism dynamic but, on the other hand, are in need for water management measures in order to support the sustainable development of tourism activity.

In the case of **transport and accessibility**, the identification of the existing infrastructure, dynamics (e.g. figure 15) and policy framework in relation to tourism dynamics (figure 8) could provide an evaluation of the need for actions in order to address the pressures generated by transport activities in relation to tourism development.

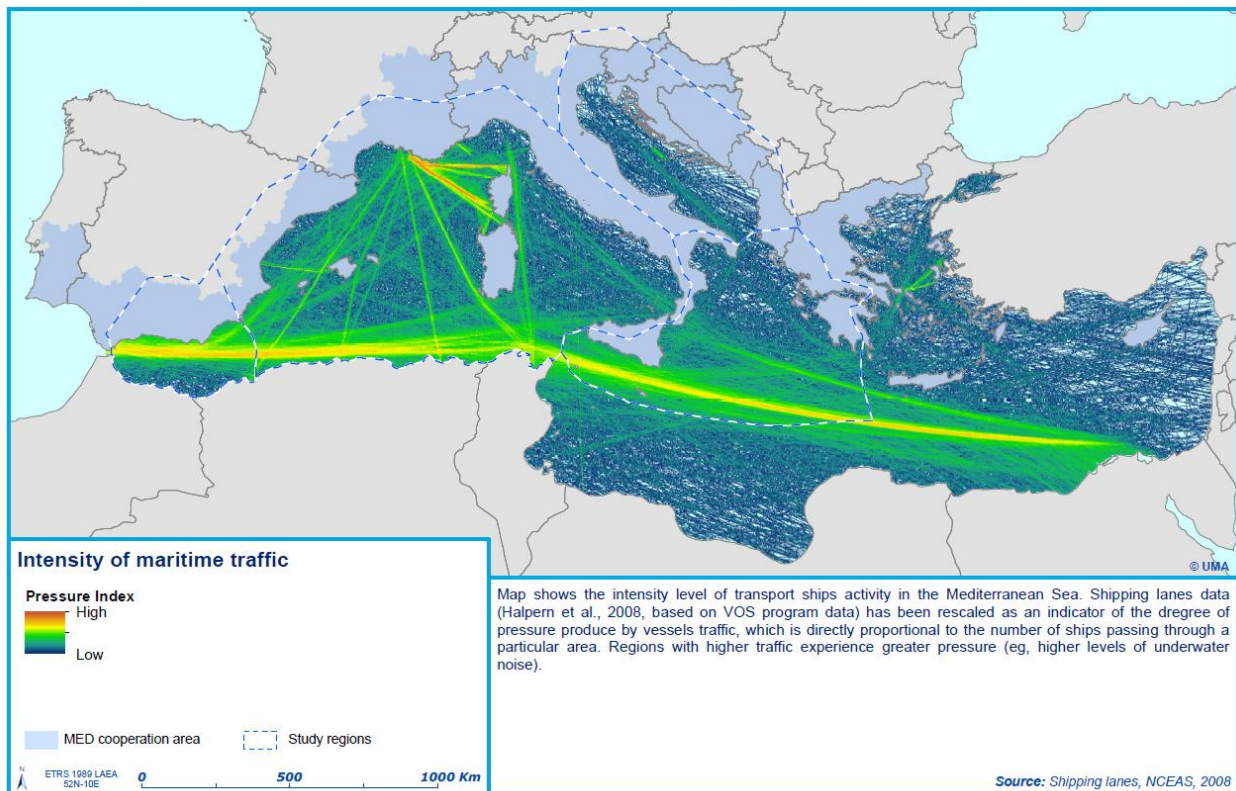


Figure 15: Intensity of maritime traffic

Source: Med-IAMER project (2015)

3.3. Relation to tourism characteristics

Finally, a connection of the proposed tourism typology is being attempted with specific tourism characteristics such as beach, yachting, cruise tourism, nature/ecotourism, city/cultural tourism etc, creating a sub-division of the typology of tourism destinations. Unfortunately, for most cases there is a lack of available quantitative data to support such a task, however, two examples can be further developed based on available knowledge, namely recreational and cruise tourism.

In the case of yachting tourism, taking into account the information on marinas in NUTS III regions (figure 16), the contribution (high/medium/low) of recreational tourism to the tourism dynamics of each region could be identified (examples in table 9).

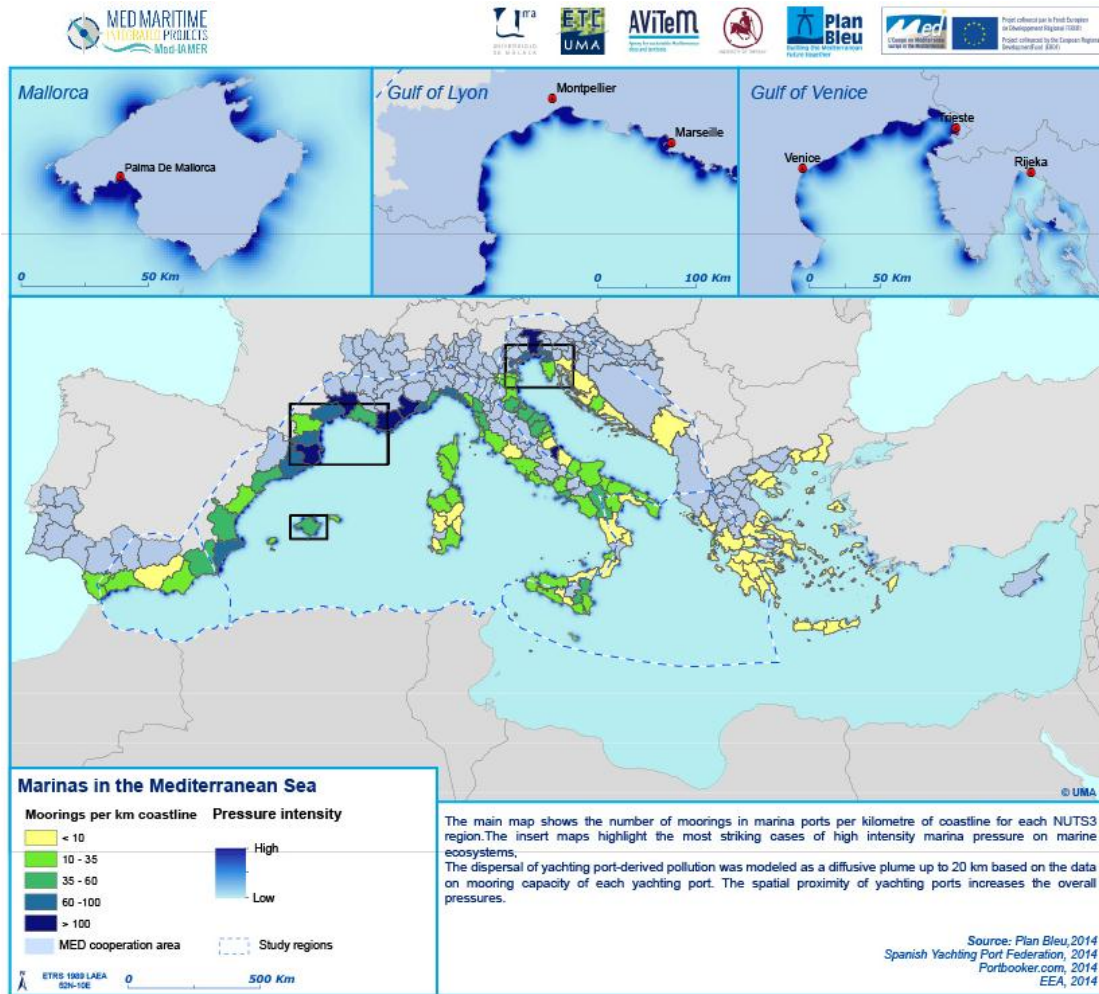


Figure 16: Marinas in the Mediterranean Sea

Source: Med-IAMER project (2015)

Table 9: Relation of typology to yachting tourism according to the existing marinas

NUTS III region	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Granada						Low contribution
Gard		High contribution				
Udine					High contribution	
Pescara	High contribution					

Attempting a similar exercise for cruise tourism, the contribution (high/medium/low) of cruise activity (figure 17) to the tourism dynamic of each region could be identified (examples in table 10).

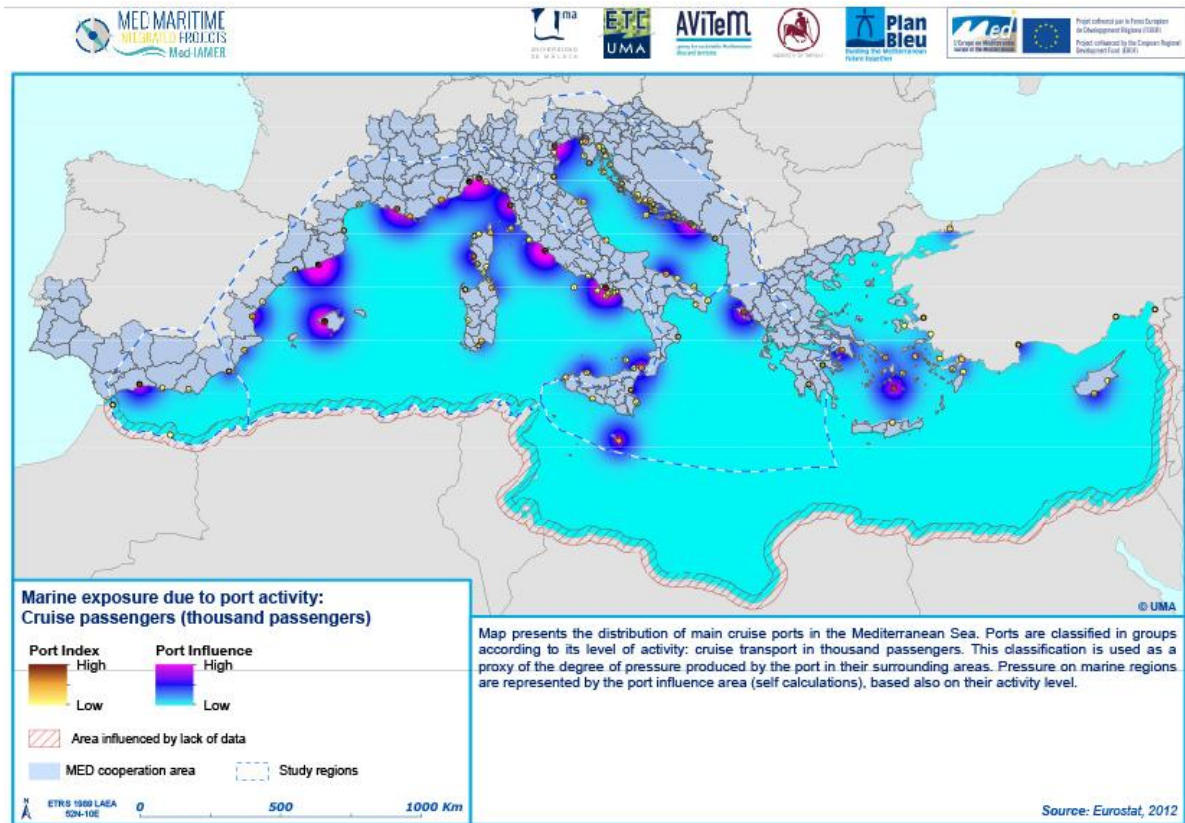


Figure 17: Cruise activity in the Mediterranean sea

Source: Med-IAMER project (2015)

Table 10: Relation of typology to cruise tourism

NUTS III region	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Corfu					High contribution	
Malaga						High contribution
Dubrovnik			High contribution			

The combination of the specific sub-typologies described above provides a synthetic typology for each NUTS III region. The outline of this typology is reflected in table 11. The aim of such a synthetic typology is to provide the separate tasks of the project (threats and enabling factors) the opportunity to identify the specific thematic areas to focus on. In table 12, an example of a NUTS III region is presented for the case of Heraklion (Greece).

Table 11: Description of the synthetic typology of destinations in the Mediterranean

	Low Share - Negative Growth	Low Share - Medium Positive Growth	Low Share - High Positive Growth	High Share - Negative Growth	High Share - Medium Positive Growth	High Share - High Positive Growth
Threats						
Climate change	Low/medium/high pressure					
Urbanization	Predominantly Urban/ Intermediate/ Predominantly Rural					
Tourist fluxes and carrying capacity	Low/medium/high density of tourism demand					
Pollution	Low/medium/high pressure					
Land-sea interactions	Very low/low/medium/high/very high pressure			Activities	Tourism	Yes/No
					Agriculture	Yes/No
					Fishing-Aquaculture	Yes/No
					Transport	Yes/No
					Energy	Yes/No
Enabling factors						
Coastal protection measures	Yes/No					
Ecosystems protection	Yes/No					
Water cycle and depuration	Yes/No					
Transports and accessibility	Yes/No					
Tourism characteristics						
Beach tourism	Yes/No					
City/cultural tourism	Yes/No					
Cruise tourism	Low/medium/high activity					
Recreational tourism	Low/medium/high activity					
Nature/ecotourism	Yes/No					

Table 12: Example of the synthetic typology for Heraklion (Greece)

	High Share - High Positive Growth					
Threats						
Climate change	Medium pressure					
Urbanization	Intermediate					
Tourist fluxes and carrying capacity	Medium density of tourism demand					
Pollution	Medium pressure					
Land-sea interactions	High pressure	Activities	Tourism		Yes	
			Agriculture		Yes	
			Fishing-Aquaculture		No	
			Transport		Yes	
			Energy		No	
Enabling factors						
Coastal protection measures	No					
Ecosystems protection	No					
Water cycle and depuration	Yes					
Transports and accessibility	No					
Tourism characteristics						
Beach tourism	No					
City/cultural tourism	Yes					
Cruise tourism	Low activity					
Recreational tourism	Low activity					
Nature/ecotourism	No					

4. References

- Butler, R. W. (1980). The concept of a tourist area cycle of evolution: implications for management of resources. *The Canadian Geographer/Le Géographe canadien*, 24(1), 5-12.
- Coccossis, H. (2002). Tourism development and carrying capacity. In G. Apostoulos & D. Gayle (Eds.), *Island Tourism and Sustainable Development* (pp. 131–144). Westport, CT: Praeger.
- Coccossis, H., & Constantoglou, M. E. (2008). The use of typologies in tourism planning: problems and conflicts. In *Regional Analysis and Policy* (pp. 273-295). Physica-Verlag HD.
- ECORYS (2013) Study in support of policy measures for maritime and coastal tourism at EU level, http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/study-maritime-and-coastal-tourism_en.pdf
- ESPON (2006) Final Report, project 1.4.5: Preparatory Study of Spatially Relevant Aspects of Tourism, https://www.espon.eu/export/sites/default/Documents/Projects/ESPON2006Projects/StudiesScientificSupportProjects/Tourism/fr-1.4.5-full_revised_Jan2007.pdf
- Hellenic Statistical Authority (2017) Hotels, rooms for rent and tourist campsites, <http://www.statistics.gr/en/statistics/-/publication/STO12/->
- Instituto Nacional de Estadística (2017) Hotel Occupancy Survey, <http://www.ine.es/dynt3/inebase/en/index.htm?padre=239>
- Italian National Institute of Statistics (2017) Capacity of collective accommodation establishments and Occupancy in collective accommodation establishments MetaData: Type of accommodation – disaggregated, <http://dati.istat.it/?lang=en#>
- Malta Tourism Authority (2017) Collective Accommodation, <http://www.mta.com.mt/page.aspx?id=166>
- McElroy, J. (2006). Small island tourist economies across the life cycle. *Asia Pacific Viewpoint*, 47(1), 61–77.
- McElroy, J. L., & De Albuquerque, K. (1998). Tourism penetration index in small Caribbean islands. *Annals of Tourism Research*, 25(1), 145-168.
- Med-IAMER Project, 2015. *Final Report WP 3.1 & 3.2a*, EU, Med Programme
- Ministry of Tourism - Republic of Croatia (2017) Data & statistics, <http://www.mint.hr/default.aspx?id=363>
- National Institute of Statistics and Economic Studies, France (2017) Services - Tourism – Transportation,

https://www.bdm.insee.fr/bdm2/choixTheme?request_locale=en&code=349#arbo:montre_rbranches=theme350

Republic of Slovenia – Statistical Office (2017) Accommodation facilities, tourist arrivals and overnight stays by groups of tourist accommodations, statistical regions, Slovenia, monthly,

http://pxweb.stat.si/pxweb/Dialog/varval.asp?ma=2164402E&ti=Accommodation+facilities%2C+tourist+arrivals+and+overnight+stays+by+groups+of+tourist+accommodations%2C+statistical+regions%2C+Slovenia%2C+monthly&path=../Database/Economy/21_hotels_tourism/01_21644_accomod_month/&lang=1

Romao, J., Guerreiro, J., & Rodrigues, P. (2013). Regional tourism development: culture, nature, life cycle and attractiveness. *Current Issues in Tourism*, 16(6), 517-534.

Statistical Service – Republic of Cyprus (2017) Tourism, http://www.mof.gov.cy/mof/cystat/statistics.nsf/services_71main_en/services_71main_en?OpenForm&sub=1&sel=2