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OVERVIEW

The present document was produced in the framework of **Co-Evolve4BG** project "Co-evolution of coastal human activities & Med natural systems for sustainable tourism & Blue Growth in the Mediterranean" in relation to Threats and Enabling Factors for maritime and coastal tourism development at a national scale" Co-funded by ENI CBC Med Program (Grant Agreement A_B.4.4_0075).

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REVIEW

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Abstract

This report aims to summarize the various threats and enabling factors related to the development of a Sustainable Blue Economy in the Mediterranean, with particular reference to coastal and maritime tourism. The report is based on the summary reports at MEd scale developed for the single topics (threats and enabling factors) under the same activities. The document structure includes:

- **Section 1:** Introduction where the context of the preparation of the present report is described.
- **Section 2:** Threats and enabling factors where the single topics are described, summarizing the main outcomes provided in the topic reports.
- **Section 3:** Conclusions where a further summarized picture is provided on barriers and enablers to development of sustainable coastal tourism in the region, as well as some recommendations.

I. Introduction

Coastal tourism is a major driver for the local and regional economy of many Mediterranean countries. Mild climate, blue waters, and the richness in natural and cultural heritage sites are among the most relevant factors that attract tourists toward the Mediterranean coastal regions. At the same time, several human activities (including tourism itself), climate change and natural and man-made disasters have the potential to substantially damage the coastal and marine environment. A damaged environment in its turn becomes less attractive for coastal tourism, contrasting its development, through negative feedback effects. Most impacted forms of tourism are those based on ecotourism in which, according to the UNWTO definition, the main motivation of tourists is the observation and appreciation of nature as well as the traditional cultures prevailing in natural areas. However, even more traditional forms of coastal tourism (beach tourism) can be severely impacted, due to the deterioration of bathing water quality, sandy beaches erosion and risk of flooding.

The concept of sustainable blue economy is gaining increasing international attention as a solution to reduce the environmental impact of coastal and maritime activities, including tourism, reinforce the socio-economy of local communities and conserve traditions and cultures.

Based on the results of specific analyses made in the Coevolve4BG Project, about common components of the blue economy, this report analyzes main enabling factors and threats that can unlock (enablers) or hinder (threats) the potential for sustainable tourism in the Mediterranean region, in a future looking perspective dominated by global changes.

This report deserves particular focus on the five coastal Mediterranean countries addressed by the Coeveolve4BG Project: Spain, Italy, Greece, Tunisia and Lebanon.

Besides this introduction, the following paragraphs of chapter II provide an overview of the major issues that need to be managed for the development of a sustainable blue economy and particularly of sustainable coastal tourism. Final considerations are given in chapter II (conclusions).

II. Threats and enabling factors

II. Threats and enabling factors

II.1. Climate change and morphological stability

Coastal areas are especially important for tourism and the need to protect these areas is essential for the economy of Mediterranean countries. Beaches are often synonymous with tourism and represent a crucial segment of the touristic offer in the Mediterranean.

Coastal tourism (and beach tourism in particular) is one of the most climate sensitive recreational activities and this makes the sector particularly vulnerable to climate change. Sea level rise and extreme temperatures are key variables expected to generate large impacts on coasts. Three main categories of causes related to climate change that determine value losses in tourism experience have been identified (Arabadzhyan et al. 2021): (i) changes in environmental features; (ii) changes in human being comfort (or health) and (iii) change in the quality of infrastructure and facilities. Conversely, longer lasting favorable seasons create new opportunities for tourism development, demanding new services and new infrastructure.

Time series of satellite measurement (since 1990s) are demonstrating that Mediterranean sea level is increasing with higher rates than the past (e.g. Semia Cherif et al., 2020), with large expected impacts in terms of coastal erosion and coastal flooding (Antonioli et al., 2020).

Climate change and the phenomena linked to it exacerbate other processes threatening coastal morphology. Considering the five Mediterranean countries assessed in this project (Figure 1), this study found that Italy and Spain are particularly suffering from erosion with 923 km (11.6 % of the national coastal length) and 638 km (12.8 %). Coastal erosion in Tunisia and Lebanon is relevant as well: though the length of eroded coastal area is lower (257 and 131 km respectively) it represents a significant portion of the total national coastlines (22.3 % in Tunisian coasts and 58 % in Lebanon).

Regarding temperature, Lebanon coasts are one of the hottest coasts of the Mediterranean (annual average temperature of about 21°C). According to a moderate climate change scenario (RCP 4.5) and to the worst scenario (RCP 8.5), projections show that temperatures will increase by around 1°C by the year 2040, and will further increase by 3.5°C by 2090, with potential consequences for liveability of the area and suitability for tourism activities. Surface water temperature will follow this trend. An increase of 0.4°C per decade has been suggested in recent studies (Sakalli, 2017, 1986-2015 period), with projected increase from 1.9 (western area) to 5.8°C (eastern area) by 2100.









To continue to support sustainable tourism activities in the long term, governments of Mediterranean countries should take measures to counteract climate change impacts and related phenomena affecting coastal stability, and, at the same time, exploit potential opportunities. Beach protection and coastal defense measures are particularly relevant, but they are actually sustainable if all coastal processes are fully considered. Various adaptation measures are in place in all investigated countries, to limit the risk of flooding of low lying coastal areas and to safeguard coastal urban agglomerations, beaches and dune ecosystems (see chapter II.10).

In the cost-benefit analysis supporting the implementation of coastal interventions, it is important to realize that the needed investments are for the present generation, while the benefits will be in the future. Uncertainties about the success of various options available include the timing of benefits and the nature and extent of those benefits.

Various approaches have been used to examine the potential geographic and seasonal redistribution of climatic resources for tourism and how tourist demand might respond. A number of studies have utilized a 'Tourism Climate Index', which integrates multiple climate variables relevant to tourism, to examine how the distribution of climate resources for tourism could be altered over the 21st century (Scott, D., Gössling, S. & Hall, CM. 2012).

Some important topics for future investigation also emerge from these studies. For example, making increasingly available geospatial data sets of coastal tourism assets (resorts, beaches, transport infrastructure) at the regional or global scale might enable the full inclusion of tourism among sectors considered in climate change impact analysis, prompting adaptation intervention to limit the vulnerability of the sector to climate change.

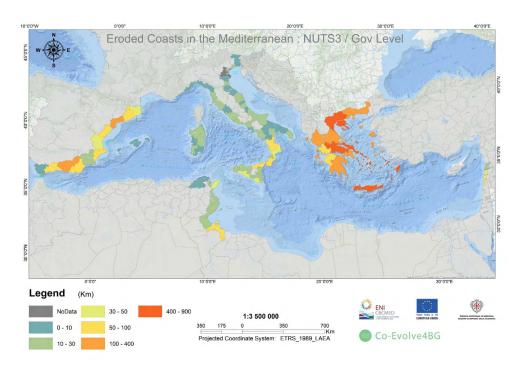


Figure 1 Coastal erosion in the in the coastal regions of the five Mediterranean countries analysed in this study (km of coasts in erosion per each region)

II.2. Littoralization and urbanization

Urbanisation generally refers to the share of population that resides in cities (versus those that live in rural areas). In its dynamic sense, it also encompasses the transition of a population from the rural world to the urban world (Polèse, 1995). The extension of this meaning to the concentration and growth of "activities in agglomerations of an urban character" (Moriconi-Ebrard, in Lévy and Lussault, 2003) was then proposed. On the coast, where the concentration of population and activities is observed and measured, the phenomenon has been called "littoralization".

The Mediterranean is the most densely populated closed sea in the world (UNEP/MAP and Plan Bleu, 2020). The total population of the Mediterranean countries grew from 276 million in 1970 to 512 million in 2018 and it is projected to grow by an additional 182 million inhabitants by 2050 (UNEP/MAP and Plan Bleu, 2020, UNDESA, 2010, UNDESA, 2019). While the population has been stabilizing in the north since 1980, the population in the south and east of the basin has more than doubled over the same period. In 2018, 39% of the Mediterranean countries' population lived on the northern shore and 61% on the southern and eastern shores (UNEP/MAP and Plan Bleu, 2020). The southern region is also the one that has the highest differences in population densities ranging from more than 1,000 inhabitants/km² in the Nile Delta to less than 20 inhabitants/km² along parts of the Libyan coastline.





Co-Evolve4BG

Complex population dynamics are recently observed in the five Mediterranean countries of this study. Considering the period 2000-2014, a strong positive trend was especially observed along the coasts of Tunisia and Lebanon. Positive trends generally feature the most economically attractive cities of these countries. In these cities, tourist activities, industrial activities, job opportunities and various services are concentrated, attracting population.

Among the five analyzed countries, the coastal regions of Spain have the largest surface of urban areas, followed by Greece, Italy, Tunisia and Lebanon. However, Lebanon is the country that has the highest rate of urbanization (2019), followed respectively by Spain, Italy, Tunisia and then Greece. Urban population is particularly concentrated in the coastal regions of Italy (all coastal regions have more than 80% of urban population), but also in Lebanon and in some regions of, Tunisia, Spain and Greece (Figure 2).

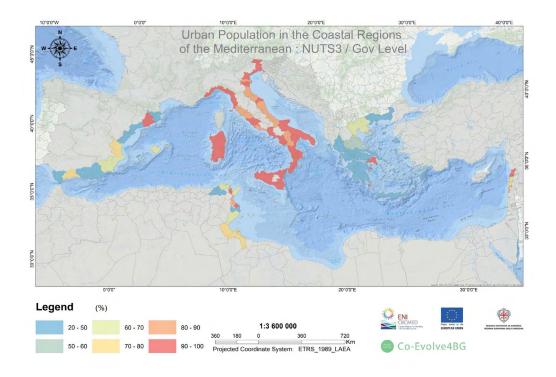


Figure 2. Urban population in the in the coastal regions of the five Mediterranean countries analysed in this study

The loss of vegetation cover (using satellite images and computing the Normalized Difference Vegetation Index) has been also observed in several coastal areas, especially in Lebanon and Tunisia. Indeed, this decrease in the vegetation cover is linked to the urbanization observed in the same areas.

By superimposing the layers corresponding to urban areas with the layers representing tourist areas, distribution patterns show important commonalities, showing that tourist areas develop near the areas with high urban density, and near the coasts.

Urbanisation and littoralisation go hand in hand with tourism development in the investigated Mediterranean countries. This means that urbanisation (in its broad term, also including the economic activities and related infrastructures) is creating the enabling conditions for tourism activities. In its turn, tourism development is boosting the development of new built areas, road and railway infrastructure, marinas, and cruise port expansions (see chapter II.12 about transport and accessibility). Observed consequences of such rapid change embrace a multitude of impacts on the marine and coastal environment that are expected to be a threat for tourism itself in the long-term. Indeed, sustainable tourism clearly depends on a healthy and attractive environment, so that economic development of coastal areas should jointly work with environmental protection.

II.3. Touristic fluxes and Carrying Capacity

Tourism in the Mediterranean is a key sector of the Blue economy. Data that provide context for the Mediterranean tourism and prove the relevance of this sector for the economy of Mediterranean countries are provided in two major reports: the State of the Environment and Development (SoED, UNEP/MAP and Plan Bleu, 2020) and the State of Play of tourism in the Mediterranean (Plan Bleu, 2022). According to the data gathered in these two studies, the Mediterranean is considered the world's leading tourism destination, attracting about one third of world tourism with around 400 million international tourist arrivals in Mediterranean countries, in 2019. The four most important sectors of the tourist market in Mediterranean countries are cruises, nautical activities, sun and beach holidays and cultural getaways. The Mediterranean favorable climate remains a major factor in attracting tourists from around the world towards the Mediterranean coasts. Conversely, despite the recent expansion of tourism to the south, southern shores' tourism remains less developed compared to the north. The unstable political situation and the lack of infrastructure and services in the countries of the southern shores increase this disparity.

Considering the five Mediterranean countries investigated in this study, Italy and Greece are the most attractive countries for tourism, being part of the top five Mediterranean countries for the number of international arrivals (UNEP/MAP and Plan Bleu, 2020). In Italy, coastal tourism ranks second after tourism in cultural cities. In Greece, although the most common tourist product remains "Sun and Sea", the central strategy for the development of the Greek tourism industry is focused on enriching new alternatives models of tourism, increasing the competitiveness of the country.







The coastal regions of Italy, Greece, Spain, Tunisia and Lebanon are rich in hotels and beds (Figure 3), with more than 1000 hotels per region in some areas of Spain, Italy and Greece. The highest total number of hotels is found in Italy (almost 18000), followed by Greece (about 10000). Conversely, Lebanon and Tunisia have the lowest number of hotels.

The average duration of overnight stay (Figure 4) is variable across the considered countries, but it does not generally exceed five days. Longer stays are found in Greece, especially in the islands where the average duration is 7-9 days.

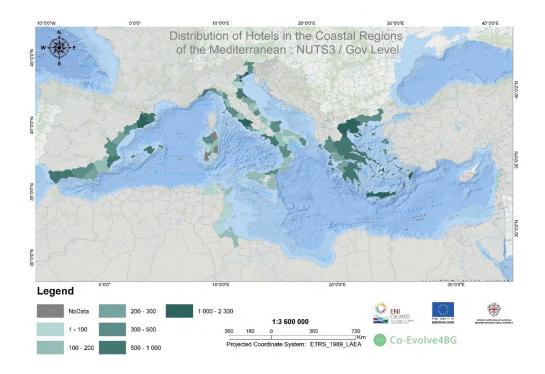


Figure 3. Number of hotels in the coastal regions of the five Mediterranean countries analysed in this study

Although data are not systematically available for all countries, the consumption of energy and water per tourist is a concerning topic. The unregulated consumption of water for tourist infrastructure, for drinking and leisure purposes such as swimming pools and water games, and the increasing demand of energy is threatening natural resources that are already suffering from other water uses and climate change. While in Spain the average water consumption is generally lower than 200 thousand cubic meters, Tunisia, water consumption is far higher, exceeding 2000 thousand cubic meters in some coastal regions.

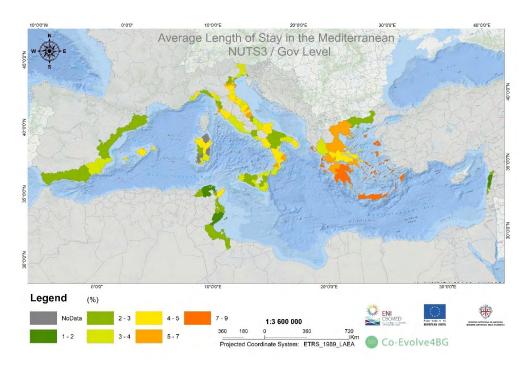


Figure 4. Average length of overnight stay in the coastal regions of the five Mediterranean countries analysed in this study

Other impacts of tourism on natural resources (pollution, damage to cultural and natural heritage sites, disruption of seabed habitats due to anchoring etc) are well recognised in the Mediterranean sea and are mentioned in several chapters of this document. Such impacts act as barriers for the development of sustainable tourism in the Mediterranean basin.

II.4. Pollution and other anthropogenic pressures affecting ecosystems

Pollution is considered one of the most important aspects of environmental degradation along the Mediterranean coast, which has serious repercussions on human health and affects the quality and quantity of a huge biodiversity and the whole ecosystem. It is well pronounced in all coastal areas (UNEP/MAP and Plan Bleu, 2020). The Mediterranean is also one of the most polluted semi-enclosed basins in the world. Millions of tons of macro-waste litter lay on the sea bottom or are in suspension. Main polluting activities are both located at sea (e.g. maritime transport, cruising, offshore hydrocarbon platforms) and on land (e.g. coastal tourism activities, discharge from industrial, urban and agricultural areas, waste management sites).

Among maritime activities, maritime transport (see also II.12, transport and accessibility) is especially relevant for the Mediterranean, where about 220,000 ships over 100 tons sail in the Mediterranean each year - about one third of the









world's maritime traffic. Many ships carry hazardous cargoes that pose potential dangers to the marine environment. Approximately 370 million tons of oil transit the Mediterranean each year (more than 20% of the world total), and approximately 250 to 300 oil tankers pass through it each day. Shipping activities generate a variety of chemical pollution pressures through the release of oil and other chemicals. Spills can occur in case of accident, during routine operations, in ports, as well as at sea. They can be voluntary or accidental, resulting from a human decision, a human error, or a technical failure. Nowadays operational pollution from ships is a major source of oil pollution in the Mediterranean region. Up to 1,500-2,000 incidences of operational oil spill are estimated to occur annually in the basin (REMPEC, 2022).

Among land based activities, pollution caused by industries (Figure 5) is a widespread issue in the five Mediterranean countries analyzed in this study. Some non-exhaustive figures about industrial pollution in these countries are here reported:

Tunisia currently has 152 industrial zones distributed throughout the country. The most important remark is that most of these industrial zones are located on the coast of Tunisia at the seaside. Waste management, especially those coming from industrial activities, is posing special concern, since toxic waste is generally stored on site or disposed of in municipal landfills.

In Italy, 53 industrial districts located in the coastal provinces have been identified. Most of them are located in the eastern coasts of Italy, towards the Adriatic side. More than 77,000 ha of marine and coastal areas are included in the perimeters of 17 coastal Sites of National Interest (SINs), established according to the national law as highly contaminated areas entailing a high health and ecological risk (Rizzo et al., 2022)

In Spain, territorial contrasts are evident: the weight of industry on the GDP is higher in Burgos, Navarra, Álava and Gipuzkoa (north-eastern part of Spain) compared to its relative weakness in other regions located in the central and southern regions (Extremadura, Madrid, Andalusia) and in the the Balearic Islands. Industrial activities include agro-food activities, chemical and pharmaceutical production and transport equipment. The beaches of the Spanish Mediterranean coast suffer from significant pollution due to local industries and agriculture. Moreover, microplastic pollution is relevant, with some Spanish beaches (Tarragona, la Pineda) designated among the most polluted in Europe in microplastics.

In Greece, the Athens region accounts for almost half of the country's industrial activity, while the other main centers are Thessaloniki, Patras and the port of Vólos, in Thessaly. Heavy industries are concentrated in Athens (chemicals, mechanical and electrical engineering, aeronautics), Piraeus (shipyards), Thessaloniki (metallurgy,

chemicals), Patras (chemicals) and Vólos (metallurgy). The pollution of the Gulf of Evia is posing special concern, due to the discharge of million tons per year of rust, which contains toxic heavy metals such as nickel, chromium, cadmium and mercury.

Lebanon has some 130 industrial zones, but they lack adequate infrastructure. Many are located in the middle of cities and on the coast of Lebanon. The industrial sector is essentially a light industry, targeting mainly food and beverages, followed by other everyday consumer products.

Tourism activities occur both on land (coastal tourism) and at sea (maritime tourism), Both forms of tourism have played a major role in the degradation of the marine and coastal environment. The rapid development and construction of infrastructure (see chapter II.2 about urbanization and littoralization) has been encouraged by the governments of Mediterranean countries to meet the increasing demand of services for tourism. This development and overcrowding has led to pollution problems (marine litter, waste water discharges, air emissions) and other forms of degradation of ecosystems (see chapter II.8 about habitats and endemic species) in many parts of the Mediterranean.

The key message is that all these activities impact on the ecological value of Mediterranean coastal areas that tourism relies on. Tourism is often concentrated in areas where nature offers the greatest wealth. Crystal waters, clean fine sand beaches, sea bottoms rich in vegetation and fish species are among the main factors that attract tourism fluxes towards the Mediterranean coasts. Pollution that follows the unsustainable development of economic activities, including tourism itself, acts as a significant potential threat for its maintenance and further enhancement.

Marine litter represents an enormous issue for marine environment, the coast, as well as for touristic activities in the region. In the Mediterranean, the input of plastics into the sea has been estimated in over 260,000 tonnes per year (UNEP/MAP, 2020; Jambeck et al. 2015), and Jambeck et al. 2015), depending on the coastal population, which may vary depending on the country, representing more than 2% of the total inputs in the world's oceans. Key economic sectors in the Mediterranean, such as professional and recreational fisheries, aquaculture, tourism and shipping, also generate large amounts of litter that end up as marine litter (UNEP/MAP, 2020). The Regional Plan on Marine Litter Management in the Mediterranean was adopted in 2013 by the 18th Conference of the Parties to the Barcelona Convention, providing a first example of initiatives towards this issue, targeted at Regional Sea Convention level.







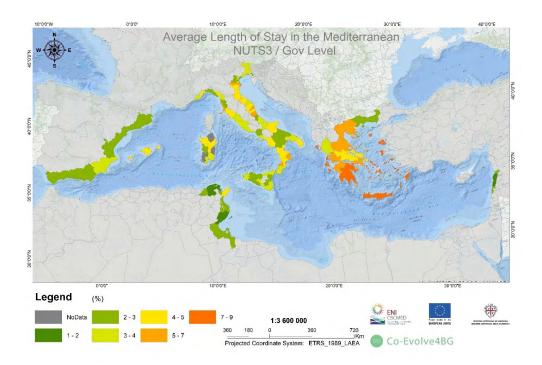


Figure 5. Areas of industrial zones in the coastal regions of the five Mediterranean countries analyzed in this study

II.5. Conflict/Synergy among different uses on land and at sea and land-sea interaction in Blue Growth

Tourism industry requires space to build infrastructure and services needed to support its development. New dedicated areas for tourism may conflict with existing activities along the coast, such as aquaculture, agriculture and industry. However, different activities can not be mutually exclusive, but can coexist, especially if they embrace the principles of sustainability of economic development. Beyond simple coexistence, synergies may be even possible. For example, as reported in Schultz-Zehden et al, (2018), sustainable tourism can develop in combination with aquaculture, providing various socio-economic and environmental opportunities and benefits. Several small-scale examples of such a combination actually exist in the Mediterranean, even if they are still embryonic in their concept. In other areas, where aquaculture is practiced with intensive farming, coexistence and synergies are more difficult and conflicts with tourism can also arise. In general, a low level of conflict between aquaculture and tourism was found along the Italian and Spanish coasts, while this interaction poses more concern along the Greek and Tunisian areas. Synergies were also highlighted for the Lebanese coasts.

Dedicated areas for the tourism industry in the five Mediterranean countries addressed by this study show a general increase in surface area in the period 2009-2019. Though data for Italy and Greece are lacking, Tunisia is in first place, having a gain of 162.11% in 10 years, followed by Lebanon (31.98%) and Spain in last place (4.51%).

Similarly, dedicated areas to aquaculture also increased, with Greece on the top (305.51%), followed by Tunisia (153.56%) and, to a lesser extent, Spain (16%). In this case, data are not available for Italy and Lebanon.

Regarding the areas dedicated to industrial activities, it is clear that Lebanon is on top of the list of the investigated countries, with an increase of 91% between 2009 and 2019, followed by Italy with 16.62% and Tunisia with 5.92%. Spain is the only country that has a quite stable trend or very slight regression of areas dedicated to industrial activities (-0.68%).

The analysis of conflicts revealed that industry is the sector with the most likely conflicts with tourism. This conflict can be regarded as a threat that is limiting tourism development, especially in areas potentially suitable for tourism. Conflicts are especially observed in Italy with a high level of conflict in all regions of the country. Similarly, in Tunisia, the industry is in conflict with tourism in the majority of governorates, but especially in the governorate of Gabes. Low level or absence of conflict instead occur in other areas of the same country where the economy is based on light industries or mainly devoted to agriculture.

Concerning agriculture, during 2009-2019, Lebanon lost the most areas that were devoted to agriculture compared to the other four countries, with a loss rate of -19.82%. In second place, Greece lost 5.86% of areas dedicated to agriculture followed by Italy with relatively low reduction (-1.65%). A very slight positive trend was instead recorded for Spain and Tunisia (2.07% and 0.76% respectively).

Conflicts between agriculture and tourism are lower compared to those observed with industry, with some cases of synergies. However, in Lebanon, tourism is in strong conflict with agriculture. Indeed, especially in Beirut, the strong increase in tourism-dedicated areas have dominated over those dedicated to agriculture, especially on the coast.

In general, massive investments in the tourism sector in coastal regions have been generating an occupation of vast areas of the coastline in vulnerable sites and a degradation of the urban and natural environment. Conflicts between tourism and nature conservation are therefore likely in the five considered Mediterranean countries, unless sustainable models are adopted. A good example was found in Tunisia, the authorities of the Governorate of Medenine (the coasts of the island of Djerba) have









worked to ensure a parallel development of all activities taking into account the preservation of the environment.

The results of the conflict analysis remarks that the need to enhance sustainable models in all marine and coastal sectors, particularly those targeting coexistence opportunities with nature conservation and between different economic activities. This can help to overcome spatial conflicts. This can reduce some constraints that actually limit the development of tourism in some areas of the Mediterranean region.

II.6. Safety and security challenges

Natural disasters are defined as all phenomena occurring in the physical environment that are harmful to humans and that are caused by external forces, such as earthquakes, volcanoes, tsunamis. Anthropogenic disasters are all phenomena attributable to human activities that have an impact on the environment and on humans, such as pollution, industrial plant explosions, gas dispersions and lethal emissions into the atmosphere. Similarly, disasters such as forest fires directly caused by human activities are also classified as anthropogenic when they are directly related to industrial or human activities in general.

Both natural disasters and man-made disasters have an impact on tourism in the Mediterranean and on other economic activities. However, their dynamics of influence and the reaction of communities are completely different. For natural disasters, a sense of helplessness and fatality prevails: the most common feelings are solidarity and compassion, since, regardless of human conduct, these disasters cannot be avoided. For human-made disasters, the common reaction of the local population is the feeling of anger, rebellion, and the search for civil justice.

A literature research was done about natural (earthquakes, volcanoes, tsunamis and floods) and man-made disasters (terrorism, health risks) in the five Mediterranean countries covered by this study, allowing to highlight the main impacts of such events on tourism. Indeed the exposure and vulnerability to such events can discourage tourists in reaching some at-risk areas, hindering the development of the sector.

Italy, Spain and Greece are **seismic areas**. Italy is especially prone to earthquakes in the area of the Appennini mountain chain, which lies on a tectonic fault. The Iberian Peninsula is located within the seismotectonic context of the Mediterranean, on the border of the Eurasian and African plates. Areas of high seismicity in Spain are the southern regions and the Pyrenean chain. Greece is one of the most active areas of the eastern Mediterranean and of Europe. The country's vulnerability to earthquakes is especially high, since about 80% of the buildings have been constructed before

1985 without or with a reduced earthquake-resistant design (Pomonis A et al., 2012). Measures to reinforce more vulnerable buildings (especially hospitals and schools) are still few, although seismological networks to detect earthquakes (http://www.geophysics.geol.uoa.gr/) and alert citizens have been improved. In Tunisia, no recent earthquakes over the level 5 of the Richter scale have been mapped. However, possible indirect risks can derive from other seismic areas located in the Western Mediterranean. Active **volcanic areas** are especially located in Italy, including volcanoes such as Vesuvio, Vulcano and Campi Flegrei (with a very low eruptive frequency) and Etna and Stromboli that still represent a (moderate) threat in the short run.

The vicinity to a tectonic plate boundary, particularly in subduction zones and submarine active significant fault zones, makes coastal areas prone to **tsunamis** (Batzakis, Dimitrios Vasileios, et al. 2020). Greece is particularly affected and has a monitoring system to identify the potential threat of a tsunami wave, which could have devastating impacts both to the coastal and beach ecosystem and the coastline infrastructures.

Floods are widespread phenomena in the investigated countries. They include rain floods, river floods and coastal floods. Though considered among natural disasters, several anthropogenic factors contribute to their occurrence, such as: channelization of rivers, paved surfaces in urban areas, deforestation, urbanization and littoralization. Climate change is expected to exacerbate this threat, with more frequent extreme weather events and sea level rise. As an example, in Tunisia, the latest flood in Cape Bon (the northeastern tip of Tunisia) in 2018, was the most devastating flood in the history of Tunisia. Several houses and even hotels were isolated. Beaches and sea were flooded and polluted by solid wastes.

Among man-made disasters, **terrorism** represents an obvious relevant threat to tourism. Tunisia is one of the most affected countries. It has experienced a clear decline in tourist flow after specific events that marked its recent history: the attacks of 11 September 2001 in the USA and of 21 April 2002 in Djerba, the revolution of 14 January 2011 and the attacks on the Museum of Bardo and Sousse in 2015 (Figure 6).







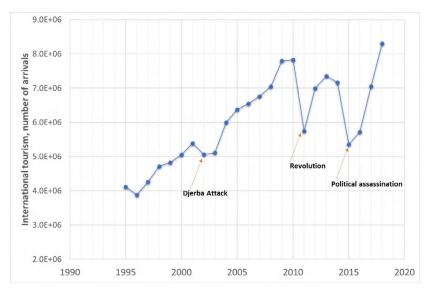


Figure 6. Sensitivity of tourist entrances to socio-political and security events in Tunisia

The spread of **infectious diseases** (see also chapter II.7 about tourism wellbeing and infectious diseases) is another threat to tourism, related to globalization: mobility and connectivity between countries collectively contribute to disease outbreaks across the globe (Sigler et al., 2021). The 2020 COVID pandemics is an emblematic example, that hit the Asian countries first and then reached Europe and the rest of the world. Human migration flows from African and other developing countries towards the northern coasts of the Mediterranean also poses some concern. However, contrary evidence shows that tourism can be even a stronger cause of infectious disease spreading: the more than 50 million tourists that Spain receives each year pose a much higher risk of introducing diseases than the 400,000 immigrants a year.

An attractive touristic destination needs to have some essential features. First and foremost, it must be a safe place, free from wars and terrorism, and, more in general, from dangerous situations of any kind. The results of this analysis show that several natural and man-made disasters have affected or can potentially affect the tourism sector in the analyzed Mediterranean countries, by discouraging tourist flows and by destroying cultural heritage, and service infrastructure. The analysis also remarks that the negative effects of natural disasters, as earthquakes and floods are enhanced by wrong choices of economic development in coastal areas, such as excessive urbanization (see chapter II.2), uncontrolled increase of built up areas close to risky areas, lack of maintenance of old buildings without resistant design etc..

The uncontrolled urbanization also concerns the growth of touristic areas since the 1970s. Commercial tourism is the dominant model, while illegal constructions remain high throughout the Mediterranean. As a vicious loop, this model of tourism can

intensify the impacts of natural and man-made disasters that have consequences on the attractiveness of the area for touristic purposes.

II.7. Tourist well-being and health emergencies

Taking safety into account is a fundamental priority for the sustainability of the tourism sector. More than any other economic activity, the success or failure of a tourism destination depends on being able to provide a safe and secure environment for visitors.

Beyond natural and human made disasters (see section II.6), health risks from infectious disease are among the permanent fears of tourists when choosing their travel destination. Over the previous three decades, several infectious diseases, with different characteristics, intensely affected tourism in the Mediterranean region (bird flu, swine flu, West Nile virus infection, Ebola virus). Most of these diseases have been spread from their original infection areas to other more distant areas by multiple vectors: migratory birds, insects, movement of goods and individuals, and means of transport. In 2020, the Covid-19 pandemics (SARS-COV-2, infectious disease of viral zoonosis type) determined the worst year for global tourism (UNWTO, 2020), with international arrivals down -74% compared to 2019. Destinations received 1.1 billion fewer international arrivals worldwide in 2020 compared to the previous year, due to unprecedented decline in demand and extensive travel restrictions. In the same year, the fall of GDP was enormous in the northern and southern shores of the Mediterranean.

The capacity of containment of epidemic's effects, the rate of vaccination and the recovery process in various Mediterranean countries are determined by the effectiveness of crisis management plans in place and of health care systems. The analysis of the five Mediterranean countries investigated in this study remarked on the presence of huge disparities of vaccination rates (Figure 7). Until 10/3/2022, 84.1% of the population in Spain have received full vaccination, 80% in Italy, and 70.6% in Greece. On the other hand, only about 54% in Tunisia and only 31.9% in Lebanon got vaccinated.







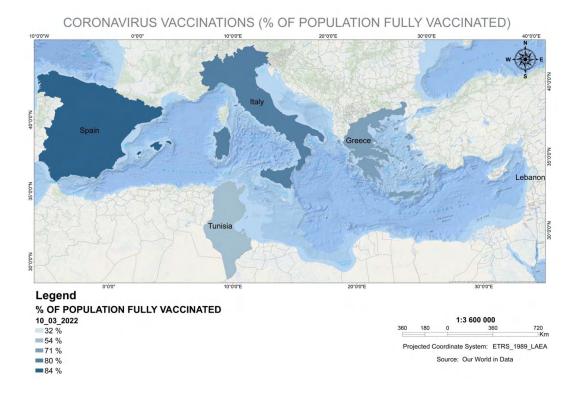


Figure 7. Vaccination rate (% of population fully vaccinated) in the n the coastal regions of the five Mediterranean countries analysed in this study

High vaccination rates and high-quality health services are enabling factors for tourism, since people are encouraged to travel to safe destinations.

Different strategies were adopted in different Mediterranean countries to mitigate and recover from the catastrophic impact of Covid-19 on tourism. Italy reinforced local tourism through financial incentive to encourage Italian people to spend their holidays in their own country. Similarly, Spanish preferred local travels. Moreover, Spanish people inclined toward non-hotel accommodations (tourist flats, campsites, rural tourism accommodations), to avoid contact with other people and limit infection possibilities. In Spain, the number of non-hotel accommodations rose from 127,553 structures in July to 141,372 structures in August 2020. In Tunisia, hotels in Hammamet, Sousse, Monastir, and Djerba proposed low prices to attract Tunisians to spend their vacations despite the risks of Covid-19 infection.

Different experiences from Mediterranean countries show that the following factors increase the resilience of tourist destination to health emergencies, with specific reference to infectious diseases:

- Diversification of tourism offer: rural tourism and other types of niche tourism that rely on nature and open air activities were less affected by the pandemics compared to other types of mass tourism, like for example cruises that concentrate many people in the same site. This confirms the need to diversify the tourist product in the Mediterranean basin by exploiting the natural and cultural heritage of the various regions in a sustainable way.
- Level of the healthcare system: high level health services attract tourists that look for safe destinations. Investments in these services and the related infrastructure can act as long term enablers of tourism development.
- Vaccination: specifically for Covid-19 pandemics, the rate of vaccination (variable from country to country, according to the different income level) demonstrated to be able to control the disease, thus encouraging tourism.

II.8. Habitat and Endemic Species

The Mediterranean Sea is a hotspot of biodiversity, characterized by a high level of endemicity. It is bordered by many lagoons and other wetlands, and has numerous islands (deltas, marshes, lagoons, estuaries, etc.), marine banks and significant wintering areas, reproduction, and migration for several species. In terms of biodiversity, the main Mediterranean habitats are the marine macrophyte beds, the coralligenous and other bio-concretions. Marine mammals and sea turtles represent iconic species for biodiversity in the Mediterranean: eight marine mammals species were found in the western basin, out of the total nine, while in the central Mediterranean and the Aegean seas two of the three resident sea turtle species (loggerhead, green, and leatherback turtles) are observed (Chrysoulidis et al., 2021).

The main problems that threaten marine and coastal biodiversity in the Mediterranean remain urbanization, overexploitation of natural resources, proliferation of alien species, increasing disturbance from maritime traffic and nautical sports, and pollution of marine ecosystems. In a climate change context, this has led to the loss of biodiversity, growing scarcity of the most sensitive endemic species and degradation of unique coastal and remarkable habitats. The complexity of cause-effect relationships makes it often challenging to distinguish the contribution of different pressures (natural, anthropogenic or climate change) to the overall changes observed in marine ecosystems.

Climate warming is expected to have a significant influence on Mediterranean biodiversity, mainly its endemic species. In fact, global warming has a strong effect









on the growth, survival, and reproduction rates of many species (Diaz Almela et al., 2007). Projections for high emission scenarios show that endemic assemblages will be modified with numerous species becoming extinct in the mid 21st century. Changes in the natural habitats of commercially valuable species would have many repercussions on marine ecosystem services such as tourism, fisheries, climate regulation, and ultimately on human health.

Recreational boating and cruising exert well known impacts, including anchoring, littering, emission of underwater noise, water pollution and generation of waste in ports and marinas. Anchoring can damage delicate marine ecosystems, such as seagrass beds and coral reefs, and littering can cause harm to marine life through ingestion or entanglement. Notwithstanding, several good practices exist and are being increasingly implemented across the Mediterranean countries, providing tools to reduce the environmental impacts on habitats caused by recreational boating and cruising. Practices include spatial measures (e.g. restricted access areas, no-anchoring areas), regulatory measures (e.g. speed reduction) and monitoring activities (Plan Bleu, 2022a) that can involve the collaboration of tourists and tourism operators, as well as managers of marine protected areas. These good practices can act as enablers for the sustainable development of tourism along the coastal and marine areas of the Mediterranean.

In the Mediterranean, tourism is often nature-based, involving excursions to natural sites (both on coastal land and at sea) and wilderness areas. Also termed as "ecotourism" it involves traveling to preserved destinations where fauna, flora, and cultural heritage are the center of attractions. This type of tourism, whenever not well managed, exerts a number of pressures on the natural resources on which they rely (Msayleb et al., 2021). However, synergies between environmental protection and sustainable tourism in areas of high ecological value are also possible and documented in different locations of the Mediterranean basin (De Pellegrin et al., 2019). Indeed, the protection of marine ecosystems could be considered as a primary factor able to support the sustainable development of tourism. Indeed, the tourist community is always looking for diversified actions and programs (e.g. guided excursions, participation in environmental education initiatives, observation of flora and fauna). This diversity of offers could only be provided in areas where ecosystems are well preserved.

A wide range of area-based conservation measures for the protection of species and habitats of high ecological value have been established in the Mediterranean basin.

According to the analysis made by MedPAN and UNEP/MAP-SPA/RAC (2021) (Figure 8), 8.33 % of the Mediterranean Sea is under official designation of a "protected"

statute". This designation include Marine Protected Areas (MPAs) with a national statute (including the Cetaceans Migration Corridor in the Mediterranean - Spain), marine EU Natura 2000 sites (designated under the EU Habitat and Birds Directive), and the Pelagos Sanctuary for marine mammals (France, Italy, Monaco). Considering the five Mediterranean countries considered in this Project (Table 1), Spain owns the largest marine surface under official designation of a protected statute, followed by Italy and Greece. On the contrary, very low levels of protection are found in Tunisia and Lebanon.

Table 1: Extension of marine protected areas (various official designations at national, European and Mediterranean level) according to the analysis made by MEDPAN and UNEP/MAP-SPA/RAC (2021)

Country	Total Number of safety measures	Reasons of the installation of the measures
Spain	73,853.04	28.34
Italy	52,380.37	9.76
Greece	15,468.85	0.64
Tunisia	124.1	0.12
Lebanon	125.36	0.62

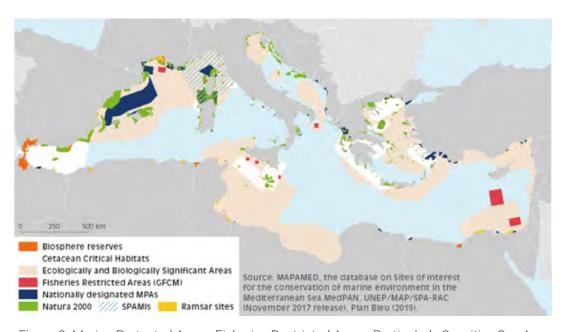


Figure 8. Marine Protected Areas, Fisheries Restricted Areas, Particularly Sensitive Sea Area and priority areas for management (Ecologically and Biologically Significant Areas, Cetacean Critical Habitats). Source: UNEP/MAP and Plan Bleu, 2020 (based on 2017 MAPAMED data).









The role of the European Natura 2000 network is crucial in determining this high disparity between countries of the Northern shores of the Mediterranean (belonging to the EU) and countries of the Southern shores.

Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types.. It stretches across all 27 EU countries, both on land and at sea. The aim of the network is to ensure the long-term survival of Europe's most valuable and threatened species and habitats, listed under both the EU Birds Directive and the Habitats Directive. The extension of marine Natura 2000 sites in Italy, Spain and Greece is close to 55,000 km2, representing 61% of the total protected area. Natura 2000 network does not preclude human activities, but encourages synergies between conservation and sustainable use of natural areas. The European Commission produced a number of sector-specific documents to guide the development of some maritime activities such as aquaculture, wind energy development and mineral extraction in marine Natura 2000 sites (European Commission, 2010, 2011, 2012).

Another network, relevant for the whole Mediterranean basin (both EU and non-EU countries) is that one established by the Protocol on "Specially Protected Areas and Biological Diversity in the Mediterranean" (SPA/BD Protocol) within the framework of the Barcelona Convention. The List of Specially Protected Areas of Mediterranean Importance (SPAMI's List) promotes cooperation in the management and conservation of natural areas, as well as in the protection of threatened species and their habitats. According to the provisions of the SPA/BD Protocol, SPAMIs may be established in the marine and coastal zones subject to the "sovereignty or jurisdiction of the Parties and in areas situated partly or wholly on the high sea". The protocol's provisions aim at safeguarding representative types of coastal and marine ecosystems, habitats in danger of disappearance and habitats critical for the survival of endemic species.

Considering the five Mediterranean countries of this study, 12 SPAMI have been established in Italy, 10 in Spain, 3 in Tunisia and 1 in Lebanon (MEDPAN and UNEP/MAP-SPA/RAC, 2021). The largest number and total surface extension of marine Natura 2000 sites is found in Greece.

II.9. Cultural and heritage sites

The five countries considered in this study (Greece, Tunisia, Lebanon, Italy and Spain) are rich in history, archaeological sites and ancient residences. Natural and cultural sites have been protected since 1972 within the global framework of the World Heritage Convention. While protecting heritage sites, the Convention aims to bring these sites to people that can visit them and appreciate their value. Strategies to enhance the fruition of cultural and natural heritage are developed to attract tourists

to the areas where these sites are located. For those communities whose particular properties or places are recognized by UNESCO, the inscription in the World Heritage List is an opportunity to attract more tourists to their territories, generating new revenues. Conversely, attracting a massive number of tourists can destabilize the local population and threaten the integrity of these sites.

Among the five Mediterranean countries of this study, Italy is the country with the highest number of officially recognized cultural sites in coastal regions, followed by Greece and Spain (Figure 9). The results of this study reveal that, despite data lacking for most Italian sites, cultural heritage is protected, in all countries, except for Tunisia where unprotected sites have been identified and mapped. Moreover, most cultural sites of the five countries are experiencing a growth in the annual number of visitors.



Figure 9. Location of cultural sites in the coastal regions of the five Mediterranean countries analysed in this study

Cultural sites are threatened by several factors. Those analyzed in this study are: climate change (and the associated impacts of flooding and erosion), natural processes (ambient conditions, aging) and bad management and conservation practices (lack of maintenance, dispersion of collections). All these factors are potential threats not only to the cultural heritage but also to tourism that relies on it.

Concerning flooding and erosion, Reimann, et al. (2018) estimated that among the 49 UNESCO sites located in n low-lying coastal areas of the Mediterranean, 37 sites









are at risk from a 100-year flood and 42 from coastal erosion, already today. The highest number of Word heritage Sites at risk from flooding can be found in Italy (13), which corresponds to 87% of the Italian UNESCO sites located in the low lying coastal zone. The risk of erosion particularly concerns sites located directly on the coast: under current conditions, 42 UNESCO sites are at risk from coastal erosion, which corresponds to 86% of all sites located in the low lying coastal zone (Reimann, et al., 2018).

Examples of the most threatened sites for coastal erosion and flooding in the five investigated countries are the archaeological remains of Tyre in Lebanon (close to the water edge and built on the sand, Westley, et al., 2021), the archaeological complex of Tarragona in Spain, Pythagoreion and Heraion of Samos in Greece, the Punic city of Kerkouane and its necropolis in Tunisia, the city of Venice and other Adriatic sites in Italy.

Natural processes do not threaten heritage only in the form of devastating catastrophes (e.g. earthquakes, landslides). They also act as a permanent condition of the environment in which the heritage asset is located. Heritage sites are exposed to insects, intrusive vegetation, fungal attack, algae, migration of salts, aging and soil compaction.

Archaeological sites and large historic residences, houses and mansions and their contents and estates are threatened by lack of maintenance or bad management. This can cause the dispersal of furnishings and collections and deep alterations to accommodate modern standards of comfort or new uses. Looting of archaeological heritage is a major threat that affects underwater heritage in particular, while treasure hunters are facilitated by new technologies and legal loopholes in international conventions and national laws.

Notwithstanding threats, enabling factors include:

- Implementing coherent spatial planning both on land and at sea to minimize conflicts and maximize synergies between different uses;
- Encouraging models of sustainable and more aware tourism that do not harm cultural sites;
- Unlocking the tourism potential of cultural heritage through public and private funding.

II.10. Coastal protection measures

Several protective structures are commonly installed along the coasts to reduce erosion and the risk of flooding, thus protecting exposed vulnerable assets, population and economic activities, including tourism. Erosion is a natural phenomenon, enhanced by excessive urbanization, gradually nibbling the shore, and in particular affecting sandy beaches and chalk cliffs. Flooding (due to extreme events of storm surges and to the slow onset of sea level rise) particularly affects low lying coastal zones.

Engineered infrastructure (also termed as "grey or hard measures") can be highly protective, but can also generate several side effects on the surrounding environment (change in the longshore drift, erosion in the adjacent beaches, alteration of ecosystems). Moreover, in a future looking perspective dominated by the effects of climate change, hard engineered measures need to be continuously heightened and reinforced. Therefore, if they are not maintained on a regular basis, the level of protection of these structures will be reduced. (These Nour Chahrour, 2021). Grey measures to mitigate beach erosion include both structures perpendicular to the coast (groynes) and parallel to the coast (breakwaters, artificial reefs, seawalls). Groynes trap sediments from longshore drift so that the coast behind the sand layer is protected, while breakwaters and artificial reefs mitigate wave energy against the beach. Seawalls are built at the transition between the beach and the mainland or dune, to protect the inland area against wave action and prevent coastal erosion. and flooding.

Green measures, also termed as *nature based solutions*, are increasingly receiving attention at the international level as no regret measures able to combine multiple goals and provide long term benefits for the environment and the society. In coastal areas they include periodical sand nourishment activities, to maintain the desidered beach width and the creation or strengthening of natural dune cordons to prevent erosion.

The real challenge of coastal protection measures is to ensure human security and promote economic development without compromising ecological integrity and without increasing the vulnerability of other areas and sectors.

Across the Mediterranean region, various measures have been implemented to safeguard coastal areas from erosion and flooding. Considering the five Mediterranean countries of this study, results indicate a variegate combination of both grey and green measures. Spain has the highest number of protection measures along its coast, followed by Lebanon, Greece, and Tunisia. Measures are mainly implemented to safeguard beaches, buildings and cities located inland. They can be regarded as clear enablers of tourism maintenance and development in areas exposed to erosion and flooding across all investigated countries.







Some pictures illustrating common implemented measures in the five countries are illustrated below.



Figure 10 Combination of different protection works along the El Mamounia section in Kélibia (Tunisia), 2017.



Figure 11. Protection structure parallel to the coast made of stones in Spain El Masnou (After the works).



Figure 12 Groynes and breakwaters along the Greek coasts (Source: Discovering Happisburg).

II.11. Water supply and depuration

Rapid growing population and urbanization in the Mediterranean region is generating substantial pressure on water resources, with increasing demand for agricultural, energy and industrial uses. Mediterranean countries are highly dependent on both surface and groundwater resources, and both are affected by unsustainable consumption patterns and over-abstraction. Irrigation is one of the most water demanding uses, causing rapid aquifer depletion (UNEP/MAP and Plan Bleu, 2020). Moreover, climate change influences water availability by altering the hydrological cycle. It also determines an increasing demand of water (for irrigation, cooling, drinking and recreational activities) due to the increasing temperature.

The growth of tourism is generating a significant footprint on water resources worldwide, creating particular concern for those areas affected by water scarcity, like the Mediterranean region, especially considering the long term impacts of climate change.

In Italy, one of the problems that are still unresolved is the loss of water in the distribution networks, due to the poor condition of the water infrastructure. The percentage of total water losses of the national drinking water distribution network is 42.0%, equal to 3.4 billion cubic meters dispersed. In 2017, the total water volumes withdrawn amounted to about 33 billion m3 of which 43% was delivered to agricultural use (14.4 billion m3), the sector that is generating the highest pressure on national water resources. A growth in the incidence of tourism on the consumption of drinking water was also reported (ISPRAMBIENTE, 2020).

In Greece, per capita consumption of water is around 830 m3 with peaks of over 1000 m3 recorded during heat wave days (EYDAP, 2014). Around 75% of total freshwater withdrawals are for agriculture with irrigated areas representing a third of total cultivated areas. The uneven distribution of rainfall leads to scarcity of water resources during the peak period for irrigation, a time that is equally crucial for other uses such as tourism. Therefore, about half of water for irrigation is pumped from aquifers. To save water resources, in the Greek Islands there is a network of Rain Water Harvesting (RWH), which provides essential water resources to the local population. Desalination plants also provide additional water resources in Greece, but their use across the Mediterranean region need to be carefully assessed, due to many unsolved problems related to high energy consumption and the environmental impacts. Like Italy, also Greece faces the problems of water losses in the distribution network with a gross estimation of about 25 to 50% of total supplied water.

In Spain, the total urban water supply water is about 3730 hm3 per year, with a volume of treated wastewater of 4450 hm3. This difference is due to the fact that the treatment plants also receive rainwater and other possible effluents. The main urban water use









in Spain is for domestic use (68%) and industrial and commercial consumption (14%). Water consumption per inhabitant/day has been decreasing in recent years, from 169 liters/inhabitant/day in 2000 to 128 liters/inhabitant/day in 2018.

In Tunisia, the most serious threat to surface waters is related to the premature siltation of dams and hill-reservoirs, which is mainly due to the frequency of very intense rainfalls. Although Tunisia is quite rich in groundwater resources, both deep and shallow, these are in some cases heavily exploited (coastal and inland regions). Overexploitation is a growing problem, estimated at 27% of the number of surface aguifers and 14% of fossil aguifers dedicated mainly for irrigation. This phenomenon is often accompanied by deterioration of quality, in terms of increasing salinity. The risk of pollution and resource degradation (extension of urbanization, intensification of pollution and use of fertilizers and pesticides) are other concerns for the sustainability of water resources. For a total allocated water volume of 3,020 Mm3/year, only 2,095 are used. This indicates that nearly 925 Mm3/year, is considered as water loss in the national water balance (Elloumi, 2016). The tourism sector consumes about 25 million m3/year which represents about 1% of total water uses and 5% of drinking water uses (Besbes et al., 2018). However, this activity poses some very specific problems as seasonal concentration with peaks coinciding with periods of low water resources, spatial concentration on the coastline, on sites characterized by low local water resources (islands), and often in sensitive natural sites, and touristic activities often relying on facilities consuming excessive water (golf courses, swimming pools and aquatic centers).

Data collected at the national level for the five countries analyzed in this Project, remark the need to promote actions to increase water supply efficiency (avoiding water losses through the distribution network), reuse waste waters for secondary uses (agriculture, industry) after proper treatment, and increase rainwater harvesting.

II.12. Transport and accessibility

The development of the road system is commonly seen as a factor of development. On the one hand, it contributes to opening up territories and offers new economic opportunities through the strengthening of accessibility. On the other hand, it is considered a driver of the economic growth by its weight in terms of investment and consumption.

The increasing development of tourist areas is related to the development of road infrastructure to make the coasts more easily accessible by tourists. Tourist areas have been gradually equipped with a road infrastructure that allows and facilitates accessibility.

European Mediterranean countries have a dense and efficient network, even if great inequalities persist between the north of the Union and the extreme south of Spain or Greece (Eurostat, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200528-1).

Non-European countries have less developed road infrastructure, limiting the possibility to reach coastal areas and thus to develop new tourism activities. For example, in Tunisia public transport capacities are often insufficient. Overloaded vehicles reduce the attractiveness of these public transport lines, which are usually used by passengers with no other choice. Buses are also very heavily affected by traffic congestion. Therefore, the access to touristic areas is generally ensured by private transport

Maritime transport is an important economic sector for the Mediterranean basin, The cruise sector is in rapid expansion. The number of individual cruise passengers in 2017 was more than 4% higher than the number of passengers who took a cruise the previous year and more than double compared to 2006, when 12 million passengers took a cruise (MedCruise Association, 2018). Mediterranean Sea is one of the busiest waterways on the planet, accounting for 15% of the total number of ships and 10% of the tons of DWT (heavy goods vehicles) (Planbleu, 2021). The As a result of this continued growth, ports face the challenge of providing adequate infrastructure to accommodate large cruise ships and modernizing facilities to accommodate an everincreasing number of cruise passengers, as well as to collect and dispose of related waste.

Finally, the presence of marinas (Figure 13) for recreational boating along the coasts of the investigated countries well overlaps also with the location of tourism areas, showing that coastal and maritime tourism relies on the presence of such type of infrastructures.







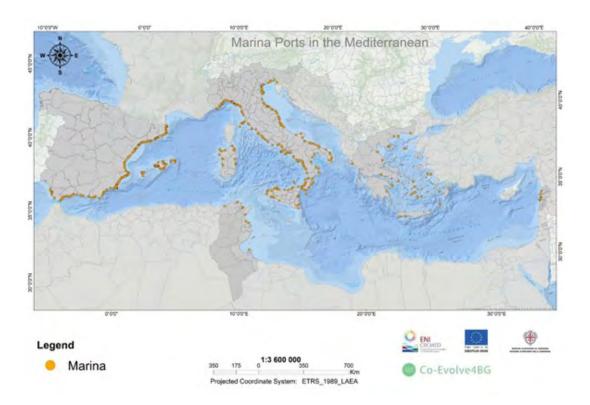


Figure 13. Location of Marinas for recreational boating in the coastal regions of the five countries analysed in this study.

II.13. Legislation, administrative constraints, governance

A wide number of policies at the global, European, Mediterranean and national levels have supported the development of sustainable tourism since the 90s of the past century.

At the global level, the Charter for Sustainable Tourism was adopted in 1995 at the first World Conference on Sustainable Tourism, held on the island of Lanzarote (Spain). This historic action took place under the auspices of UNESCO, the World Tourism Organization (UNWTO) and the leading associated international organizations programmes, such as the United Nations Environment Programme (UNEP), the MAB Programme (Man and the Biosphere), the World Heritage Centre, the European Commission and the United Nations Division for Sustainable Development. For the first time, the charter officially recognised the need to take global to support the sustainability development of tourism, recognizing that the "ambivalence" of this sector that "can contribute positively to socio-economic and cultural achievement, while at the same time it can contribute to the degradation of the environment and the loss of local identity". The charter also recognizes the "need to develop a tourism that

meets economic expectations and environmental requirements, and respects not only the social and physical structure of destinations, but also the local population".

As a fundamental frame of reference for responsible and sustainable tourism, the Global Code of Ethics for Tourism (GCET) is a comprehensive set of principles designed to guide governments, travel industry and communities in tourism development. It aims to help maximize the sector's benefits while minimizing its potentially negative impact on the environment, cultural heritage and societies across the globe. Adopted in 1999 by the General Assembly of the World Tourism Organization, although not legally binding, it was acknowledged by the United Nations in 2001.

At the European level, the 2007 Commission Communication, 'Agenda for a sustainable and competitive European tourism' (COM/2007/0621 final) listed a set of key principles that should guide tourism development in Europe against major challenges. In June 2010, the European Commission adopted the Communication "Europe, the world's No. 1 tourist destination – a new political framework for tourism in Europe" (COM/2010/0352 final), to encourage a coordinated approach for tourism initiatives and define a "new framework for action to increase its competitiveness and its capacity for sustainable growth". The European Tourism Manifesto for Growth and Jobs is a declaration adopted in December 2015 by 24 European public and private tourism stakeholders, calling . Sustainability is among the manifesto's priorities, including the environmental, economic, social and cultural components. Diversifying the offer is another Manifesto's priority, especially promoting initiatives based on natural resources to contrast excessive seasonality in tourism flows.

At the Mediterranean level, the Integrated Coastal Zone management Protocol issued in the framework of the Barcelona Convention and the Mediterranean Strategy for Sustainable Development (MSSD 2016-2025) are two major policy documents supporting sustainable tourism. The ICZM Protocol (Art. 6) encourages sustainable coastal tourism that preserves coastal ecosystems, natural resources, cultural heritage and landscapes. It also promotes rural and ecotourism that respect the traditions of local populations, while promoting smart management and planning of the coastal zone (see also section II.14 Blue Economy).

The MSSD is based on the principle that economic growth needs to be harmonized with the protection of natural resources, and benefits need to be equally spread to the society. The implementation of the MSSD is supported by the UNEP/MAP – Barcelona Convention system, in particular through the work of the Mediterranean Commission on Sustainable Development (MCSD).

At the national level, public authorities have a crucial role in developing policies and programs to ensure the sustainable management of tourism. However, while the









cost of developing policies and strategic guidelines for sustainable tourism remains modest, the investment required to implement these guidelines is considerably higher.

Tunisia is promoting the diversification of the tourism offer through alternative proposals such as eco-tourism, cultural tourism and "desert tourism" to stimulate alternative tourist accommodations in inland regions, in order to achieve balanced regional development (Tunisian Ministry of Tourism 2021).

In Italy, the 2017-2022 national strategic programme for tourism advocates the achievement of objectives based on sustainable tourism to boost destination competitiveness by enhancing natural and cultural heritage and preserving natural resources.

In Lebanon, the national strategy that ran from 2015-2020 developed a policy to transform rural regions and large urban areas into thriving sustainable destinations for travel, including cultural, historical, religious, culinary, nature, sports, agricultural and adventure tourism.

Moreover, since tourism is a key sector, most Mediterranean countries have established ministries specifically dedicated to tourism. However, tourism is also a cross cutting sector that depends on several other sector developments. Multi-level coordination between various ministries is therefore required, involving for example the Ministries of the Environment, Culture and Regional Planning.

In Mediterranean countries, tourism management remains under the responsibility of national programmes, but the sustainable development of a coastal destination also depends on a concerted regional vision. Regional and local authorities are therefore relevant, with responsibilities that generally are focussed on the environmental preservation, the development of tourist areas and the protection of cultural heritage.

The results of this study reveal that the concept of sustainable development of tourism has spread rapidly in the Mediterranean basin, and it is now increasingly part of the political discourse and decision-making processes at national, regional and local levels. Although principles of sustainability are well embedded in national policies, many challenges and constraints persist and currently constitute obstacles to their actual implementation. Lack of cooperation between different sectors and different governance levels, lack of proper involvement of local communities in tourism planning as well as lack of comprehensive, reliable and consistent data on tourism flows, impacts and trends are among the most frequently reported challenges (Plan Bleu, 2017).

II.14 Blue economy

Since 2012, the international community has recognized the importance of adopting the blue sustainable economy as an overarching approach to ensure the sustainable development of coastal countries. This new concept emerged following the international conference on sustainable development held in Rio de Janeiro in June 2012, that highlighted the need for new approaches to ensure sustainable and inclusive management of marine environments and coastal areas. This need has been remarked with the launch of the Sustainable Development Goals of the United Nations 2030 Agenda. In particular the goal n.14 aims to "conserve and sustainably use the oceans, seas and marine resources for sustainable development.

In 2012, at the European level, the European Union adopted the concept of Blue Growth as "smart, sustainable and inclusive growth" for maritime activities (Blue Growth opportunities for marine and maritime sustainable growth, COM/2012/0494 final). In 2021 the European Commission approved a Communication about the blue economy (COM/2021/240 final), setting out a detailed agenda to reach the transition to the sustainability of maritime activities. The EU Blue Economy report (European Commission, 2022) groups maritime activities in (i) marine-based activities (that take place at sea) and (ii) marine-related activities (mainly based on land but that rely on marine resources). Moreover, it identifies a list of established sectors, with a proven contribution to the economy, and a list of emerging sectors, with significant development potential.

At the Mediterranean level, on 17 November 2015, the Ministers of the Union for the Mediterranean (UfM) adopted the UfM Ministerial Declaration on Blue Economy. The Declaration aims at strengthening the potential of the blue economy in the Mediterranean region, as well as improving maritime governance and achieving a conducive environment to promote jobs, innovation and knowledge-based business opportunities through the development of key maritime sectors. Six years later, Ministers adopted a new declaration on Sustainable Blue Economy (21/02/2021), committing to cooperate closely and address joint challenges in key blue economy sectors. They agree to promote transformative policies and tools such as maritime clusters or maritime spatial planning, and support the transition to carbon neutral and circular blue economy. New joint activities and projects will be set up on a wide range of issues, including blue skills, marine litter, marine renewable energies and nature-based tourism.

Also at the Mediterranean level, the UNEP/MAP-Barcelona Convention is working to ensure that the development of maritime activities does not come at the expense of marine and coastal ecosystems. The Barcelona Convention's Protocol of Integrated









Coastal Zone Management (ICZM) and the Conceptual Framework on MSP (Maritime Spatial Planning) encourage planning and managing maritime human activities in line with the Ecosystem Approach: an interdisciplinary and integrated approach to planning and management that recognises the richness and complexity of ecological systems and the continuous interactions among their components. The Naples Ministerial Declaration adopted at COP21 of the Barcelona Convention in December 2019 included committed to "take concrete action to to enhance the level of safeguard of the Mediterranean" in the context of sustainable development. Concrete steps are being taken within the framework of the Mediterranean Blue Growth Community of projects (Blue Growth Interreg MED horizontal project, 2019-2022) stemming from the previous InnoBlueGrowth project.

Tourism is considered as one of the main established sectors of the blue economy for European Seas and the biggest mature and growing sector across the Blue Economy in terms of GVA and employment (European Commission, 2022). Similarly, tourism has been gradually recognized as a key economic sector for the Mediterranean within the UNEP/MAP - Barcelona Convention system.

In all the five countries analyzed in this study, tourism is a strong and growing sector. In Lebanon, coastal tourism is an important element of the economic and social fabric of the country. Due to the limited distance of mountains from the coasts, the whole territory of Lebanon can be substantially considered as a coastal area. Conversely, maritime tourism in Lebanon is experiencing several constraints, due to geopolitical conflict, the lack of financial resources to develop new tourist activities and the existence of frequent sources of pollution such as the dumping of liquid and solid waste, oil spills, etc..

In Italy, although sea bathing and seaside tourism only generates 21% of arrivals, it accounts for 30% of attendance, making it the main type of tourism in Italy. High seasonality of tourism, with a strong summer peak is observed in Italy. Moreover, some destinations are overloaded with tourists, while others struggle to become popular destinations.

Tunisia is one of the main tourist destinations on the southern shores of the Mediterranean basin. Coastal tourism is one of the fundamental sectors of the Tunisian economy and a major contributor to the country's development.

The analysis made in the different Mediterranean countries reveal the importance of some enabling factors that can foster the sound development of sustainable tourism as key sector of the blue economy:

- Put in place clear measures on integrated coastal zone management (ICZM), as one of the decisive tools of governance which overcome the sectoral management of the coastal space. ICZM encourages sustainable coastal tourism that preserves coastal ecosystems, natural resources, cultural heritage and landscapes (Art. 9);
- Establish marine spatial planning to manage spatial conflicts and mitigate the impacts on the marine environment, by supporting decision making. MSP can deserve areas where sustainable tourism can have the priority over other uses or can coexist together with other existing activities
- Improve multi-level governance for various sectors of blue economy, ensuring the coordination between different sectoral plans
- Set up a list of indicators to monitor the progress of the blue economy and sustainable tourism in particular.
- Moreover, to ensure that these activities promote models of tourism that do not harm the Mediterranean ecosystem, suggested actions include:
- Improve the knowledge of the marine ecosystem of the Mediterranean, including its potential resources (e.g. for renewable energy)
- Protect biological diversity through the creation of new and well managed marine protected areas and other area based conservation measures
- Diversify the tourist offer and promote ecotourism and cultural tourism.
- Improve the consideration of climate change in coastal zone management

III. Conclusions

III. Conclusions

The development of coastal and maritime tourism in the Mediterranean areas relies on some well-known environmental and cultural features of the region. The overview proposed in this document, based on the results of specific analyses made in the Coevolve4BG Project, shows that the development of tourism in the Mediterranean region is threatened by several factors. Main threats derive from the presence of human activities that affect the environmental features that tourism depends on. The complexity of cause-effect relationships makes it often challenging to distinguish the contribution of different pressures (natural, anthropogenic or climate change) to the overall changes observed in marine ecosystems.

Most affected forms of tourism are ecotourism and cultural heritage-related tourism that are most directly related to the natural and cultural richness of the Mediterranean landscape and seascape. However, even more traditional forms of coastal tourism (beach tourism) are affected by human activities and related pollution, due to the deterioration of bathing water quality.

Notwithstanding the presence of multiple threats to the development of sustainable tourism, an important number of enabling factors can also be derived by this analysis. For example, climate change and natural and human made disasters, though posing severe concerns to the environment and to the development of tourism, may also be transformed into opportunities to improve the current state. The implementation of sustainable solutions to face erosion and flooding (green measures, nature-based solutions), the adoption of improved disaster risk reduction plans and the improvement of health care systems following extreme events or peak infectious events, can mitigate some threats posed by climate change and other global challenges and can be seen as enabling factors for the development of tourism in the long term.

The following table aims to synthesize enabling factors and barriers for sustainable development derived from the analysis of individual topics analysed in this report.

As expected, the alteration of environmental features is a quite recurrent topic, generated by several human activities. It includes a wide range of possible impacts, such as water pollution, air pollution, invasion of alien species, alteration of seabed habitats, and disturbance to local flora and fauna. All these impacts have the overall effects of decreasing the attractiveness of coastal and marine areas for tourism, especially in the long term.

About enabling factors, a quite recurring topic is related to the need of diversification of tourism activities. Indeed, rural tourism, eco-tourism and various niche forms of tourism demonstrated their efficacy to counteract, though to a limited extent,







the catastrophic effect of the COVID-19 pandemics on tourist flows. The presence of various areas officially designated for ecosystem protection and cultural sites conservation in the Mediterranean areas can also be regarded as enabling factors for the promotion of new forms of tourism that are alternative to the mass tourism.

Issue	Enabling Factors for sustainable tourism development	Threats for sustainable tourism development
Climate change	Extension of the length of favorable season for tourism, New opportunities for diversification Impetus for implementing sustainable adaptation actions that reduces vulnerabilities	Alteration of environmental features Decrease in human wellbeing (e.g. Extreme temperature) and health (disaster risks and infectious diseases) Damages to cultural heritage sites (extreme events) Damages to infrastructure and facilities (extreme events)
Littoralization and urbanization	Creation of new infrastructure and services that attract tourism in areas where tourism is not still dominating	Alteration of environmental features Wildlife disturbance Landscape alteration
Touristic fluxes and carrying capacity	New opportunities for diversification	Alteration of environmental features Damages to cultural heritage Wildlife disturbance Landscape alteration
Pollution and other anthropogenic activities		Alteration of environmental features Landscape alteration

Issue	Enabling Factors for sustainable tourism development	Threats for sustainable tourism development
Conflicts/synergies between uses	Creation of synergies between sustainable economic activities (aquaculture, fishing) with sustainable tourism Creation of synergies between sustainable tourism and marine protected areas and other area-based conservation measures	Reduction of surface areas potentially dedicated to tourism
Safety and security challenges	Impetus for the development of disaster risk reduction strategies	Damages to cultural heritage sites Damages to infrastructure and service infrastructure Reduction or stop of tourist flows in less safe areas
Tourism well-being and health emergencies and infection prevention	New opportunities for diversification (increase of tourism models alternative to mass tourism as rural tourism, eco-tourism) Impetus for the development of health care services able to protect both local population and tourists	Reduction or stop of tourist flows in less safe areas
Habitat and endemic species and ecosystem protection	Increase of attractiveness for tourist destinations New opportunities for diversification (ecotourism in marine protected areas)	Limitation to some tourist activities and access restriction to most vulnerable sites
Cultural and heritage sites	Increase of attractiveness for tourist destinations New opportunities for diversification	Limitation to some tourist activities and access restriction to most vulnerable sites









Issue	Enabling Factors for sustainable tourism development	Threats for sustainable tourism development
Coastal protection measures	Increase of safety against floods and erosion Maintenance of minimum beach width	Landscape alteration (for engineered infrastructure) Alteration of environmental features
Water supply and depuration	Preservation of water quality	Alteration of environmental features (degradation of water quality, if water is not properly treated)
Transport and accessibility	Creation of new infrastructure and services that attract tourism in areas where tourism is not still dominating	Alteration of environmental features Landscape alteration
Policies for Blue economy, Legislation, administrative constraints, governance	New opportunities for diversification ICZM and MSP as tool to support sustainable tourism Improvement of multi-level governance Better inclusion of climate change considerations in tourism development Set up of indicators to monitor the progress of sustainable tourism	Poor implementation of policies due to the lack of intersectoral coordination

The successful development of sustainable tourism in the Mediterranean requires the establishment of strategic orientations that should be translated into concrete actions that can be summarized in the following objectives:

- "Environmental integrity": measure, reduce and mitigate the environmental impacts of tourism, while reducing the territorial imbalance between coastal and hinterland areas by assessing and monitoring environmental pressures and impacts of tourism activities on natural ecosystems and their carrying capacity.
- "Social progress / equality / inclusion": ensure social rights, decent work, equal opportunities and access to basic resources for local populations and develop an inclusive and responsible tourism sector that promotes decent jobs, guarantees social rights and integrates vulnerable groups, in particular women, youth and minorities.

- "Economic success / development / prosperity": Develop resilient, competitive and innovative tourism products and services, promote a better balance between economic sectors in tourist destinations and territories and Support the activities of and alternative forms of tourism.
- "Cultural heritage/assets": Protect and enhance cultural heritage and identify vulnerable cultural property and encourage their enhancement.
- "Shared governance": Ensure inclusiveness, effectiveness and transparency in policy design, implementation and monitoring and promote transparent and inclusive dialogues and collaborations at all levels (local and national) between local and national decision-makers, tourism professionals, businesses and populations.









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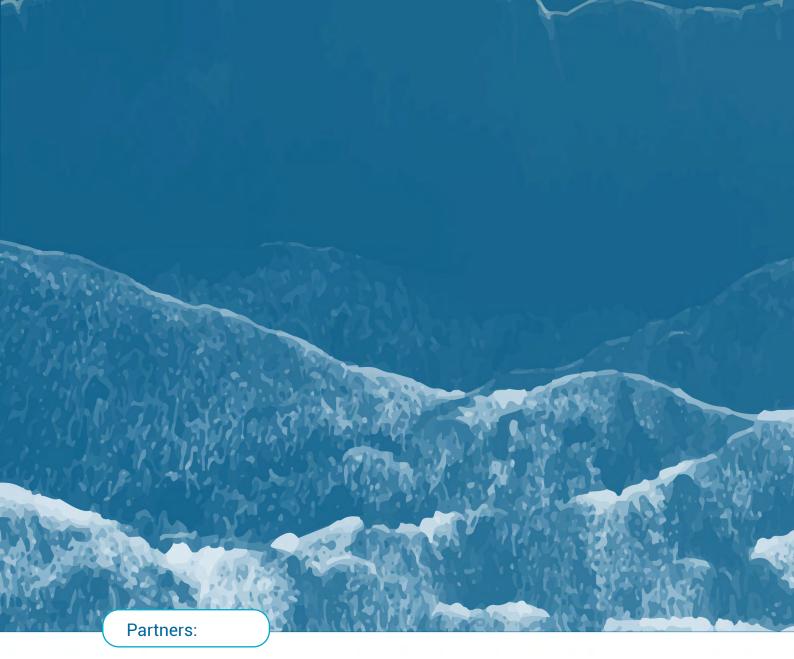
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