

Deliverable 5.2.1 – 5.2.2

**Transferability plan at pilot area and regional scale
(country and transboundary level)**

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de la Comunidad Valencia-**



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Background

CO-EVOLVE is an Interreg MED modular project co-financed by the European Regional Development Fund, which lasted from January 2017 up to October 2019. It aimed at analyzing and promoting the co-evolution of human activities and natural systems in touristic coastal areas, allowing sustainable development of touristic activities based on the principles of Integrated Coastal Zone Management (ICZM) and Maritime Spatial Planning (MSP).

As all Interreg MED modular projects, Co-Evolve was divided in three phases: the studying phase, the testing phase and the transferability phase. During the first phase of the project - the studying phase -, an unavailable analysis at MED scale of threats and enabling factors for sustainable tourism with local studies on representative pilot areas has been performed in order to demonstrate through pilot actions the feasibility and effectiveness of a ICZM/MSP based planning process. The coherent and cross-fertilized analysis performed constituted the basis of indications for the testing phase, which translated in practice those findings in order to implement pilot actions (plans, concrete actions and measures) in selected coastal zones, setting the conditions for a sustainable tourism in coastal areas. Finally, the transferring phase, in the framework of which this document has been produced, targets two levels: the pilot/regional scale and the Mediterranean scale. At the local/regional level, the objective is to transfer the results of the analysis and demonstration actions beyond the immediate territorial and administrative limits of the pilot area. At the Mediterranean level, the objective is to transfer Co-Evolve major findings, conclusions and outputs to relevant authorities from each Mediterranean countries.

It should be noted that the purpose of this document is not to present in detail the results of Co-Evolve, be it research or pilot area experiments, but to give an overall overview of what has been achieved. The individual reports are available on the Co-Evolve website <https://co-evolve.interreg-med.eu/> and the direct references of the reports mentioned in this document are listed in the bibliography.

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Chapter 1: Results from the studying phase

The coastal areas are very coveted spaces, which are also fragile and limited. The concentration and competition of human activities have led to degradation of coastal ecosystems. The challenge of sustainable development in these areas is to preserve outstanding natural spaces without hindering the development of human activities. Tourism is one of the major economic activities on the coastal zone of the Mediterranean region. In 2014, it accounted for 11.3 percent of Gross Domestic Product (GDP) and 11.5 percent of employment in 2014, with expected significant growth through 2025 including a 0.6 percent increase in total contribution to GDP¹. As such, this activity has a crucial role to play in the development of the region. Though, the continuous growth of tourism in Mediterranean coastal areas exerts pressures on environmental and cultural resources of the coastal zones, and affects negatively social and cultural patterns of tourist destinations.

The approach of Integrated Coastal Zone Management (ICZM) is perceived by European Union (EU) and numerous international organizations as the most appropriate approach for the development and the management of coastal zones. ICZM is defined as “a dynamic process for the sustainable management and use of coastal zones, taking into account at the same time the fragility of coastal ecosystems and landscapes, the diversity of activities and uses, their interactions, the maritime orientation of certain activities and uses and their impact on both the marine and land parts”². It is complemented on the sea side with maritime spatial planning (MSP) principles. MSP aims at “analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve objectives usually specified through a political process”³. In order to better understand which are the threats tourism poses to the coastal zones, but also which are the most relevant enabling factors for its sustainability, an analysis has been performed, and its results are summarized below.

¹ Plan Bleu, 2016. Tourism and Sustainability in the Mediterranean: Key Facts and Trends.

² UNEP/MAP/PAP/RAC, 2008, ICZM Protocol

³ Ehler, C. and Douvère, F. 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management, Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides no. 53, ICAM Dossier no. 6. Paris: UNESCO.

1.1. Threats and enabling factors for tourism sustainability

1.1.1. Tourist fluxes and carrying capacity⁴

Massive tourist fluxes can alter and compromise tourism destinations causing several potential direct and indirect impacts, strictly linked to the increasing need of local resources, space and to the over-production of waste/pollution. Diversification of the tourist offer, de-seasonalization and distribution of the flows on wider areas are all key actions to reduce the pressure from tourist fluxes.

The Tourism Carrying Capacity Assessment (TCCA) is a valuable decision-making tool for maritime and coastal tourism destinations planning. A system of metrics for a logical assessment of TCCA for maritime and coastal tourism in the Mediterranean was developed in the frame of CO-EVOLVE.

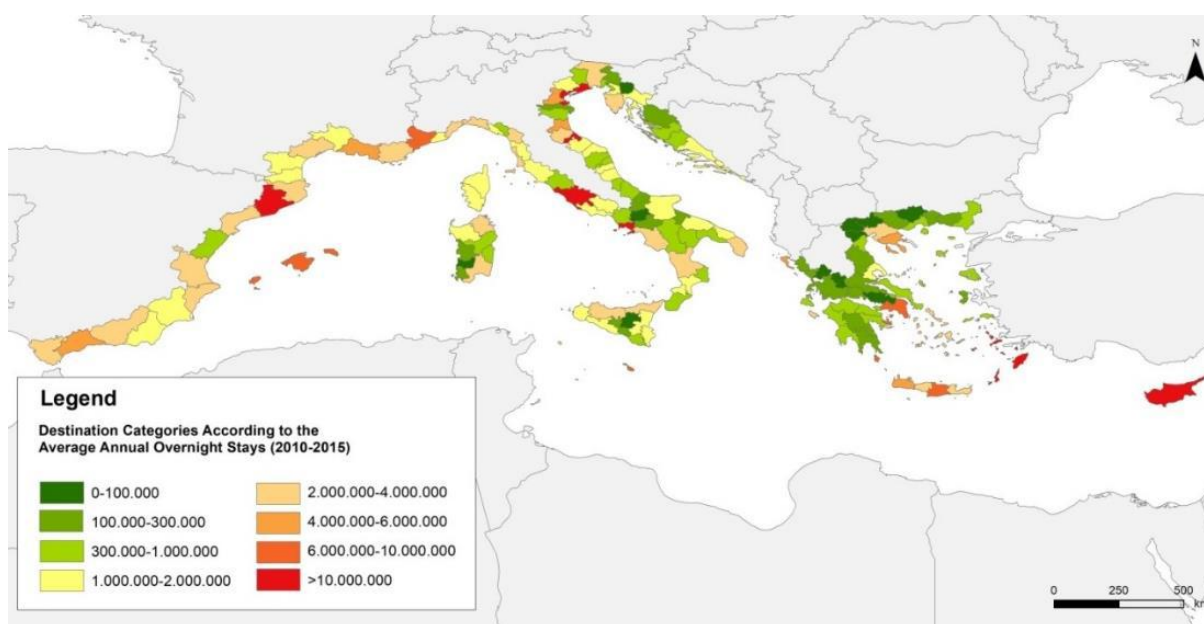


Figure 1: Destination categories according to the Average Annual Overnight Stays (2010-2015) (from Coccossis, H. and Koutsopoulou, A., 2017(b))

⁴ CO-EVOLVE project: Coccossis H. and Koutsopoulou A., 2017(a); Coccossis H. and Koutsopoulou A., 2017(b)

1.1.2. Littoralization and urbanization⁵

Urbanization and especially coastal urbanization or littoralization, namely land occupation by urban land uses and related infrastructure in coastal areas, is a long-standing and intense phenomenon in the Mediterranean region.

Between 1950 and 2010, the Mediterranean urbanisation rate increased from 42.86% to 65.63%, while estimations show that, by 2050, 73.96% of the Mediterranean population will live in urban areas. The population residing in urban areas is shown in Figure 1.

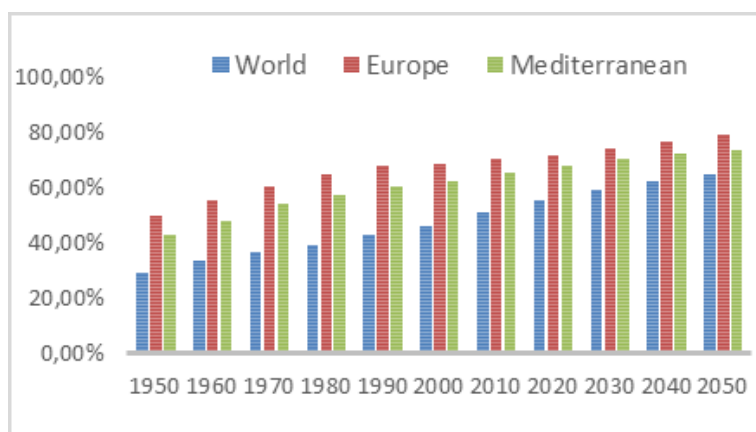


Figure 2: Increase of the population residing in urban areas (%) (Coccossis H., Stavridou K. and Koutsopoulou A., 2017, based on United Nations Environmental Programme Data Set, 2015)

The population within 100 kilometres of the Mediterranean coast has increased almost 1.5 times in the period from 1975 to 2005 (figure 1). Likewise, the population density at the European coast of the Mediterranean, from 1950 to 2013, is continuously increasing but with a lower growth rate over the years.

If the urbanization rate of European countries is expected to increase by a moderate degree by 2050, North African countries' rate will grow even more rapidly.

Coastal urbanization/littoralization can be considered both as a threat to and a main component of the tourist destinations development. Mature tourist destinations with high tourism dynamism show the highest degree of coastal urbanization/littoralization, while regions characterized by low to medium touristic pressure are still predominantly rural.

The ICZM Protocol is the main instrument at the basin scale to address littoralization/urbanization. In its article 8, it requires the contracting parties to establish a setback zone where construction is not allowed in the first 100 meters from the shore. At the national level, all Mediterranean countries have developed strategies and plans to manage land use in their coastal areas.

⁵ CO-EVOLVE project: Coccossis H., Stavridou K. and Koutsopoulou A., 2017.

*1.1.3. Land-sea interactions*⁶

The Mediterranean has long been the focal point of interactions between different coexisting and often conflicting socio-economic activities, such as fisheries and agriculture, energy extraction and exploration, and maritime transport. However, currently the maritime and coastal tourism is the largest sea-related economic activity in the Mediterranean region. Future scenarios indicate that in 2030 the Southern and Mediterranean Europe will receive 103 arrivals per 100 inhabitants. The forecast for energy extraction and exploration is for an increased exploitation of offshore oil and gas deposits; while for maritime transport a 4% annual growth rate in global trade over the next decade can be anticipated.

Similarly, fish aquaculture production in the Mediterranean countries of the EU is expected to increase by 112% between 2010 and 2030 (Piante & Ody, 2015⁷). Impacts from other activities on tourism include, for instance, negative interactions with marine aquaculture (conflicts over the use of space and local degradation of ecosystems), the density and negative influence of ports infrastructures, and negative interactions with off-shore oil and gas infrastructures.

*1.1.4. Coastal erosion and protection measures*⁸

Many important tourist destinations along the EU Mediterranean coast are exposed to erosion.

If over the past decades the broad erosion along the Mediterranean coasts has been basically related to the anthropogenic development, which altered the overall sediment budget and the natural balance of littoral sand nourishment, the future erosion trends will additionally largely depend on the climate change effects (sea-level rise and extreme events). Building coastal defense structures is a concrete way to prevent or reduce erosion at the local level. A significant presence of hard defense structures is observed in several Mediterranean areas characterized by sandy beaches and high urban development. Well-designed defense structures generally reduce the erosion rate of the protected beach, and are often combined with sand supply, dredging and nourishment in the framework of ICZM policy development. Although the technique of beach nourishment is nowadays becoming

⁶ CO-EVOLVE project: Coccossis H. and Koutsopoulou A., 2017(d)

⁷ CO-EVOLVE project: Piante C., Ody D., 2015. Blue Growth in the Mediterranean Sea: the Challenge of Good Environmental Status. MedTrends Project. WWF-France

⁸ CO-EVOLVE project: Carniel S., Gaeta M.G. and Bonaldo D., 2017(a); Carniel S., Gaeta M.G. and Bonaldo D., 2017(b); Rizzetto F. and Vacca C., 2017(a).

much more adopted in the Mediterranean region, it is often applied as a measure of a remedial rather than preventive strategy. Therefore, an overall long-term planning, coastal management, and regular monitoring of the coastline should be included in the planning of this type of measures as part of ICZM policy.

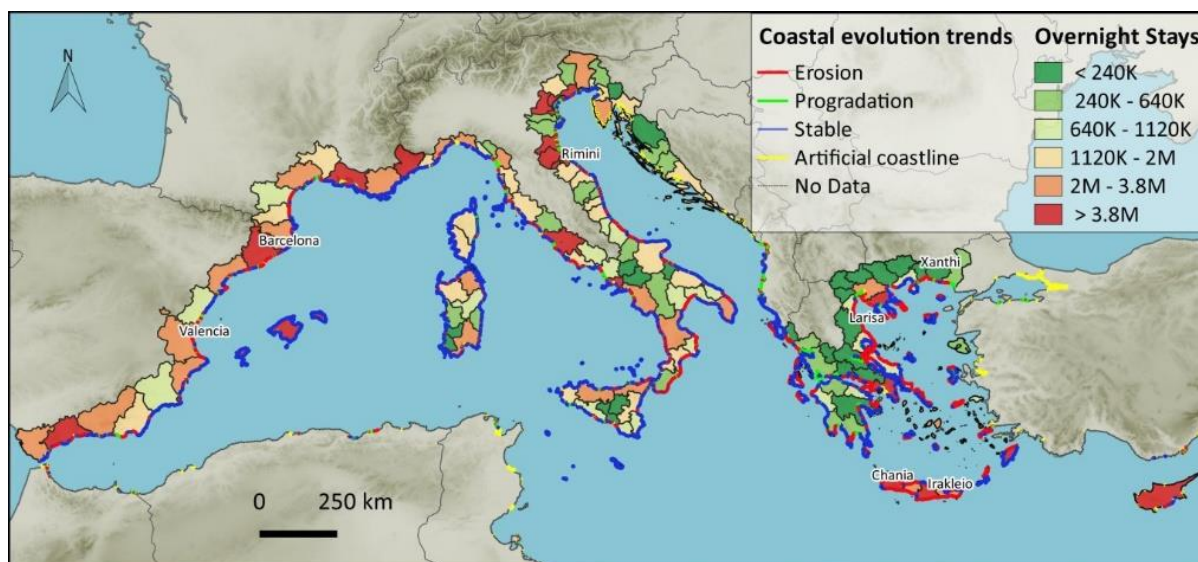


Figure 3: Coastal evolution trends and NUTS III overnight stays (average 2010-2015) in the Northern Mediterranean
(from Drius et al. 2018)

1.1.5. Ecosystem threats and protection⁹

The main threats tourism poses to ecosystems are ecosystem fragmentation and degradation; wildlife disturbance and exploitation, solid waste production, water pollution, air pollution, introduction of alien species, noise pollution and light pollution.

On the other side, healthy coastal ecosystems provide multiple benefits for coastal tourism. They support recreation, wellbeing, aesthetic experience and intellectual stimulation. These so-called “cultural ecosystem services” rely on other services provided by coastal ecosystems crucial for tourism development, such as for instance micro-climate regulation and protection from coastal erosion. Considering the importance of ecosystem services for coastal tourism, current regulations, such as the MSP Directive, need to be supported and guided by an ecosystem approach, which takes into adequate consideration also the role of ecosystem services.

⁹ CO-EVOLVE project: Drius M., Bongiorno L. and Pugnetti A., 2017 (a); Drius M., Bongiorno L. and Pugnetti A., 2017(b); Drius M., Campanaro A., Bongiorno L. and Pugnetti A., 2017

Conservation measures are concentrated more in the EU Northern Basin (Corso Ligurian Basin) and in the Central Basin (between Tunisia and Sicily), than in the southern Mediterranean Basin.

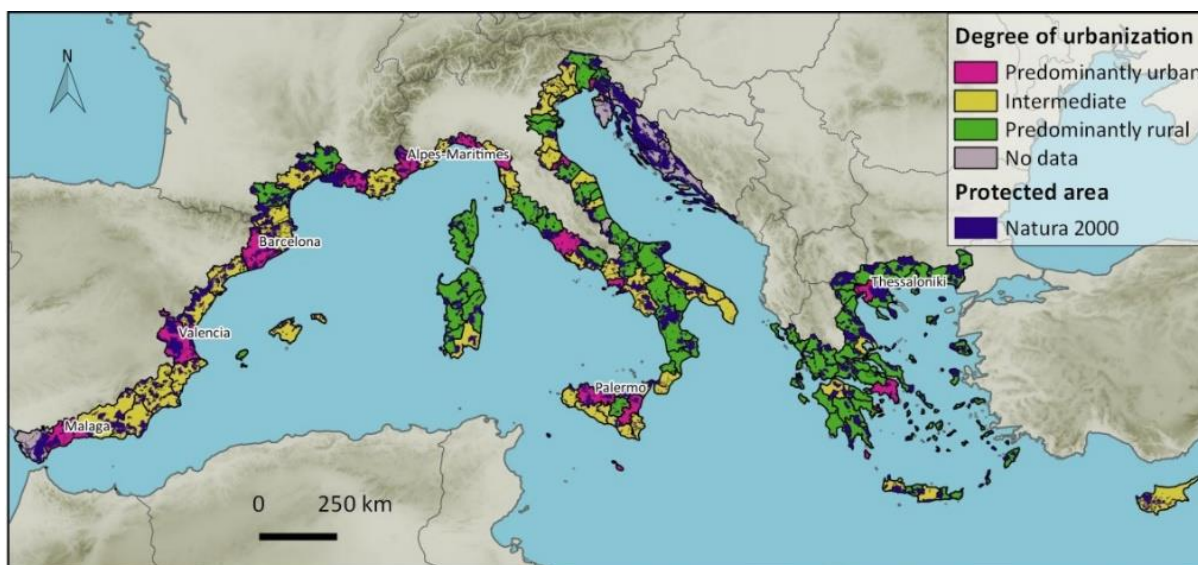


Figure 4: Degree of urbanization and distribution of Natura 2000 sites in the Northern Mediterranean (from Drius et al. 2018)

1.1.6. Water management¹⁰

Most of the impacts of tourism on water resources are linked to seasonality, with peak demand coinciding with the dry season (summer). Spatial concentration along the coast, at locations with scarce local water resources (islands) and often in fragile natural environments, is particularly problematic. There are numerous conflicts among uses (drinking water, agriculture, industry, ecosystems).

¹⁰ CO-EVOLVE project: Kennou H., Miquel S., Burak S., Margat J., and Dubreuil C., 2017

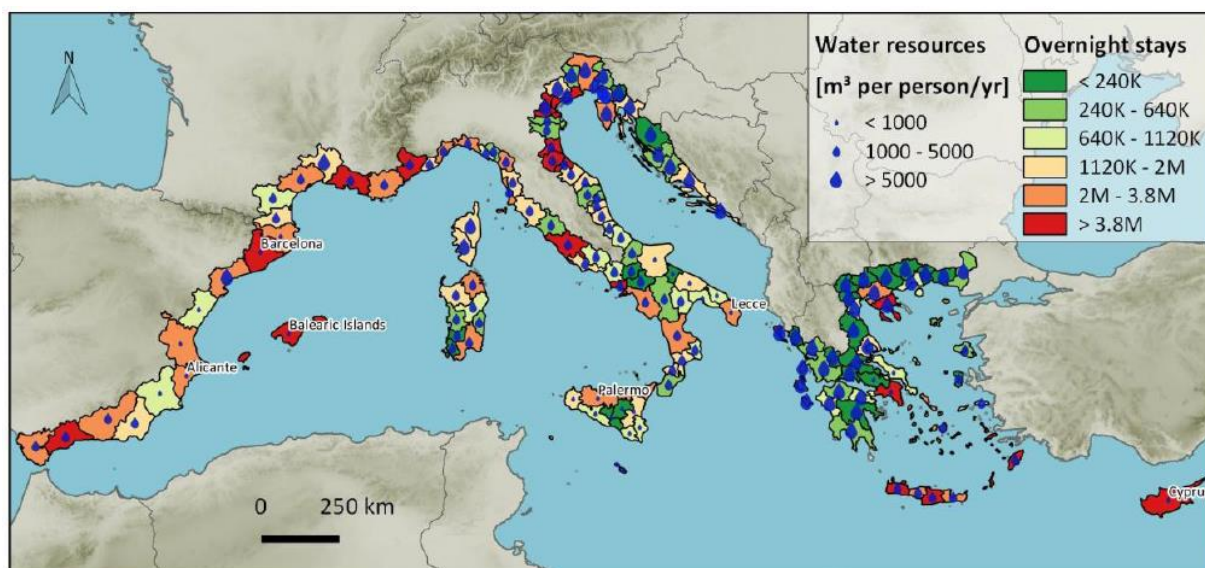


Figure 5: Availability of water resources and high tourist pressure (from Drius et al. 2018)

In the southern countries, as well as in Turkey, where water demand is still increasing and the resources are most threatened by climate change, the supply-side policy, mainly for development purposes, is still predominant. Overexploitation of groundwater is still unequally mastered. One of the main objectives of water policies is to prevent the consequences of drought and the risk of water shortage, as well as the current and future “water crisis” caused by climate change.

1.1.7. Transport and accessibility¹¹

Transport can be considered as a key factor in the success of sustainable tourism development. Accessibility of a tourist destination in order to attract tourists largely depends on the availability and efficiency of transport needed to travel to that destination. On the other hand, poor accessibility to destinations can discourage visitors from attempting to reach these places altogether.

¹¹ CO-EVOLVE project: Sakib N., Musco F., and Gissi E., 2017. State of the art and future development of Transport and Accessibility at Mediterranean Scale.

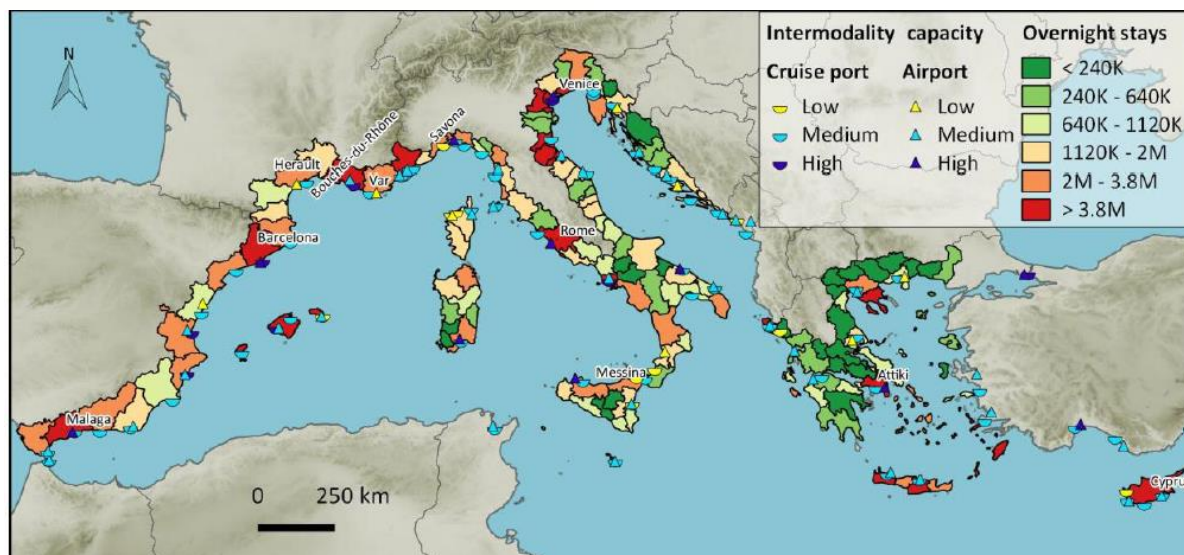


Figure 6: Intermodality capacity for cruise ports and airports is higher in Western Mediterranean than in Eastern Mediterranean, consistently with tourism fluxes (from Drius et al. 2018).

1.1.8. Interaction among threats and enabling factors ¹²

All T&EF are expected to increase in the near future, although at different speed and intensity, with the exception of “pollution and other anthropogenic pressures affecting ecosystems” which should stay constant, owing to the good environmental policies and practices. In general, the intensity of the interactions between T&EF is increasing, with the three main drivers being: i) the morphological instability of coastal areas, also due to climate changes; ii) the increase of tourist fluxes; iii) the protection measures to put in place on the coasts and ecosystems in order to respond to threats and allow for sustainable tourism development. The expected increase of other uses of the coast and the sea within a general expansion of sea economy and their coexistence with tourism will be another major issue. This analysis, although simplified, clearly shows the importance of a multidisciplinary, integrated and long-term view and effort on policy and governance.

1.1.9. Governance for a better sustainability of tourism ¹³

Even though they cannot be considered as “silver bullets”, the ICZM Protocol and MSP principles can be considered as major tools for the improvement of sustainability of tourism since they address all the crucial issues, which the Mediterranean basin is facing. Considering tourism through their prism can also help adopt a holistic approach which is essential in order to balance the uses of the coastal zone, as well as to reduce the conflicts

¹² CO-EVOLVE project: Drius M., V. Evers, S. Bellacicco, L. Petrić, M. Prem, A. Barbanti, 2018.

¹³ CO-EVOLVE project: Evers V., Petric L. and Prem M., 2017.

among them. Five main cross-cutting obstacles to sustainable tourism can be identified when adopting this holistic perspective.

- Obstacle 1: Countries' excessive orientation and over-dependence on tourism as an economic activity;
- Obstacle 2: Misbalance between destinations' carrying capacities and demand volume;
- Obstacle 3: Seasonal concentration of demand;
- Obstacle 4: Over-use and pollution of (natural and cultural) resources by tourism industry;
- Obstacle 5: Illegal activities by tourism industry.

The ICZM Protocol, as a legally binding instrument, complemented by the MSP principles on the marine part of the coastal zone, provides a legal basis for getting over these obstacles, and may act as a key enabling factor for co-evolution of the tourist areas of the Mediterranean region. Its implementation through the national laws, as well as through local practices, should enable the coastal destinations to keep or turn their coastal zones into healthy, attractive, economically balanced and diverse ones, which is the basis for developing sustainable tourism. Besides, it enables dealing with the emerging coastal environmental challenges, such as the climate change.

1.2. Co-evolve's planning methodology¹⁴

The guidelines produced in the framework of the project offer a step-by-step methodology to construct a tourism-driven strategic plan for sustainable development of coastal areas. They integrate the main principles and goals of ICZM and of sustainable tourism. The proposed planning methodology is organized in different consequential steps that constitutes an adaptive and cyclical process. It consists of 6 major phases, each of which includes key tasks and steps. The iterative process of tourism-driven strategic planning in coastal areas is reported in the figure bellow.

¹⁴ CO-EVOLVE project: Filippo Magni, Federica Appiotti, Denis Maragno, Alberto Innocenti, Vittore Negretto, Francesco Musco, 2017.



Figure 7- Conceptual framework of the methodology to the tourism-driven strategic plans construction (from Magni et al, 2017)

A short summary of each phase of the process is presented bellow.

STEP 0 - PLANNING SET-UP: The main aim of this step, that can be considered the most important pre-planning phase, is to create the needed bases for the subsequent implementation of the whole planning process. In this phase, one will answer to the **questions** why (why do we need this strategy for), who (identification of the stakeholders and of the team which will develop the plan), when (timing definition, identification of the milestones), where (territorial boundaries), and how (which are going to be the costs).

STEP 1 - BUILDING KNOWLEDGE FRAMEWORK: The overall aim is to analyze the area, in a coherent and integrate way, in order to build up the knowledge to support the decision-making process provided in steps 2 and 3, in which the vision and objectives are defined and the strategy is constructed. This step is organized in 3 main tasks. The first task aims to collect information about the existing area status in relation to sustainable tourism development. The information that should be collected and subsequently analyzed are: (i) threats and enabling factors that affect the co-evolution of area's tourism development, (ii) area's sustainability status; (iii) existing policies and plans. The second task aims at

analyzing data collected in order to obtain a knowledge framework useful to construct planning priorities and subsequent goals and objectives. The analysis must be strongly focused on the planning main goal. Finally, the third task's purpose is to organize the results obtained from the previous phases to facilitate the subsequent steps execution. At the end of this phase, a final summary of existing conditions of the area should be produced focusing on the agreed points

STEP 2 - DEFINING GOALS VISION AND OBJECTIVES: The starting point to create an effective strategy for sustainable tourism development in coastal areas is to set the main direction to which we want to move: the vision and its related objectives. The construction of the vision for the area and the identification of strategic specific objectives must be constructed, on one hand, addressing the strategic issues emerged from the analytical phase, and, on the other hand ensuring the coherence and compliance with ICZM and Sustainable tourism principles and main goals. Therefore, the step should be subdivided in 3 main tasks: the first one will consist in designing a common and integrated vision for the area; the second one will be to identify the main planning goals and objectives; and the last will be to link objectives with ICZM and sustainable tourism goals.

STEP 3 - TOURISM DRIVEN STRATEGIC PLANNING CONSTRUCTION: The aim of this step is to develop the longer-term elements for a sustainable tourism-driven development of the area starting from the vision and objectives identified. The tourism-driven strategy identifies a feasible “trajectory” of change based on the approved objectives and consisting of concrete actions reported in a comprehensive action plan for its implementation. Therefore, the tourism-driven strategic plan is an integrated set of desired and integrated outcomes in which the actions for the realization of them are explained through an action plan. The action plan will consist in a series of management actions aimed at achieving one or more identified objectives.

STEP 4 - IMPLEMENTING THE PLAN: The purpose of this phase is to apply the strategic approach to priority issues, i.e., on a smaller, more practical scale. Design and implement of strategic action plans depends upon the strategic priorities identified within the second step. As it identifies the key undertakings in consultation with stakeholders while focusing on resources and partnerships, the implementation of strategic actions plans remains fully congruent with the Co-evolve project approach.

STEP 5 - REVIEWING THE PLAN: The revision step is one of the most critical planning steps, and is an activity designed to provide constant feedbacks on the progress of the planning process and on the status and efficiency of its implementation. The revision step

includes a phase of monitoring and a phase of evaluation. The aspect of tourism sustainability can be monitored using the “Sustainability toolkit” presented below, and the indicators selected for the specific area in the building framework step (step1). The use of indicators will show the trends of change after the actions’ implementation.

The importance of stakeholder involvement

It is important to stress the development of the plan should be done in a participatory way. The participatory process shall start from the very beginning of the process (STEP 0), starting from concept development through implementation, to monitoring and evaluation of results. Early stakeholder engagement in decision-making has been frequently cited as essential if participatory processes are to lead to high quality and long-lasting decisions.

In order to be efficient, stakeholders involved should include not only the actors likely to have an impact on the project, but also the people who will be affected by the project. Categories of stakeholders usually considered as relevant in tourism context include government, residents, local business, visitors, tourism employees, academics, and civil society. The participation process is complex and can be problematic, as there has to be collaboration among stakeholders holding different opinions on the same subject. For example, investors and hotel managers often don’t share the point of view of NGOs.

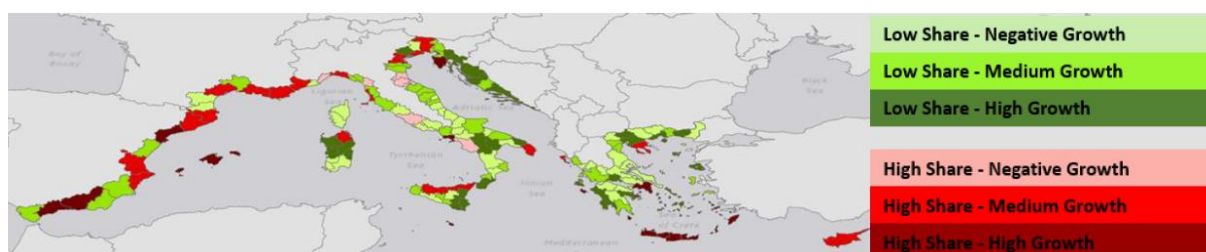
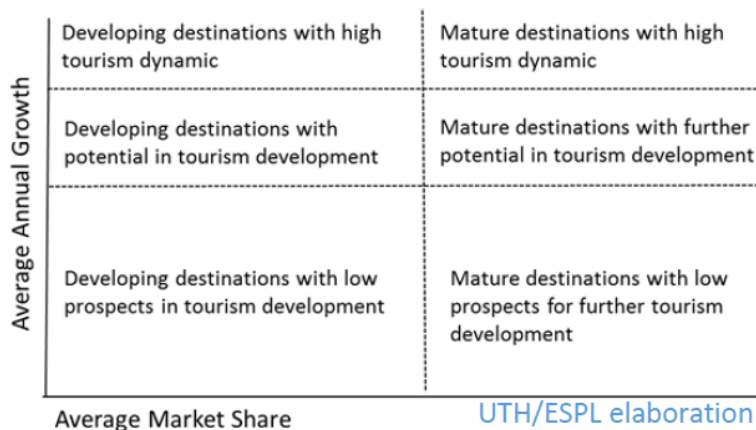
1.3. Co-evolve’s tourism typology and indicators¹⁵

Tourism typology

The use of a common typology in tourism development substantially contributes to the identification of goals and objectives, the highlighting of trends, problems, conflicts and opportunities for development, the improvement of the decision-making process and the production of alternative scenarios for each type of destination. In CO-EVOLVE, the typology developed is based on two variables that form the basis for the classification. The first refers to the average share of overnight stays at each destination against the total overnight stays in the Mediterranean destinations and the second refers to the average annual growth of overnight stays at each destination.

¹⁵ CO-EVOLVE project: Coccossis H. and Koutsopoulou A., 2017(e); Coccossis H. and Koutsopoulou A., 2017(f).

The use of the two variables led to 6 main destination types that provide useful insights about the state and potential of the tourism sector in the Mediterranean regions (figures 8 and 9).



Figures 8 and 9 - State and potential of the tourism sector in the Mediterranean regions (Coccossis H. and Koutsopoulou A., 2017(e))

Building upon the typology, the conceptual model of indicators developed in CO-EVOLVE represents an extended and flexible tourism sustainability toolkit that can be customized according to the specific needs and characteristics of the highly diversified Mediterranean coastal destinations.

The toolkit (figure 11) constitutes a three-tier system composed by the following sets of indicators:

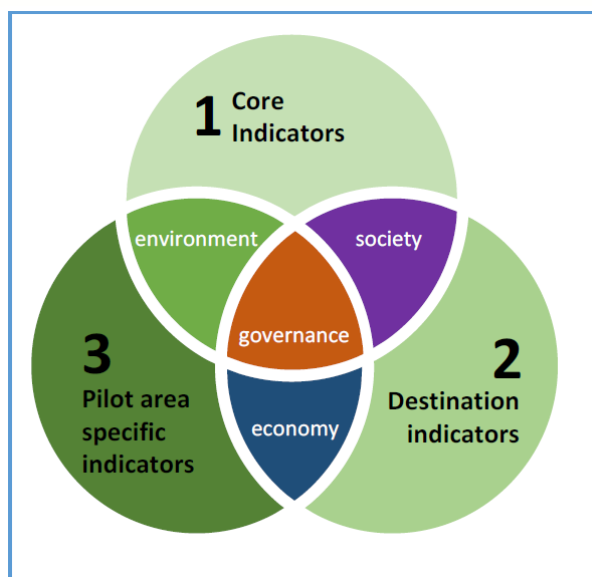


Figure 11: CO-EVOLVE toolkit (Coccossis H. and Koutsopoulou A., 2017(e))

Core indicators: 40 indicators have been selected from the European Tourism Indicator System (ETIS) to serve as the basis for comparison of the level and trends of sustainable development for all types of destinations

Destination indicators: an extensive set of indicators developed to address the specific issues of coastal areas according to the characteristics and particularities of the predominant type of tourism activity in each type of destination (Beach/Maritime tourism, Urban/Cultural tourism, Cruising, Recreational boating, Nature/Ecotourism).

Pilot area-specific indicators: a set of indicators developed on the basis of area-specific critical issues with linkages to the main threats, enabling factors and governance issues identified in Mediterranean coastal areas.

The starting point for adapting the Toolkit to each destination is a list of priority indicators selected from the Toolkit which refer to the most common critical issues and specificities encountered in Mediterranean coastal tourism destinations. The list is meant to act as a baseline for comparisons among coastal tourism destinations in the Mediterranean.

The use of the Toolkit provides hints for improving existing - or shifting towards alternative - tourism models, it highlights existing data gaps & provides guidelines towards relative measurements. It can also be used as a starting basis to measure and quantify stakeholders' perceptions, define thresholds through public consultation processes, develop probability scenarios to adjust future planning actions and policies and to monitor changes in sustainability in the future.

Chapter 2 – Results of pilot experiences

2.1. Presentation of the baseline situation

The city of **Valencia** is located on **Spain's eastern coast**, at the mouth of the Turia River, right in the centre of the Gulf of Valencia. It is situated on the shores of the Mediterranean, a stretch of water which has gradually forged the city's character over the centuries.

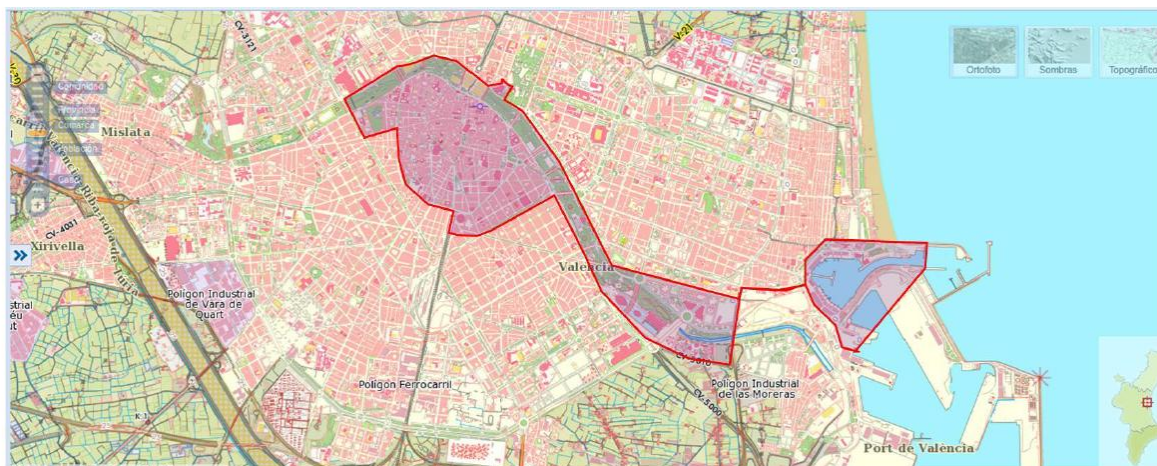
It is the capital of the autonomous region of Valencia and the **third-largest city in Spain** after Madrid and Barcelona, with around 800,000 inhabitants and an extension of near 138 km², of which around 62.5 km² correspond to the city. Its metropolitan area extends beyond the municipality limits, adding up near 76 towns and a population of around 1.8 million people.

The area's development is influenced by economic, environmental and Mediterranean touristic dynamics. **Valencia shows a quite positive trend in terms of tourism development and market.** This condition is quite different from the nearby Regions, characterized by coastal destinations hosting a relatively low number of tourists than the Mediterranean average but with a good potential for attracting more tourist fluxes. Valencia's Region shows high potential for strengthening its market share, **paying attention to not exceed its carrying capacity and the negative externalities that could affect it.** Moreover, the population trend in the area, as in the surroundings regions, is in a positive direction with a high increase in the last years in line with the nearby Regions and the Northern/Western Mediterranean trend.

Valencia has an important commercial Port, known as Valenciaport. **Cruise traffic at the Port of Valencia has grown 125% in number of passengers over the last 10 years.** At the end of **2018**, it closed the year with a total of **194 calls and 421,518 cruise passengers.** This **traffic will continue increasing according to the cruise industry trends** and its growth perspectives in the Mediterranean area.

The **Pilot Area includes the port-city system and, in particular the axis port - City of Arts and Sciences - old city.**

Figure 1. Pilot Area limits.



Source: Terrasit (<http://terrasit.gva.es>)

- The **port waterfront** extends for 5.2 km of the coastline.
- The **City of Arts and Sciences** consists of an avant-garde collection of buildings (most of them designed by Santiago Calatrava, considered one of the most recognized Spanish architects in the world), with Europe's biggest aquarium, a science museum, a 3D cinema and the Palau de les Arts opera house. It is located in the former bed of the Turia River.
- The **old city**, known as Ciutat Vella, concentrates most of Valencia's cultural heritage. The district extension is 1.69 km² with a population of near 27,000 inhabitants. It concentrates most of the cultural heritage elements of the metropolitan area, including museums, historical buildings, monuments, art galleries and hosting some of the main thematic routes offered by tourism operators.

The City of Arts and Sciences and the old city are the most demanded tours for cruise passenger. These are also the main attractions for most of Valencia's tourists and same day visitors apart from cruisers.

The economic impact of cruise tourism and its benefit to local livelihoods is a ubiquitous topic for destination policymakers and stakeholders that arises when discussing cruise tourism development. **Cruise tourism has been criticized for keeping the majority of associated revenues within the cruise shipping line and not for the local communities** (which may make up a large part of the attractiveness and experience) that are not benefitting sufficiently from the cruise passengers. Destinations should routinely monitor, benchmark and seek to improve the spending per cruise passenger and the portion that remains within the local economy and its communities.

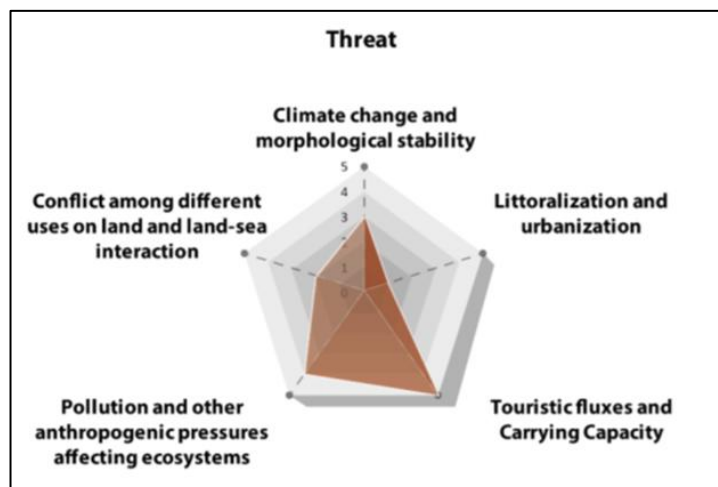
Cruise tourism is a key source of Valencia City, but this kind of tourism is also pointed out as a source of pressure and environmental impacts. **The presence of cruises at port and high concentrations of cruiser passengers** in certain parts of the city, **could affect negatively the city in terms of environment**. In this sense, the coexistence between ports and cities has had many problems related to the territory sharing.

Information regarding the environmental and economic aspects associated with the cruise tourism activity in Valencia was largely lacking, and **it was very convenient to establish/ integrate/ strengthen the information channels that make it possible to collect quantitative data from the cruise activity in relation to its sustainability, in order to determine a sustainable model for development of this traffic**.

According to the WP3 pilot area analysis the main threats were:

- Concentration of tourist demand on tourism interesting sites.
- Large number of visitors within the destination and its attractions for short periods.
- Substitution of local traditional shops by tourism oriented ones.
- Pollution:
 - Air emissions from cruise ships: the most relevant are NOx, CO2, SO2, PM2,5, PM10.
 - Air emissions from cruisers trips (by car or by bus) in the city.
 - Saturation of waste management channels at specific times (when several cruise ships dock in port at the same time). Waste generated on activities on board by passengers and crew (urban and similar, and dangerous waste) could cause pollution in coastal and marine ecosystems.
 - Waste water (lack and grey water that comes from showers, sinks and activities on board) and ballast water (needed for the balance of the ship). If they are not properly treated, can generate water pollution problems (loss of water quality).
 - Noise (from cruise ships during berthing).
 - High pressures on the quality and quantity of natural resources.

Figure 2. Graphical elaboration of Valencia pilot area's priorities that emerged from the analysis of threats.



Source: Deliverable 3.18.2 Tourism-driven Strategic Planning on Pilot Areas (CO-EVOLVE Project).

2.2. Methodology used at pilot area

The proposed ECO-cruise tool was designed in order to evaluate the impact of cruise activities within ports and city areas. It aims to measure specifically aspects related to their socio-economic and environmental impacts.

The tool proposes a three-step approach:

- 1) Definition of parameters to measure (WHAT), the best way to do it and their metrics (HOW).
- 2) Measurement and analysis in order to evaluate the starting point (AS IS).
- 3) Establishment of an action plan (TO BE) including recommendations to minimize its negative impact.

The tool focuses on five aspects (areas of analysis) related to the environmental impact of the cruise ships' activity. I.e.:

- **Air emissions.** It addresses the air quality analytics by measuring GHG emissions related to cruise ships traffic, and focusing on their impact on the quality of the air at port areas.
- **Noise.** It investigates the noise produced by cruise ships when berthed at port and that it frequently results in complaints from people living near ports.
- **Waste.** It evaluates the waste management policies at cruise ships.

- **Mobility.** It identifies the availability of sustainable low-carbon mobility options for cruise passengers.
- **Resource consumption.** This module of analysis pays attention on the use of resources on the cruise ships in order to promote resource efficiency policies.

Regarding to the economic impact, it was used an accounting tool, the Input-Output Table (TIO), which makes it possible to quantify the number of jobs, wage income, surplus and tax burdens generated, as well as the GVA, as well as the aggregated and disaggregated information on production corresponding to the management of cruise ship activity itself.

In addition to its theoretical description, a practical application has been conducted to assess the cruise tourism impact on the city of Valencia in Spain, as a first benchmark following the principles of the Integrated Coastal Zone Management (ICZM) Protocol.

Once the baseline scenario was analysed, it was defined and proposed an Action Plan, including recommendations to contribute for increasing economic impacts of cruise activities and reducing their carbon foot print.

2.3. Stakeholders involvement

During participatory process in Valencia, it was created a **Monitoring Committee**, made up of the own “Valenciaport Foundation”, the “Port Authority of Valencia” and “Valencia Turismo” (local entity promoting tourism). This group was responsible for monitoring, supervising, controlling and reorienting the process and also for presenting and discussing the views of the institutional representatives on the objectives, the strategy followed and the results obtained.

Additionally, a **stakeholders group** was set up. It was made up of all the agents involved in the value chain of cruise ship activity in Valencia, including a large number of companies and institutions with very different profiles; as well as citizen groups that may be affected by cruise ship activity in Valencia (neighbourhood associations from areas with more congestion due to the presence of cruise ship tourists, etc.).

The participatory process consisted of developing a series of meetings with these two large groups, to shape the strategy to be developed around cruise ship tourism in Valencia. The meetings have been:

- Regular meetings of the **monitoring committee**:

- Initial meeting (held on *April 16, 2018*), to organize the participatory process (selection of stakeholders, issues to be addressed, etc.).
- Intermediate meetings (*from May 2018 to February 2019*) to follow up on the participatory process (intermediate results), assess the results of the individual interviews carried out, and prepare a draft provisional plan.
- Final meeting to analyse and draft sustainable strategy lines (*March 2019*).
- Individual meetings with stakeholders. These meetings were intended:
 - On the one hand, to gather information that allows a more detailed characterization of cruise activity in Valencia, and this in turn allows a reorientation of the strategy during the participatory.
 - On the other hand, these meetings allow us to know in greater detail the sectoral vision of each of the agents involved, as well as their expectations and objectives.
- Multi-stakeholder meetings: These sessions are designed and planned in advance to ensure participation of the different agents involved and the achievement of certain minimum objectives in each session. It is foreseen to organize two multi-stakeholder meetings:
 - A first initial multi-stakeholder meeting, which allows contact with the different agents and sectors potentially involved and/or affected by the development of cruise activity in Valencia, and which aims to demonstrate the various existing positions. This first meeting was held on *28th May 2018*.
 - A final multi-stakeholder meeting, organised on *14th March 2019*, where the action plan and strategic vision was validated with all identified stakeholders.

2.4. Tools applied

The proposed methods followed in the different areas for the practical application of the Eco-cruise tool at Valencia pilot case were:

- **Air emissions**

Maritime transport has an impact on the global climate and on air quality, because of the carbon dioxide (CO₂) emissions and other emissions that it generates, such as nitrogen oxides (NO_x), Sulphur Oxides (SO_x), methane (CH₄), particulate matter (PM) and black carbon (BC).

The particular objective in Valencia was to improve the data collection process on air emissions coming from cruise ships as part of the calculation of the Carbon Footprint in the Port of Valencia.

It was followed the methodology proposed by the World Ports Climate Initiative (WPCI) in its Carbon Foot printing for Reports Guidance Document Draft. This method to estimate emissions quantifies the energy consumption (KWh) of berthed ships considering the following variables:

- Number of ships distinguishing by kind of ship.
- Their main engines' power.
- Their auxiliary engines' power.
- Engine use characteristics (main or auxiliary).
- Time at berth, anchoring time and arrival process time (from traffic area to berth) and departure process time (from berth until leaving port waters).
- Distance sailed on port waters.
- Speed.

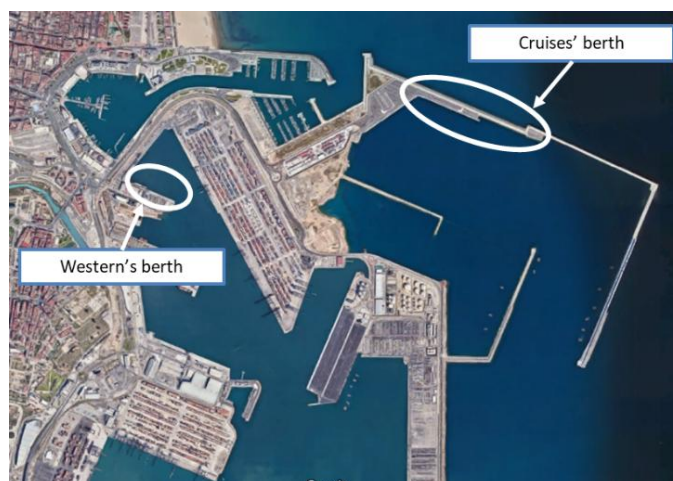
Once measured these variables, it was applied a factor of emission depending on the used fuel. The final calculation of emissions (GHG) results from multiplying energy consumption data by the documented factors of emissions.

Currently, the regulation 2015/757 of the EU of 29 April 2015 is the point of reference for monitoring, reporting and verification of carbon dioxide emissions from maritime transport.

- **Noise**

This area of analysis focuses on studying the level of noise caused by cruise ships berthed at port. In Valenciaport, the methodology followed to perform the noise impact assessment consisted on in situ measurements campaigns.

Figure 3. Noise measurement points at Valenciaport.



Source: Own elaboration by Valenciaport Foundation.

Moreover, predictive models were used to define a noise map and assess its impact on residential areas near the port.

In this case, the main regulation to be considered at EU level is the Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise - Declaration by the Commission in the Conciliation Committee on the Directive relating to the assessment and management of environmental noise.

- **Waste management**

This area seeks to evaluate the waste management on cruise ships. The idea behind it is to recognize the value of waste and to promote “waste valorization” plans aimed at reusing, recycling, or composting from wastes, useful products, or sources of energy; aligned with circular economy initiatives.

The MARPOL Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes.

In the case of the application of eco-cruise port/city tool at Valenciaport only two of them were considered. I.e. *Annex I: Regulations for the Prevention of Pollution by Oil* and *Annex V: Prevention of Pollution by Garbage from Ships*.

- **Mobility**

This factor aims to promote a sustainable low-carbon mobility among cruise passengers.

It was necessary to identify the mobility options for cruise passengers nearby the port and categorize them depending on their environmental impact (from the most pollutant ones as taxis or buses to the more environmental friendly transport options as bikes, e-bikes, electric scooters, etc.).

- **Resource consumption**

This area of the eco tool aims to measure resource use in the cruise ships looking for improving their resource efficiency.

In its application at Valenciaport, it was performed a characterization of the main consumptions and innovative solutions were studied (outstanding the potential implementation of cold ironing technology at port allowing cruise ships to turn off their engines).

2.5. Proposals of solutions

Taking into consideration the economic and environmental results, the cruise community of Valencia carried out an analysis in order to **define an Action Plan to reduce the environmental impact and to optimize the economic impact of the cruise industry in Valencia**. As a result, the Action Plan includes lines of actions and specific tasks organised in **3 strategic goals**:

- Maximizing local economic benefits from cruise tourism.
 - Lines of action:
 - Optimising cruise passengers' expenditure.
 - Increasing the number of cruise passenger embarking and disembarking in Valencia (ideally with an overnight stay) and their expenditure.
 - Optimising the expenditure of shipping companies and their crew.
- Improving the institutional framework and policies affecting sustainable cruise activity.
 - Main line of action: Fostering a coordinated environment of all the administrations involved (such as City Council, Valencian Tourist Agency, Port Authority, Chamber of Commerce, business associations and Valencia Region Council).

- Reducing the environmental impact caused by cruise shipping industry.
 - Lines of action:
 - Optimising waste management.
 - Improving air quality and reducing CO₂ emissions.
 - Reducing the noise impact caused by cruise ships.
 - Improving cruise passengers' mobility.

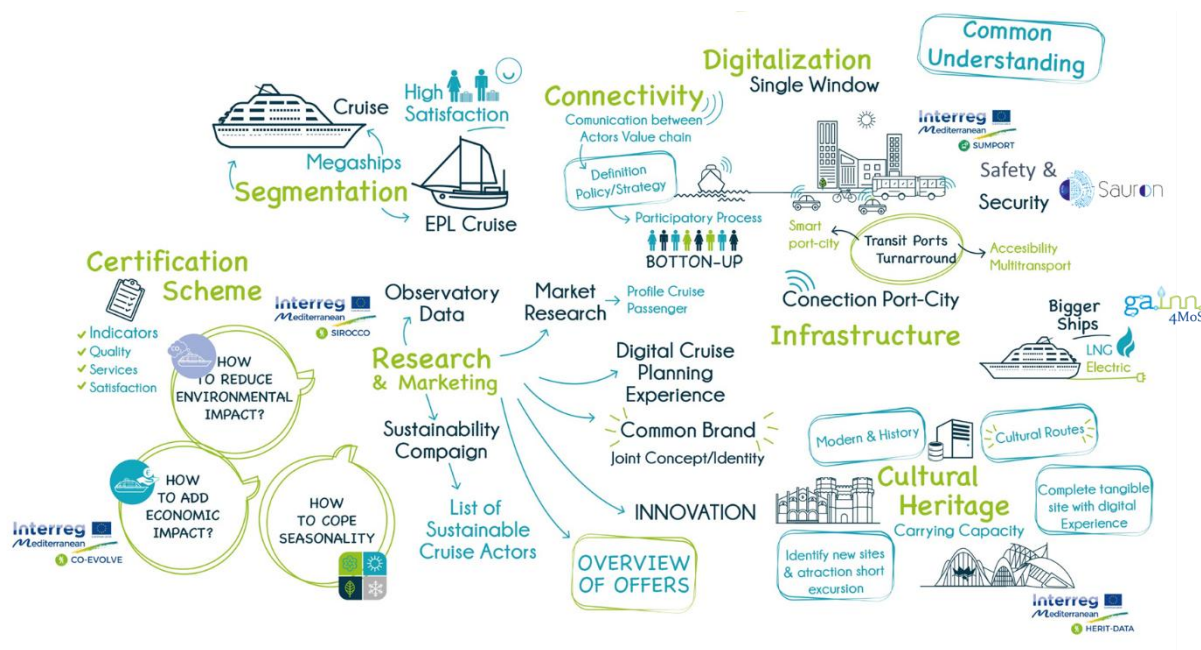
Chapter 3 – Replicable tools and methods

3.1. Positive experiences with a replication potential

The proposed ECO-cruise tool has been designed in the framework of the CO-EVOLVE project in order to evaluate the impact of cruise activities within ports and city areas. The tool is based on an innovative methodology consisting measuring specifically aspects related to their socio-economic and environmental impact. Moreover, once the initial situation is analysed and characterized, the tool suggest to move forward and stablish an Action Plan focusing on increasing economic impacts of cruise activities and reducing their carbon foot print.

In addition to its theoretical description and contextualization for its use, a practical application has been conducted to assess the cruise tourism impact on Valencia (Spain) as a first benchmark with promising results.

Figure 4. Characterization of a sustainable cruise destination.



Source: Own elaboration by VPF.

The experience so far was positive and **there is a widespread impression among the stakeholders that it was necessary to evaluate the real impact of the cruise activities in the city.** The better knowledge of the local situation based on quantitative figures have allowed us to define a roadmap including lines of actions and specific tasks for the future.

3.2. Negative experiences to be avoided

The sea cruise industry is booming. In global terms, the cruise sector generated 1.1 million jobs in 2017 and it created a \$134 billion annual global value. The number of passenger is experiencing an upward trend in the last years, arising a total number of 28.2 million passengers in 2018, and it is expected to continue to be so in the coming years. When, 122 new cruise ships are scheduled to come into service in 2027, providing an aggregated capacity for 290,000 passengers.

However, this growth has been accompanied by rising protests and it is clear that cruise industry is a controversial issue. Critics claim these floating hotel complexes not only pollute the environment, but also bring cities to the brink of collapse.

Cities like Dubrovnik in Croatia and Bergen in Norway have even reduced the number of cruise ships permitted to moor in their ports to slow the growing rush of people. Palma de Mallorca wants to follow suit. Other cities, such as Venice and Amsterdam, have announced that they will ban cruise ship from city centre docks¹⁶.

The Eco-Cruise tool could be a good way to fight against criticism. It is necessary to analyse deeply the starting situation based on quantitative figures and fieldwork. Then, with these numbers in mind, it will be time for suggesting potential improvements in order to minimize the environmental impact of the cruise ship traffics in the city.

Additionally, a committed stakeholders group is essential to be successful and reverse critics' point of view. This group should be made up of all the main agents involved in the value chain of cruise ship activity (Port Authority, City Council, shipping companies, tour operators, etc.) as well as citizen groups that may be affected by the cruise ship activity (neighbourhood associations from areas with more congestion due to the presence of cruise ship tourists, etc.).

It is important to involved (if possible) committed persons from each entity who should be able to contribute in a positive way.

¹⁶ <https://www.dw.com/en/are-cruise-ships-climate-killers/a-49275044>

Chapter 4 – Actual replication/transfer

4.1. Replication at the local level

It aims to transfer CO-EVOLVE experience, with its lesson learned and good practices, to the local and regional authorities in Valencia. Particularly, the plan is to use the Eco-Cruise tool kit periodically in order to control and monitor the cruise ship impact assessment and update properly the predefined Action Plan.

The transferability plan at Valencia's Pilot are is intended to be presented and discussed in individual meetings with the three main public administrations able to take decisions regarding ship cruise traffic here:

- Valencia City Council.
- Valencia Regional Government (*Generalitat Valenciana*).
- Port Authority of Valencia.

These meetings are planned, but not yet scheduled due to prior commitments from their side.

The sources of financing will mainly come from these three public administrations.

4.2. Replication at the regional level in a transboundary context

As in the case of the local level, the use of the Eco-Cruise tool kit could be replicated in a transboundary context.

The Pilot results in a form of best practices were prepared and summarized in the WP4 of the present project. These materials, including methods used, processes and tools, are ready be shared with the relevant target entities when interested.

The main step of the transferability plan are:

- Communication of the expression of interest to the Co-Evolve consortium or directly to Valenciaport Foundation (VPF).
- Scheduling a meeting between local coordinator and VPF (first discussions to define the scope, evaluate the need of training courses, etc.).
- Setting potential resources, time-planning, tools, financing options, involved agents and expected results.

- Establishing a local working group made up the main stakeholders dealing with cruise ship activities.
- Organising regional workshops.
- Planning periodical follow-up meetings.

Conclusion

In view of the controversy stirred by the cruise ship industry, the Eco-Cruise tool kit is conceived as a mechanism for showing and evaluating the real impact of these traffics and their associated tourism models in different port cities beyond its preconception.

It is based on an innovative methodology consisting measuring specifically aspects related to their socio-economic and environmental impact. But, it goes far beyond it and the suggested method propose to move forward and stablsh also an Action Plan focusing on increasing economic impacts of cruise activities and reducing their carbon foot print.

There is a widespread impression among citizens and even the own stakeholders of the cruise ship industry that it is necessary to evaluate the real impact of their activities in the port cities. The experience in Valencia his can be seen as a first step in this direction. Moreover, the knowledge of the current situation based on quantitative figures have allowed us to define a roadmap for the future including lines of actions and specific tasks to be carried out.

It can therefore be concluded that the methodology proposed as part of the Eco-Cruise Tool Kit could be replicated at Mediterranean level in order to assess the cruise tourism impact on port cities. Evaluating the baseline scenario will support the subsequent policy-making and decision-taking process.

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