

CO-EVOLVE

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

Deliverable 3.14.1

**From General to Local – Adapting Threats’
Analysis to Pilot Areas &
Evaluating co-evolution threats at Pilot
Areas**

Deliverable 3.15.1

**From General to Local – Identifying
enabling factors at focus areas &
Evaluating enabling factors at Pilot Areas**

Activity 3.14

Threats to co-evolution at local scale - Pilot Areas analysis

Activity 3.15

Enabling factors for sustainable co-evolution at local scale - Pilot Areas
analysis

WP3

REMTH



Authors

Eleni Chouli, Ydronomi SA Consulting Engineers

Michalis Aftias, Ydronomi SA Consulting Engineers

Maria Chamitidou, Region of East Macedonia Thrace

Region of East Macedonia Thrace, Komotini, Greece

This report is the result of collaboration of all Task Leaders and Pilot Area Coordinators and the REMTH team would like to thank them all for their contribution.

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1. Introduction

1.1. Scope of the document

This document aims at the analysis of Threats and Enabling Factors at pilot area scale according to the methodologies provided from activities 3.2-3.6 and 3.8 -3.12 respectively. The objective is to adapt the provided methodologies from MED/National scale to local/Pilot Area Scale and use the results of the analysis for the better preparation of the sustainable development tools and the Testing.

The CO-EVOLVE Project 10 Pilot Areas are localized in 7 different MED Regions as following:

- 1A Alexandroupoli (Region of East Macedonia-Thrace, Greece)
- 1B Keramoti (Region of East Macedonia-Thrace, Greece)
- 2A Cattolica harbor and coastal area (Region Emilia Romagna, Italy)
- 2B Comacchio – Lido di Spina (Region Emilia Romagna, Italy)
- 3A Rosolina Mare (Veneto Region, Italy)
- 3B Polesine Camerini (Veneto Region, Italy)
- 4 Port of Valencia (Valencia Region, Spain)
- 5 Orb River Delta (Languedoc-Roussillon, France)
- 6 Kastela Bay (Split- Dalmatia, Croatia)
- 7 Neretva River Delta (Dubrovnik-Neretva, Croatia)

The 10 Pilot Areas cover a wide variety of touristic typologies, based on the Del. 3.16.1 report, and this gives us the opportunity to study the importance of every T & EF for five out of six touristic destination typologies, no Pilot Area is classified as High Share- High Growth touristic destination. The following classification is based on Del. 3.16.1 classification on NUTS III level. The necessary data for performing the classification on Pilot Area level are not available. Most Pilot Areas concern a small part of a municipality or include many municipalities (or portion of them) and it is not possible to extrapolate the necessary data from municipal data, even when this data is available on local scale.

- 1A Alexandroupoli(Evros)→ Low Share – Negative Growth
- 1B Keramoti (Kavala) → Low Share – High Growth
- 2A Cattolica harbor and coastal area (Rimini) → High Share - Negative Growth
- 2B Comacchio – Lido di Spina (Ferrara) → Low Share – Medium Growth

- 3A Rosolina Mare (Rovigo) → Low Share – Medium Growth
- 3B Polesine Camerini (Rovigo) → Low Share – Medium Growth
- 4 Port of Valencia (Valencia) → High Share – Medium Growth
- 5 Orb River Delta (Herauld) → High Share – Medium Growth
- 6 Kastela Bay (Split) → Low Share – High Growth
- 7 Neretva River Delta (Dubrovnik) → Low Share – High Growth

A detailed description of the Pilot Areas is available in the Annex: Pilot area Profiles.

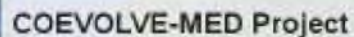


Figure 1: Localisation of the CO-EVOLVE Pilot Areas in the Mediterranean area

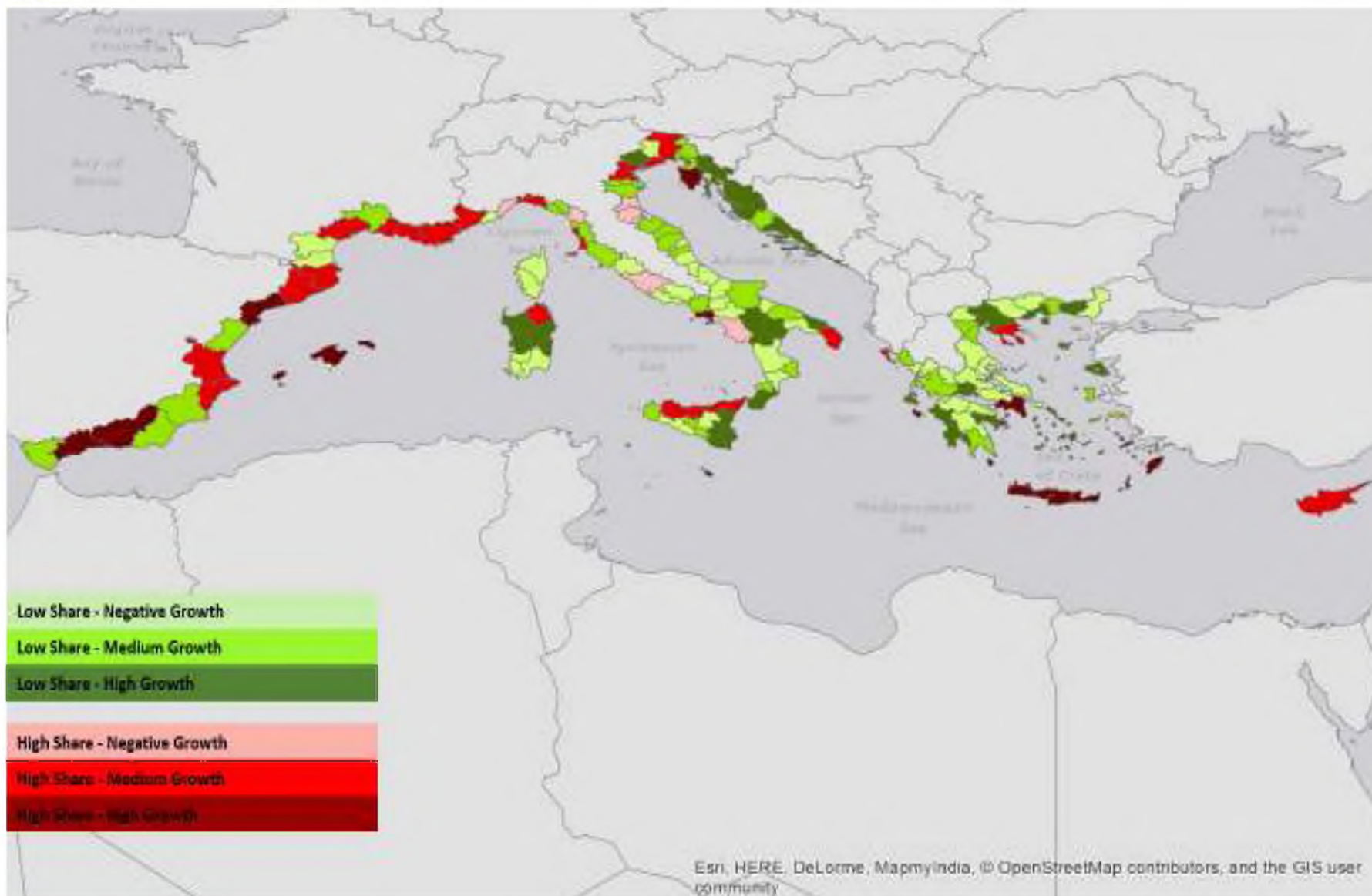


Figure 2: Distribution of the six types of destinations for the NUTS III regions of northern Mediterranean (n= 149), from Del 3.16.1 (CO-EVOLVE PROJECT)

1.2. Methodology

In the framework of the CO-EVOLVE project the following Threats and Enabling Factors were chosen as the most important for the co-evolution of human activities and natural systems for the development of sustainable coastal and maritime tourism:

- **Climate Change and morphological stability:** This threat includes coastal erosion, soil subsidence, coastal flooding and coastal submersion
- **Littoralization and Urbanization:** This threat includes the urbanization of the coastal area which takes up the space of natural ecosystems, degrades the coastal natural environment and increases the vulnerability to Climate Change and morphological stability
- **Touristic fluxes and Carrying Capacity:** This threat includes all problems relative to the Tourism Carrying Capacity and how should tourism be limited by the availability of natural resources and existing infrastructure
- **Pollution and other anthropogenic pressures affecting ecosystems:** This threat includes all the negative impacts of tourism on the natural environment (energy and water consumption, water and air pollution, Habitats/Ecosystems deterioration and impacts on the Wildlife)
- **Conflicts among different uses on land and at sea and land-sea interaction:** This threat includes conflicts concerning the use of space, exploitation of the same coastal and marine resources, conflicts related to the degradation of natural ecosystems
- **Coastal protection measures:** This enabling factor includes coastal works, soft measures and relative policies/planning instruments for managing the erosion phenomena and also limiting future vulnerability to coastal erosion
- **Ecosystems protection:** This enabling factor includes the promotion of ecotourism, management of protected areas, adequate management of pollution generated by tourism (litter, waste, wastewater, recycling) and the “strengthening” of the coevolution these two issues (ecosystem protection and tourism) by building common planning instruments and strategies
- **Water supply and depuration:** This enabling factor includes the promotion of strategies for securing the necessary water resources for tourism activities: building reservoir dams, introducing seawater desalination systems, reusing wastewater, changing farming practices, limiting water losses, limiting water consumption/visitor (water economy appliances and tourists sensibilisation campaigns)

- **Transport and accessibility:** This enabling factor includes the development of transport to travel to a destination and to travel within the destination (both necessary infrastructure and public transport availability)
- **Governance:** This enabling factor includes all policy instruments that can be used in order to promote sustainable tourism and make different stakeholders work together to achieve this common objective.

A more detailed description of every T&EF is available in the following chapters. All ten T&EF were analyzed for each Pilot Area and then commented by Task Leaders and Pilot Area Coordinators, which revealed the relative importance of every T&EF for the promotion of sustainable tourism. The results of this analysis are presented in the following paragraph.

As a first step of the T& EF analysis on Pilot Area scale, a description of every Pilot Area was asked from the Pilot Area Co-ordinators including specific information: the Pilot Area Profile.

Geographic characteristics
Area (km ²)
Administrative status (authorities governing the area)
Geomorphology and natural resources (water & soil resources, agricultural land)
Socio-economic characteristics (NUTS III, municipal, city, area level)
General socio-economic profile (population, GDP)
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc
Natural and cultural assets
Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)
Cultural resources (UNESCO sites, historic city centres)
Other
Development patterns
Development trends (e.g. urban growth, linear development of activities)
Coastal and maritime infrastructure (ports, marinas, fisheries etc)
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities
Institutional and planning framework
Administrative framework (institutional arrangements)
Development strategies relevant with tourism
Management policy, plans and other arrangements
Key priorities and challenges in relation to coastal and maritime tourism

The collected information is available in the Annex: Pilot area Profiles.

The collected information showed that the Pilot Areas were very different in many aspects (geographic scale, objectives, involved stakeholders) and for the analysis of T&EF more detailed information and comparable data was necessary.

The next step, of the analysis of every Threat and Enabling Factor, was to collect comparable information from reports 3.2, 3.3, 3.4, 3.5, 3.6 on Threats and reports 3.8, 3.9, 3.10, 3.11 and 3.12 on Enabling Factors. This information was about:

- the description of each Threat and Enabling Factor,
- all the aspects of each Threat and Enabling Factor that are studied (for the analysis within the CO-EVOLVE project)
- the trend of each Threat and Enabling Factor on MED and national level and
- how each Threat and Enabling Factor impacts Sustainable Tourism Development

This information was adapted on local scale for every Pilot Area in order to set the general framework and clearly set the context of our analysis.

Moreover for each Pilot Area and each Threat and Enabling Factor data were collected from the Task Leaders of Tasks 3.2, 3.3, 3.4, 3.5, 3.6, 3.8, 3.9, 3.10, 3.11 and 3.12. These data were originated from their analysis and data Pilot Area Coordinators provided for this analysis, from prior projects on these issues, from international databases and from bibliography.

Some of these data, when data was available, were organized according to the Sustainability Indicators proposed by Task 3.16. The organization of data into Sustainability indicators helped in the comparison of Pilot Areas.

As a second step of the T& EF analysis on Pilot Area scale, all the above information: general context and specific data available from Task Leaders was organized by Pilot Area and sent to the Pilot Area Coordinator. Every Pilot Area Coordinator was asked then to comment if this information was valid for their Pilot Area and give further information on how every Threat and Enabling Factor is important for every Pilot Area and a short description of the problem /solution.

Furthermore, every Pilot Area Coordinator was asked to score the importance of every Threat and Enabling Factor for the specific Pilot Area and which Threat and Enabling Factor were going to work on within the Co-evolve project – Work Package 4 Testing. All the collected information is presented in the next chapters of this report

1.3. Main Results of the analysis

The analysis on Pilot Area scale revealed the great differences not only between Pilot Areas but also between Threats and Enabling Factors.

For the issues of Climate change, morphological stability and coastal protection measures much information is available from prior projects and monitoring programs. Climate change and morphological stability is recognized on MED scale as an important threat of sustainable tourism development and much work has been done, on local level, to establish and improve Coastal Protection works and strategies.

Pollution, Ecosystem Protection, Water Cycle and Depuration are important issues that have been set as prerequisites for the sustainable development of all activities on EU level. Special EU directives have set the general objectives and the “minima” every country has to achieve in order not to jeopardize sustainable development. In this framework, the monitoring of these issues is mandatory and data are available on EU, national, regional and local level on these issues. Furthermore local and regional “management plans” on these issues are also mandatory.

However, we can see from the collected information that not all Pilot Areas have reached “good quality”. But many Pilot Areas have embraced their “protection status” so as to promote ecotourism and make a paradigm shift from “sea and sun” tourism. Another aspect of the same issue is the necessary infrastructure and funds for environment protection: water supply, water treatment, waste management, energy management etc. How to plan expensive infrastructure for the summer tourism peak period and how to limit the squandering of natural resources by the tourism activities.

Littoralization and urbanization, tourism fluxes and carrying capacity, conflict among different uses, transport and accessibility are very area specific issues and few comparable data are available.

The Co-evolve pilot areas are set with specific geographic limits. This means that a Pilot Area can be 100% urbanized and next to it to have a protected area with no urbanization. So, on these issues more qualitative information was available.

Another factor is that these issues depend mostly on spatial planning, which is often out of the jurisdiction of Pilot Areas stakeholders. Spatial planning takes place on larger scale and on longer periods of planning (longer than the time frame of the CO-EVOLVE project). So Pilot Area Coordinators can pin point these issues as Threats and Enabling Factors of

Sustainable Tourism but they do not plan to work on them within the CO-EVOLVE project. Some of them will try to prepare proposals for the next planning period.

Another, product of our analyses, is that all Pilot Areas Coordinators state that their Pilot Areas are well connected and they have no problems of accessibility, their main issue is to attract more quality tourism.

Finally, Governance is an important issue for all Pilot Areas but very difficult to quantify. Local management plans exist, but most of the times, they do not include all the aspects of sustainable tourism. Another issue is that plans many times are not implemented or partly implemented. In some cases, plans include 10 actions in order to obtain funding for one action.

Fragmented jurisdictions and building common visions is another important aspect of Governance. The management of the CO-EVOLVE Threats and Enabling Factors of Sustainable tourism is diffused in many different entities on local and regional level. All Pilot Area Coordinators try to involve into the CO-EVOLVE Work Package 4 – Testing, the maximum number of local stakeholders in order to be able to influence and bring together all these fragmented areas of jurisdiction.

1.4. Hierarchisation of Threats and Enabling Factors

Taking in consideration the above mentioned comments on the availability of data and the different jurisdictions, we present the hierarchisation of every Threat and Enabling Factor according to the Pilot Area coordinators answers:

Question: Which of the Threats and Enabling Factors analyzed above is important for your Pilot Area based on your experience and local stakeholder's opinion:

Threat & EF	Pilot Areas										SCORING
	1A	1B	2A	2B	3A	3B	4	5	6	7	
3.2	X	X	X	X	X	X		X	X		8/10
3.3	X		X	X	X	X		X	X		7/10
3.4							X				1/10
3.5		X					X				2/10
3.6	X										1/10
3.8	X	X	X	X	X	X		X	X		8/10
3.9		X			X	X		X	X	X	6/10
3.10								X			1/10
3.11	X		X	X			X				4/10
3.12	X	X	X	X	X	X	X	X	X	X	10/10

Question: Which of the Threats and Enabling Factors analyzed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholder's opinion:

Threat & EF	Pilot Areas										SCORING
	1A	1B	2A	2B	3A	3B	4	5	6	7	
3.2	X	X	X	X	X	X		X	X		8/10
3.3											0/10
3.4							X				1/10
3.5							X				1/10
3.6		X									1/10
3.8	X		X		X	X		X	X		6/10
3.9		X		X							2/10
3.10								X			1/10
3.11			X								3/10
3.12	X	X	X	X	X	X	X			X	8/10

Question: Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats and of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders' opinion:

Threat & EF	Pilot Areas										SCORING
	1A	1B	2A	2B	3A	3B	4	5	6	7	
3.2	5	5	5	5	5	5	3	5	1	2	41/50
3.3	4	2	4	4	4	4	1	3	4	5	35/50
3.4	1	3	3	3	1	1	5	2	2	1	22/50
3.5	2	1	2	1	2	2	4	4	3	3	24/50
3.6	3	4	1	2	3	3	2	1	5	4	28/50
3.8	4	1	5	5	5	5	1	3	5	2	36/50
3.9	1	5	2	3	3	3	3	5	3	5	33/50
3.10	2	3	1	1	1	1	2	4	1	1	17/50
3.11	3	4	3	2	2	2	4	1	2	3	26/50
3.12	5	2	4	4	4	4	5	2	4	4	38/50

2. Pilot Area 1A : Alexandroupoli

2.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

The coast of the Region of Eastern Macedonia and Thrace (REMTH) can be considered as an example of urbanized littoral subjected to erosion. It is mainly low and flat (around 85%) with sandy beaches, but there are also low rocky shores and cliffs with accumulations of gravel and pebbles. The shoreline is affected by a general retreat, whereas accretion is restricted to local areas.

Another process that affects Greek coastal areas is salt-water intrusion. It has been estimated that the total surface area of aquifers impacted by seawater intrusion is about 1,500 km².

Erosion is expected to increase in the future due to sea-level rise, the intensification of extreme wave phenomena and the further reduction of the river sediment supply due to changes in rainfall and construction of river management works. According to a projection based on 0.5 m sea-level rise by 2100, 15% of the total coastal wetlands in Greece could be submerged by flooding.

In addition, the foreseen increase of frequency and energy of storms could be responsible for higher erosion rates and more extended flooding

Pilot Area Alexandroupoli- Makri Specific available information (From Task Leaders)

65% of shoreline subjected to erosion (Xeidakis et al. (2006; 2007) and refers to the period 2004-2005)

The coastal area is estimated in medium degraded condition based on findings from various projects, in particular the ESPON Climate (<https://www.espon.eu/programme/projects/espon-2013/applied-research/espon-climate-climate-change-and-territorial-effects>) and the EUROSION Project (<http://www.euroSION.org/>). Estimations are mostly based on vulnerability to climate change, and overall capacity to adapt to climate change.

Coastal flooding:

- events per year: 5-15,
- events per year per 100km² :0,3 – 0,4,
- No potentially High Risk Flood Hazard Zones

Task Leader appreciation

-

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The pilot Area is under erosion due to the general factors mentioned above but also because of the construction of the Alexandroupoli port and its navigation channel. These works have cut-off the long shore sediment transport from East to West (from the Evros river Delta). In the last years coastal protection works took place in the city coastal front (reconstruction of the old seawalls and addition of revetment protection, 560m total length of the protected zone, completion of the works in 2016. The erosion problem has not stopped and it is moving from East to West and from the city to more sub-urban areas.

The pilot area also includes the port area, east of the city which is 100% artificial.

Due to estimated future erosion, in the new urban district west of the city of Alexandroupoli a policy of “retreat” has been adopted: the new “coastal” road and building lots are planned inwards so as to leave space for the future erosion and prevent new expensive coastal protection works. This area has not been developed yet.

Coastal flooding events (flooding of the urban coastal road and promenade) have been documented connected with south winds and high tide.

Erosion is an important issue for this pilot area.

2.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

Greece has the most extensive coastline (a length of approximately 15,000 km) among all Mediterranean countries and a large number of islands. The total urbanized coastal area is estimated at 1,315 km², which represents 1.31% of the country's total surface area. These areas host 50 % of the country's population and the majority of the industrial activity. The population density is estimated at 88 inhabitants per km², while the average density of the country is 75 inhabitants per km². In the last decades, the coastal zone has encountered continuous deterioration, as a result of increasing pressures for tourism and recreation (development of second houses); urbanization of the coast has caused loss of agricultural land and open spaces, which could also serve as habitat areas and sites for recreation.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The city of Alexandroupoli is a coastal city. The urbanization towards the east is limited because of the Evros River Delta. This area is "not attractive" because it is lowlands prone to flooding and protected area with limitations to developments.

The city itself is built on the sea front and the main coastal road is partially built on seawall which was reconstructed in 2016 because of erosion problems, with addition of revetment for wave energy dissipation (560m total length of the works).

West of the city of Alexandroupoli and towards Marki settlement there is pressure for littoralization and urbanization along the coast. Planning procedures are trying to "push" the urbanization landwards and protect the coastline and beach zone from urbanization.

2.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The city of Alexandroupoli has a lot of tourism establishments (hotels and camping sites) and it is also a transport hub because of the airport, port, railway and highway connection.

The municipality of Alexandroupoli wants to promote quality tourism, cruise tourism etc. In general the local tourism establishments have occupancy rates lower than other Greek tourism areas (islands).

The objective is to improve the quality of the natural environment, the quality and the variety of the tourism product and attract more and tourism and higher quality tourism.

2.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

Percentage of artificial land cover classes with respect to total surface	Percentage	3.51%	Elaboration from CORINE LAND COVER 2012	The value refers to NUTS3 10km wide coastline
Percentage of bathing sites with excellent water quality	Percentage	100%	Elaboration from European database	This value refers to NUTS3 10-km wide level
Artificial sky brightness	mcd/m2	0.14	Elaboration from Falchi et al. 2016	The PA has very low light pollution, in comparison with the other PAs. Values range from <0.1 (no light pollution) to 1 and over (high light pollution). Information based on mean value measured at 10 km wide coastline
Natural land cover classes/artificial land cover classes	Number	13.1	Elaboration from CORINE LAND COVER 2012	The value refers to NUTS3 10km wide coastline

Task Leader appreciation

Artificialization& habitat loss

The data reported for both indicators refer to the 10km-wide coastline belonging to NUTS3 region Evros(EL511).Artificialization (proxy for air pollution) is at 3.51%, which is at middle level in comparison with the other Mediterranean coastal areas considered in CO-EVOLVE. Habitat loss is very low, especially compared to Western coastal cities. The area therefore still maintains high levels of naturalness.

Water pollution

Data available via European statistics (<https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>).

The value reported at NUTS3 level is very good.

Noise

No data available.

Waste production

No data available.

Light pollution

The PA has very low light pollution, especially in comparison with other PAs. The data reported refer to the mean value calculated at the NUTS3 10 km coastline. Light pollution is direct consequence of urbanization and “wild” coastal development which occurred in this area in the past century.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The city of Alexandroupoli as an urban and port area, is source of pollution.

The municipality has taken all the appropriate measures to limit urban pollution: litter collection, wastewater collection network etc.

2.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

	Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
Tourism & Fisheries	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	
Tourism & Aquaculture	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	
Tourism & Energy extraction	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	
Tourism & Agriculture	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	
Tourism & Maritime Transport	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The city of Alexandroupoli is trying to combine in a very limited waterfront (approximately 5km) many conflicting activities: commercial and passengers port and marina, city centre, hotel resorts, camping sites etc. The prosperity of the city is based on the successful management of the waterfront.

2.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

In the last years coastal protection works took place in the city coastal front (reconstruction of the old seawalls and addition of revetment protection, 560m total length of the protected zone, completion of the works in 2016. The erosion problem has not stopped and it is moving from East to West and from the city to more sub-urban areas.

The pilot area also includes the port area, east of the city which is 100% artificial.

Due to estimated future erosion, in the new urban district west of the city of Alexandroupoli a policy of “managed retreat” has been adopted: the new “coastal” road and building lots are planned landwards so as to leave space for the future erosion and prevent new expensive coastal protection works. This area has not been developed yet.

An important issue for the pilot site is how to adopt soft measures as sand nourishment, so as to manage the erosion problem without the construction of new hard measures and to minimize the cost of future maintenance of defense measures

2.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Extent of Natura 2000 sites	ha	12557	Standard Data Form	N2000 site “Evros River Delta”
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	-	-	There is no such information in the Standard Data Form, which is dated 2009
Municipal waste recycled per year	kt/year	-	-	No data
Implementation of Natura 2000 management plans	Yes/No	No	Standard Data Form	No Management plan set in force till 2009
Adequacy of legislation tackling pollution	Low/Intermediate/High	-	-	No data

Task Leader appreciation

Coastal biodiversity and landscape protection

Alexandroupoli-Makri is an urban pilot area in vicinity to a vast Natura 2000 site (Evros River Delta), which is part of a protected area (the Park of Evros Delta). Along the coastal strip between Makri and Alexandroupoli multiple uses exist and are in contrast one with each other. In particular, on the one hand there is pressure for further urban development and littoralisation and on the other hand there is need for developing sustainable coastal tourism. There is no information on the extent of EU habitats in the N2000 site; however, the site is of utmost importance for migratory bird stop over and for plant species richness. More than 320 bird species were recorded in the area. Of great importance for birds occurring in the delta are the reed bed formations dominated by *Phragmites australis*, *Scripus maritimus*, *Typha angustifolia*, *T. latifolia*, *Schoenoplectus lacustris* etc., fringing lagoons and freshwater canals and in stagnant waters or slowly flowing of fluctuating depths. Important for the wetland is, also, aquatic vegetation in shallow freshwater ponds and canals, dominated by rooted aquatic plants with floating leaves or submerged with often emerging flower spikes (*Nymphaea alba*, *Trapa natans*, *Ranunculus fluitans*, *Potamogeton crispus*, *P. pectinatus*, *Myriophyllum spicatum*, *Ceratophyllum* sp. etc.). Evros River is the second biggest river in

Eastern Europe and is characterized by the large amount of sediment that it transfers and deposits on its delta.

Sources: <http://www.evros-delta.gr/en/>

Waste recycling

No data available, not even at NUTS2 level.

Adequacy of legislation tackling pollution

No data available.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The pilot Area is positioned outside the protected area. However the promotion of eco-tourism within the protected area could promote local tourism. Most of tourism today is “sea and sun” oriented, there are hotel resorts and camping sites built in the coastal area. The city of Alexandroupoli disposes of a Waste Water Treatment Plan since 1992

2.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The city of Alexandroupoli, water supply comes from the Aisimi water reservoir, positioned approximately 18 Km northeast from the city. The water reservoir was constructed in 2004 especially for the water supply of Alexandroupoli.

The city of Alexandroupoli disposed of a Waste Water Treatment Plan since 1992. The treated water is disposed to the sea.

The coastal groundwater is facing overexploitation and salinisation problems caused mainly by abstractions for irrigation.

2.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Car, Train, Airplane, Ferry	PA Coordinator	Cars may include taxi, rented cars and private vehicles
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	Yes	PA Coordinator	However it doesn't include alternative fuel (i.e. CNG, electric or low sulfur oil) and airborne emission monitoring
N° of dredging operations needed per year		-	PA Coordinator	No statistics available, Dredging operations are carried out

Task Leader appreciation

Alexandroupoli has an international airport. The intercity train and bus terminals are in Alexandroupoli. This city also hosts a ferry passenger port. Mostly visited tourist destinations include the Municipal Beach and Agia Paraskevi Beach (Makri). Both Alexandroupoli and Makri PAs host one marina each with 50 mooring capacities, providing accessibility to nautical tourism and recreational boating activity. While the marina within Alexandroupoli also provides accessibility to public transports, the one in Makri does not provide such accessibility. An overall transport and accessibility network development is needed in the Greek PAs.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Alexandroupoli disposes of an international airport and very good railway and highway connection.

Many tourists transit from Alexandroupoli to other destinations: Greek islands, REMTH coastal area and many tourists arrive from the Balcan (Romania, Bulgaria, Turkey) by private car.

All coastal area and tourism facilities are accessible by public bus.

The beaches and the camping sites near the city attract many visitors because of the easy accessibility by public transportation and by private car.

The city disposes cycling paths which are going to be connected to a coastal front cycling path.

The port of Alexandroupoli is under expansion, new commercial docks are under expansion and the objective is to make Alexandroupoli a commercial transport hub connecting the commercial port to the international railway. Another objective is to promote cruise tourism and maritime tourism by offering high value marina services.

The last port basin excavation/construction works were completed in 2015. The port main basin was excavated to a depth of -12m and a 3.5 km length navigation channel was excavated/dredged to a depth of -12.5m. Since no dredging was necessary.

Further excavation and construction works are necessary in order to reach a main port basin depth of -15m according to the port approved Masterplan.

The study of the navigation channel estimates that annual dredging of 250.000 m³ of sediment is necessary for the maintenance of the navigation channel, with an estimated cost of 10 euros/m³.

Since the port basin is not fully excavated and the navigation channel is relatively new there are no available data on the actual needs and cost of port dredging. The port authority is trying to find formulas so as to limit future dredging cost and in the same time help the municipality to manage the erosion issues.

2.10. Enabling Factor 3.12: Governance

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems.

However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

There is a National strategy on tourism development as well as a Regional/local plan.

Despite the existence of various provisions in existing legislation, no mechanisms for public participation in the planning process has been reported.

Coordination mechanisms for land-sea, vertical and horizontal coordination for ICZM purposes are in preparation.

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The municipality of Alexandroupoli disposes of an operational plan (2015-2019) covering all development aspects under their jurisdiction: urban development, public transport, tourism development, social services, environmental protection, water and wastewater services, waste management.

The development of the port is under the jurisdiction of the Alexandroupoli Port Authority. The two entities have excellent relations and share many common ideas and objectives. Part of the Port activity will be probably concessioned to the private sector very soon.

Both the municipality and the Port Authority have detected a lack of data and monitoring of coastal erosion and lack of an integrated coastal zone management plan and they are working together in order to cover this gap which is mainly due to the existing national legal and administrative framework.

2.11. Priorities of the Pilot Area

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.3 : Littoralization and urbanization
- 3.6: Conflict among different uses on land and land-sea interaction
- 3.8: Coastal Protection Measures
- 3.11: Transport and accessibility (port activities development)
- 3.12: Governance

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.8: Coastal Protection Measures
- 3.12: Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	5
Littoralization and urbanization	4
Touristic fluxes and carrying capacity	1
Pollution and other anthropogenic pressures affecting ecosystems	2
Conflicts among different uses on land and sea and land-sea interaction	3

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	4
Ecosystems Protection	1
Water Cycle and Depuration	2
Transport and accessibility	3
Governance	5

3. Pilot Area 1B : Keramoti

3.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

The coast of the Region of Eastern Macedonia and Thrace (REMTH) can be considered as an example of urbanized littoral subjected to erosion. It is mainly low and flat (around 85%) with sandy beaches, but there are also low rocky shores and cliffs with accumulations of gravel and pebbles. The shoreline is affected by a general retreat, whereas accretion is restricted to local areas.

Another process that affects Greek coastal areas is salt-water intrusion. It has been estimated that the total surface area of aquifers impacted by seawater intrusion is about 1,500 km².

Erosion is expected to increase in the future due to sea-level rise, the intensification of extreme wave phenomena and the further reduction of the river sediment supply due to changes in rainfall and construction of river management works. According to a projection based on 0.5 m sea-level rise by 2100, 15% of the total coastal wetlands in Greece could be submerged by flooding.

In addition, the foreseen increase of frequency and energy of storms could be responsible for higher erosion rates and more extended flooding

Pilot Area Specific available information (From Task Leaders)

Most relative data: Annual coastal erosion (t/ha) in Keramoti-Thassos is $0 \leq SE \leq 5$

This value derives from the map available at:

http://thyamis.itia.ntua.gr/eqyFloods/gr11/gr11_maps.jpg_p08/GR11_P08_S4_Erosion_Map.jpeg

57% shoreline subjected to erosion, This value derives from Andreadaki et al. (2014) and refers to the period 2002-2007.

Coastal area in medium degraded condition, This estimation is based on findings from various projects, in particular the ESPON Climate (<https://www.espon.eu/programme/projects/espon-2013/applied-research/espon-climate-climate-change-and-territorial-effects>) and the EUROSION Project (<http://www.euroSION.org/>). Estimations are mostly based on vulnerability to climate change, overall capacity to adapt to climate change and qualitative data regarding the pilot areas.

Coastal flooding events per year (number)

Events (number)*	Events (per 100km ²)**	Potentially High Risk Flood Hazard Zones
5-15	0,5-0,7	Yes

* Distribution of floods expressed as the number of events per administrative unit for the period 1880–2010.

** Distribution of events expressed as the number of events per 100 km² in each of these units.

Medium Estimated sea level rise

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Coastal erosion is an important issue of the Pilot Area. The sediment supply of the Nestos river is diminishing because of the construction of dams upstream. The urban area of Keramoti and the touristic beaches do not experience intense erosion phenomena but a long stretch of the pilot site (~2 km) east of the settlement of Keramoti and west of the River Nestos Delta is under erosion. From 2002 till 2017 a 120m retreat of the beach was documented by aerial photos. There are many studies on the subject, but there is no official monitoring program.

Another important issue is coastal flooding. During the last years we have coastal flooding on average 3 times per year. The coastal flooding concerns some roads of the Keramoti constructed on lowlands. Most of the village and the port have been constructed on higher level. On these roads, during the coastal flooding events, the sea level is about 1 meter above the road level. The problem does not only concern the accessibility of this part of the village (few building are constructed in this area), but it effects all the urban drainage system causing urban flooding. The coastal flooding events are connected with winter south winds, which cause sea level rise.

This occasional sea level rise, affects the water level of the lagoon surrounding Keramoti. If the lagoon level rises even more (water level rise of about 50cm), parts of the main road leading to Keramoti will be occasionally flooded.

The erosion and the sea level rise have also influenced the salinity of the lagoons and the groundwater level causing problems to agriculture and aquaculture.

If the erosion progresses, parts of the lido will collapse or they will be artificially filled with rocks by local stakeholders.

No subsidence phenomena have been documented.

3.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

Greece has the most extensive coastline (a length of approximately 15,000 km) among all Mediterranean countries and a large number of islands. The total urbanized coastal area is estimated at 1,315 km², which represents 1.31% of the country's total surface area. These areas host 50 % of the country's population and the majority of the industrial activity. The population density is estimated at 88 inhabitants per km², while the average density of the country is 75 inhabitants per km². In the last decades, the coastal zone has encountered continuous deterioration, as a result of increasing pressures for tourism and recreation (development of second houses); urbanization of the coast has caused loss of agricultural land and open spaces, which could also serve as habitat areas and sites for recreation.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Keramoti is a settlement within a protected area, many activities are not permitted outside the settlement limits, so Littoralization is not possible. Keramoti settlement plan was approved in 1960 and until today all lots have not been constructed. The municipality is planning to "concession" to the private sector the construction of hotels and other tourism establishments near the beach.

So we can say that Keramoti is not threatened by Littoralization but in the near future more tourism establishments will be constructed following 1960 urban planning.

3.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Keramoti settlement has 1228 permanent inhabitants and more than 4500-4700 visitors during the summer peak period. We expect this number to increase to 6000 within the next 5 years.

The municipality in planning to "concession" to the private sector the construction of hotels and other tourism establishments near the beach and also increase the capacity of the municipal camping site so as to increase the carrying capacity of Keramoti.

The necessary infrastructure works of water supply have been completed and the waste water treatment works will be completed within 2018.

Our main, limiting factor is the port infrastructure and road infrastructure, the small settlement of Keramoti is the main port for all marine transport to Thassos island, including the marble industry. This causes great problems of traffic, noise, degradation of the road infrastructure and degradation of the urban environment. The municipality of Nestos has proposed all commercial marine transport to be moved to other nearby ports, leaving space to tourism and ameliorating the urban environment.

3.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

Percentage of artificial land cover classes with respect to total surface	Percentage	3.32%	Elaboration from CORINE LAND COVER 2012	The value refers to NUTS3 10km wide coastline
Percentage of bathing sites with excellent water quality	Percentage	100%	Elaboration from European database	This value refers to NUTS3 10-km wide level
Artificial sky brightness	mcd/m2	0.21	Elaboration from Falchi et al. 2016	The PA has low light pollution, in comparison with the other PAs. Values range from <0.1 (no light pollution) to 1 and over (high light pollution). Information based on mean value measured at 10 km wide coastline
Natural land cover classes/artificial land cover classes	Number	17.32	Elaboration from CORINE LAND COVER 2012	The value refers to NUTS3 10km wide coastline

Task Leader appreciation

Artificialization& habitat loss

The data reported for both indicators refer to the 10km-wide coastline belonging to NUTS3 region Kavala(EL515). Artificialization (proxy for air pollution) is at 3.32%, which is at middle level in comparison with the other Mediterranean coastal areas considered in CO-EVOLVE. Habitat loss is very low, especially compared to Western coastal cities. The area therefore still maintains very high levels of naturalness.

Water pollution

Data available via European statistics (<https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>).

The value reported at NUTS3 level is very good.

Noise

No data available.

Waste production

No data available.

Light pollution

The PA has verylow light pollution, especially in comparison with other PAs. The data reported refer to the mean value calculated at the NUTS3 10 km coastline. Light pollution is direct consequence of urbanization and “wild” coastal development which occurred in this area in the past century.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The settlement of Keramoti is positioned within a protected area. As such many polluting activities are not permitted.

The production of litter is increasing by nearly 30% (volume) the summer months, for approximately 4500 to 4700 visitors.

The port activity and mainly the commercial ships to Thassos island and the heavy vehicles to Thassos are creating noise and marine pollution.

3.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

	Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
									Tourism & Fisheries
									Tourism & Aquaculture
									Tourism & Energy extraction
									Tourism & Agriculture
									Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Tourism and maritime transport and tourism and ecosystems protection are the main conflicts of land use identified on the pilot area.

3.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

No coastal protection measures exist but maybe they will be necessary in the near future in order to manage the local erosion problems.

3.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Extent of Natura 2000 sites	ha	40077	Standard Data Form	Two N2000 sites
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	-	Standard Data Form	There is no such information in the Standard Data Form, which is dated 2009.
Municipal waste recycled per year	kt/year	-	-	No data
Implementation of Natura 2000 management plans	Yes/No	No	Standard Data Form	No Management plan set in force till 2009
Adequacy of legislation tackling pollution	Low/Intermediate/High	-	-	No data

Task Leader appreciation

Keramoti-Thassos is a “rural” pilot area, being characterized by the village of Keramoti, which is “inside” the Natura 2000 site GR11500010 and the port of Thassos, which is “surrounded” by another Natura 2000 site (GR1150012). There are two ports in the pilot area: Keramoti and Kavala. The island of Thassos is a tourist destination which combines beach tourism with eco-tourism.

GR1150010 has 20 EU habitats, whose extent is not reported in the Standard Data Forms. The site consists of Nestos Delta and Keramoti lagoons. Riverbanks are sandy with extended softwood and riparian forests. Moreover, a mosaic of habitats at the mouth of the river, composed by reedbeds, *Tamarix* scrubs, inland as well as large coastal dunes. There are several greater lagoons with salt marshes around, where in the area of Chrysoupolis there are freshwater lakes with reedbeds and water lilies. There, is also found a rocky islet (island of Thassopoula). At the adjacent gorge of Nestos, rich vegetation grows on the steep cliffs and diverse fauna is provided with shelter.

The wetland is important from ornithological point of view because of the big extent it occupies and because of its rich habitat types. Moreover, it is a valuable part of a wetland chain included between Axios river and Delta Evrou in northern Greece. The riparian forest

and the coastal area are important for breeding, the lagoons for migrating and the river for the wintering of many species as grebes, ducks, herons, cormorants, pygmy, raptors, geese, flamingos, waterfowl and others.

GR1150012 has 9 EU habitats, whose extent is not reported in the Standard Data Forms. Thasos Island is one of the most important nesting sites, on a European Level, for the Shag (*Phalacrocorax aristoteli*) and the Lanner Falcon (*Falco biarmicus*). Furthermore, it holds significant numbers of birds of prey such as the Golden Eagle (*Aquila chrysaetos*), the Peregrine Falcon (*Falco peregrinus*) and the Short-toed Eagle (*Circaetus gallicus*). In the past, Griffon Vultures used to nest, but now they are only visitors to the area. With appropriate conservation measures, they could re-use the area for nesting.

The PA's ecosystems are still in favourable condition according to the indicators populated, as water quality is excellent in all recorded bathing sites, light pollution is still very low, artificialization and habitat loss values are even lower than those obtained for Alexandroupoli. As most of the area is officially protected by Natura 2000 sites, this fact that could be employed to enhance the existing touristic offer for tourists coming to visit Alexandroupoli.

Waste recycling

No data available, not even at NUTS2 level.

Adequacy of legislation tackling pollution

No data available.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The pilot area is within a Natura 2000 site GR11500010. The municipality of Nestos is in close collaboration with the managing authority of Nestos-Vistonis Protected Area so as to promote eco-tourism and develop common projects and activities.

Both local stakeholders believe that the area is receiving enough tourism in quantity and they want to invest in attracting more quality tourism and orient the "sea and sand" tourists towards eco-tourism activities even if this is only for day visits to the protected area. They also try to promote local products of "eco-friendly" agriculture, aquaculture etc.

3.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

In 2016 the aqueduct connecting Keramoti to Xrisoupoli was completed. By this aqueduct Keramoti is connected to the springs of Paradise, another upstream settlement. This water supply is abundant and is planned to cover the urban water supply of the settlement of Keramoti for the next 50 years (including an estimation of 10.000 visitors per year during the summer months) thus water supply issues have been dealt with.

The city of Xrisoupoli also disposes a Waste Water Treatment Plan, which has been dimensioned to receive also the waste water of Keramoti settlement. The main connection and the internal waste water network are already completed, within 2018 the main pumping stations and the house connections will be completed.

3.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Car, Airplane, Ferry	Estimation	May be lacking sufficient Public transport infrastructure
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Task Leader appreciation

The nearest airport providing accessibility to this PA is the Kavala Airport (almost 10 km away). A low local population density can be estimated and therefore the public transport frequency and infrastructure may be predicted poor. Tourists mainly access this PA by car, which may include private vehicles, taxi and rented cars. Keramoti also hosts a ferry passenger port linking the Thasos island. An overall transport and accessibility network development is needed in the Greek PAs.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Keramoti settlement is accessible by Car, Airplane and Ferry. The main problem is commercial road and marine traffic to Thassos Island.

There are public busses connecting Keramoti to Kavala and Xrisoupoli, the main cities nearby. But most tourists are coming by individual cars from Bulgaria (~70-90%), Romania (~15%) and Turkey (~5%).

The port of Keramoti is under the jurisdiction of the Port Authority of Kavala. Nestos municipality has proposed all commercial marine traffic to be moved/ diverted to the new port of Phillipos B, 23 km west of Keramoti and near Kavala. Nestos municipality is proposing Keramoti port to serve only passenger boats and serve as a marina.

3.10. *Enabling Factor 3.12: Governance*

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems. However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

There is a National strategy on tourism development as well as a Regional/local plan.

Despite the existence of various provisions in existing legislation, no mechanisms for public participation in the planning process has been reported.

Coordination mechanisms for land-sea, vertical and horizontal coordination for ICZM purposes are in preparation.

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Governance is an important issue on Keramoti Pilot Area. The settlement is positioned within a protected area under the jurisdiction of Nestos -Vistonis Managing Authority. Furthermore an important part of the settlement is port area under the jurisdiction of the Kavala Port Authority. The settlement itself and urban activities are under the jurisdiction of the Municipality of Nestos.

The municipality of Nestos and the Managing Authority of Nestos – Vistonis are working together to set common objectives and build common planning instruments.

3.11. Priorities of the Pilot Area

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.9: Ecosystem Protection
- 3.8: Coastal Protection Measures
- 3.12: Governance
- 3.5: Pollution and other anthropogenic pressures affecting ecosystems

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.9: Ecosystem Protection
- 3.8: Coastal Protection Measures
- 3.12: Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	5
Littoralization and urbanization	2
Touristic fluxes and carrying capacity	3
Pollution and other anthropogenic pressures affecting ecosystems	1
Conflicts among different uses on land and sea and land-sea interaction	4

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	1
Ecosystems Protection	5
Water Cycle and Depuration	3
Transport and accessibility	4
Governance	2

4. Pilot Area 2A : Cattolica harbor and coastal area

4.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

As regards the Emilia-Romagna region, sandy beaches, having an average width of 70 m and generally protected by offshore breakwaters, represent the dominant coastal landscape. The littorals are currently experiencing a deficit in their sediment budget owing to a decrease in human-induced fluvial sediment transport from the 1970s onwards.

In the last 30 years, the Emilia-Romagna coastline has been in a “frozen state,” except for the zones near Comacchio, owing to human interventions (coastal defences and widespread beach replenishments). Moreover, significant effects on the morphological modifications and damages along the Emilia-Romagna coastline have been produced by storms and flooding

Pilot Area Specific available information (From Task Leaders)

- Annual change in measured shore/beach area (in %): Southern Cattolica: +19 m³/m Northern Cattolica: 25 This value refers to the period 2006-2012. The percentage measurement is not available m³/m
- % shoreline subjected to erosion: Stable shoreline, This information refers to the period 1943-2005
- Coastal area in degraded condition: Low
- Extreme events on the coast per year(number) 17 This value indicates the number of extreme events occurred between 1946 and 2010.
- Coastal flooding events per year(number): 2, between 1946 and 2010

Task Leader appreciation

The littorals extending north and south of the Cattolica harbour are composed of sandy beaches. The analysis of the recent evolutionary trend has shown that in the period 2006-2012 the northern beach (cell n. 4) was characterized by erosion, whereas the southern one (cell n. 3) by accretion.

A few aggradation phenomena have been observed along the coastline behind the Cattolica breakwaters. Consequently, for over 20 years, the Municipality of Cattolica and the bathing establishment owners have removed sand from the beach behind the first 10 southern artificial reefs (thus avoiding the connection between shore and reef) and have transported it to the northern stretch of the beach of Cattolica and Misano Adriatico, which were undergone slight erosion (Montanari & Marasmi, 2012). As this is an area of high tourism vocation, the reduction of sediment losses from the coastal system is a very important factor in the framework of the regional coastal defence strategy.

Owing to its morphological characteristics, the Pilot area may be subjected to flooding, which could be increased (in terms of frequency and energy) by climate change.

In this area, the future sea-level rise could be higher than the IPCC perspectives owing to the contribution of local subsidence (Perini et al., 2017), thus increasing its impact on the coast.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The Cattolica pilot area as other part of the regional coast is characterized by a low and sandy beach, in general protected by groins and emerged breakwaters. Due this coastal asset the climate change effects are expected to have a relevant impact on the coastal morphology, in particular if the sea level rise will be linked with an increasing of storm and high water events.

4.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

Coastal Urbanization in Italy is intertemporally increasing. Between 2001 and 2012, population trends increased up to 5%. Littoralization and the subsequent urban sprawl have long been considered as one of the causes of urban functional disorganization, in terms of the use of services and transport efficiency. The national framework related to sustainable urbanization is considered as neither comprehensive nor homogenous as there are regions with experience in the use of integrated assessment procedures in urban development planning and others which adopt only general instruments without taking into account the contemporary changes in the urbanization process.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The high density of urbanization and littoralization of this area is one of the main issues that affects all the activities in relation to coastal protection and management, and that will, of course increase the flooding risk during storm events.

4.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

4.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 18.50%, The value refers to NUTS3 10km wide coastline
- Percentage of bathing sites with excellent water quality: 63%, This value refers to NUTS3 10-km wide level; however measurements at site level gave good results in 2017
- Artificial sky brightness: 1.75 mcd/m², The PA has extremely high light pollution, in comparison with the other PAs. Values range from <0.1 (no light pollution) to 1 and over (high light pollution). Information based on mean value measured at 10 km wide coastline
- Natural land cover classes/artificial land cover classes: 0.09, The value refers to NUTS3 10km wide coastline
- Percentage of people exposed to road noise: 77.8%, Data refer exactly to the city of Rimini, 25km far from Cattolica
- Municipal waste per capita annually produced: 690 kg/year, Data refer to the municipality of Cattolica (year 2014)

Task Leader appreciation

Artificialization& habitat loss : The data reported for both indicators refer to the 10km-wide coastline belonging to Rimini NUTS3 region (ITH59). The area is extremely highly artificialized (18.50% of artificial areas over NUTS3 10km wide coastline), with natural areas in fewer extent compared to artificial areas. This value is the HIGHEST among the PAs, even higher than Valencia. Habitat loss is also alarming, since the ratio between natural and artificial is only 0.09.

Water pollution: Data available via European statistics (<https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>). The value reported at NUTS3 level is very alarming, especially compared to EU coastlines and to other PAs. 63% is in fact a very low value of bathing quality, since most of Mediterranean EU coastlines currently reach higher % of excellent bathing sites. However, measurements at pilot site also exist and gave a different picture. According to these measurements, bathing water quality in Cattolica was “good” during 2017, and no contaminations were detected.

Source: https://www.arpae.it/v2_balneazione_dettaglio.asp?idlivello=243&s=903

Noise: Data refer to the city of Rimini. Road noise data were retrieved from the following source: <https://www.eea.europa.eu/data-and-maps/data/data-on-noise-exposure-2>. This database contains information on the number of people exposed to five decibel (dB) bands for two indicators "Lden: 55-59, 60-64, 65-69, 70-74, >75" and "Lnight: 50-54, 55-59, 60-64, 65-69, >70". We calculated the cumulative percentage of people exposed to the five bands for “Lden”. (data submitted from 2012 till 2016). The PA is likely to have lower levels of noise pollution in comparison to the bigger city of Rimini; however, we think the value recorded in Rimini could be an acceptable indication for the PA as well, being Rimini and Cattolica characterized by similar economic patterns.

Waste production: Waste generation in Cattolica looks high in comparison with other areas for which information is available, especially considering that the value is already “adjusted” with tourist presences. The value is in line with NUTS2 regional production, which is the highest in Italy. Source for PA:

<http://www.ambiente.provincia.rimini.it/view.asp?categoria=rif&idsezione=33> The PA coordinator gave indication on the estimate of marine litter collected along Cattolica’s beaches: 1500 to 2400 t/year.

Light pollution: The PA has very high light pollution, especially in comparison with other PAs. The data reported refer to the mean value calculated at the NUTS3 10 km coastline. Light pollution is direct consequence of urbanization and “wild” coastal development which occurred in this area in the past century.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

4.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

4.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

- Existence of a coastal planning management system: No, There is a local beach use plan
- Length of protected and defended coastline (km): 2, SICELL and SIC database are used to obtain this information
- % of tourist area and infrastructure with sea defences: 100%, SICELL and SIC database are used to obtain this information
- Cost of erosion prevention and repair measures per year (€): 150K (Estimation to be verified)
- Typology of coastal defense measures (to be selected from the list of the defense techniques described in Report 3.8.1 Breakwaters, beach nourishment, 17 emerged barriers were built in '60s-'70s years
- Cost for the maintenance of defense measures per year (€):-
- % of sites where coastal protection measures limit access to beach: 0
- Influence (positive or negative) of defense measures presence on tourist appeal of the area (Low/medium/high influence based on interviews, questionnaire etc): Medium,

Task Leader appreciation

The littoral of Cattolica is strongly devoted to beach tourism, especially to families and young visitors. In 1934 a fishing dock was built near the west pier, and in 2006, the new offshore sea defence works of the yachting marina of Cattolica were built in front of the old port and the dredged quantities of sediment (around 100'000 m³) were used for beach nourishment purposes in the adjacent areas suffering erosion and protected by emerged barriers. The cost of erosion prevention of the beach is the same for its maintenance, mainly consisting of beach nourishment. In fact, from 2000 to 2010, 10.000 m³ of sand (estimation of the cost is around 150'000 € for each nourishment action) were nourished every 5 years to the coastline. A sediment loss of 22 m³/m have been still estimated in the period 2006-2012,

although the presence of defence structures, revealing an unstable equilibrium of the area in terms of sediment budget, that obtains benefits from the nourished sand. No intervention for the hard defense works maintenance occurred in the recent years.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The area is highly urbanized due to the increasing of tourism in the last century and its characterized by a complex structure of detached breakwaters that goes northward from the Cattolica harbour to MisanoAdriatico

The improvement of coastal protection measures will be one of the output of the pilot site small scale investment. The right and low coast management of the port internal sediments can boost the tourism and improve the sand management of the whole stretch

4.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	1193	Standard Data Form	N2000 site “Colle S. Bartolo” is in the proximity of the PA
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	149	Elaboration from Standard Data Form	No Natura 2000 site within the PA. However, there is a small Natura 2000 site in the vicinity, “Colle S. Bartolo”, with five EU habitats
Municipal waste recycled per year	ktonns/year	8.574	Municipal data	Data refer exactly to Cattolica
Implementation of Natura 2000 management plans	Yes/No	No	Standard Data Form	No Management plan set in force till Jan 2017
Adequacy of legislation tackling pollution	Low/Intermediate/High	Intermediate	PA Coordinator	Several measures to reduce noise and air pollution (see discussion)

Task Leader appreciation

Coastal biodiversity and landscape protection

The PA is a very small (6.2 km²) highly urbanised coastal area with harbour which serves various purposes: fishery, shipyard, crafts production, and pleasure boats. Cattolica is also a seaside resort structured with bath-house facilities. Since there is silting of the internal harbour area coupled with social crisis, the PA needs to be re-launched for sustainable tourism. To this aim, there is a N2000 hilly site in the proximity of the PA, named “Colle s. Bartolo”, which could serve to enlarge the current touristic offer.

Five EU habitats were identified in this N2000 site: Reefs; Annual vegetation of drift lines; Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); Eastern white oak woods; *Salix alba* and *Populus alba* galleries.

Management plan for the N2000 site need to be put in place in order to effectively manage and protect it, but also in order to better plan sustainable tourism coupled with the existing recreational activities in Cattolica.

Waste recycling

Cattolica did recycle 8.574ktonns of waste in 2014, which is ca. 52% of total waste generation. The value is line with the other municipalities of the NUTS3 Rimini and with other Italian PAs. Still, considering the high waste production and its seasonality due to sea side tourism, more effort could be done in preventing waste generation.

Source: <http://www.ambiente.provincia.rimini.it/view.asp?categoria=rif&idsezione=33>

Adequacy of legislation tackling pollution

Local pieces of legislation addressing air pollution are the D.lgs 155/2010 – L.R. 44/95 – PAIR – DGR n. 115 11.04.2017.

Regarding noise pollution, there are several plans and pieces of legislation addressing the issue: L. n.447/95 – L.R n. 15/2001 – D.G.R. n. 45/2002; and a Municipal Regulation for regulating temporary noise generating activities (C.C. n. 29 approved in 20/05/2010).

This considered, we assigned an “intermediate” level to adequacy in tackling pollution. It would be interesting to gather information on the regulation in force in the Port of Cattolica.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

4.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

4.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/Expert Opinion	Description of the Data
Density of public transport (route kms per km ²)	Number	-	-	No Data Feedback Available from PA Coordinator
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Bus, Train, Car, Airplane	Estimation	Cars may include taxi, rented cars and private vehicles
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	-	-	No Data Feedback Available from PA Coordinator
% of accommodations, tourism facilities and other tourist attractions accessible by public transport	Percentage	-	-	No Data Feedback Available from PA Coordinator
Ratio of travel expenses by public versus private transport inside the destination	Ratio	-	-	No Data Feedback Available from PA Coordinator
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	-	-	No Data Feedback Available from PA Coordinator
N° of dredging operations needed per year	Number	2	-	Data Available from PA Coordinator
Volume (m ³) of sediments dredged per year	m ³	30000	-	Data Available from PA Coordinator
Cost of dredging operations per year (€)	€	250.000	-	Data Available from PA Coordinator

Task Leader appreciation

Well connected with the intercity bus and train stations. Nearest International Airport is 12km away and ferry port (Ancona) is 100km away. This PA may provide easy touristic accessibility. There are no big ports in this PA, however smaller marinas and beaches are present and may need timely dredging and coastal defense or beach nourishments in order to maintain the good accessibility

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The pilot site small scale investment will help the multipurpose use of the port, boosting tourism and accessibility to the port and to the city.

4.10. *Enabling Factor 3.12: Governance*

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems.

However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

There is a National strategy on tourism development as well as a Regional/local plan.

Coordination mechanisms for land-sea, vertical and horizontal coordination for ICZM purposes are in preparation.

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The sustainable tourism management plan will be setup on the basis of stakeholder meetings and its outputs. The construction of a stakeholder council will increase the level of governance of the area and boost sustainable tourism

4.11. *Priorities of the Pilot Area*

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.3: Littoralization and urbanization
- 3.8: Coastal Protection Measures
- 3.11: Transport
- 3.12: Governance

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.8: Coastal Protection Measures
- 3.11: Transport
- 3.12: Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	5
Littoralization and urbanization	4
Touristic fluxes and carrying capacity	3
Pollution and other anthropogenic pressures affecting ecosystems	2
Conflicts among different uses on land and sea and land-sea interaction	1

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	5
Ecosystems Protection	2
Water Cycle and Depuration	1
Transport and accessibility	3
Governance	4

5. Pilot Area 2B : Comacchio – Lido di Spina

5.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

As regards the Emilia-Romagna region, sandy beaches, having an average width of 70 m and generally protected by offshore breakwaters, represent the dominant coastal landscape. The littorals are currently experiencing a deficit in their sediment budget owing to a decrease in human-induced fluvial sediment transport from the 1970s onwards.

In the last 30 years, the Emilia-Romagna coastline has been in a “frozen state,” except for the zones near Comacchio, owing to human interventions (coastal defences and widespread beach replenishments). Moreover, significant effects on the morphological modifications and damages along the Emilia-Romagna coastline have been produced by storms and flooding

Pilot Area Specific available information (From Task Leaders)

- Annual change in measured shore/beach area (in %): Southern Lido di Spina, -315 m³/m, Northern Lido di Spina: -36 m³/m This value refers to the period 2006-2012. The percentage measurement is not available m³/m
- % shoreline subjected to erosion: 27%, This information refers to the period 2006-2012
- Coastal area in degraded condition: Southern Lido di Spina: high, Northern Lido di Spina: low
- Extreme events on the coast per year(number) 22 This value indicates the number of extreme events occurred between 1946 and 2010.
- Coastal flooding events per year(number): 0, between 1946 and 2010

Task Leader appreciation

The Comacchio-Lido di Spina coast is characterized by extended sandy beaches, which undergo erosion. The analysis of the recent evolutionary trend have shown that in the period 2006-2012 erosion was particularly intense in the southern cell (cell n. 97), whereas it was slight in the northern beach (cell n. 98).

Flood simulations, based on three climate scenarios (short 2020s, mid 2050s and long 2080s term) for sea level rise, storms and surges, have been proposed by Villatoro et al. (2014). They indicate that beach reshaping and the maintenance of beach width could play a relevant role in the eventual flood of the urban area behind the bathing facilities and in the defence of the urban area. Moreover, Lido di Spina would be naturally protected due to the construction of this area on the ancient dunes (i.e. higher bottom elevation). The inland sector of this area could be flooded in case of long-term (2080) scenarios.

However, in this area the future sea-level rise could be higher than the IPCC perspectives owing to the contribution of local subsidence (Perini et al., 2017), thus increasing its impact on the coast.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

Coastal Urbanization in Italy is intertemporally increasing. Between 2001 and 2012, population trends increased up to 5%. Littoralization and the subsequent urban sprawl have long been considered as one of the causes of urban functional disorganization, in terms of the use of services and transport efficiency. The national framework related to sustainable urbanization is considered as neither comprehensive nor homogenous as there are regions with experience in the use of integrated assessment procedures in urban development planning and others which adopt only general instruments without taking into account the contemporary changes in the urbanization process.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 4.14%, The value refers to NUTS3 10km wide coastline
- Percentage of bathing sites with excellent water quality: 100%, Bathing water quality is excellent (NUTS3 level). Positive feedback also at PA level
- Artificial sky brightness: 0.33 mcd/m², The PA has extremely high light pollution, in comparison with the other PAs. Values range from <0.1 (no light pollution) to 1 and over (high light pollution). Information based on mean value measured at 10 km wide coastline
- Natural land cover classes/artificial land cover classes: 0.99, The value refers to NUTS3 10km wide coastline
- Municipal waste per capita annually produced: 848 kg/year, Data refer to the municipality of Comacchio and to an eight-month period (2013). We can hypothesize a contribution from touristic presences

Task Leader appreciation

Artificialization& habitat loss : The data reported for both indicators refer to the 10km-wide coastline belonging to Ferrara NUTS3 region (ITH56). Comacchio is likely to be characterized by a better naturalness degree than the whole area considered in the calculation. However, the predominant land cover in the considered area is arable land, while natural areas occur insignificantly lesser extent compared to artificial areas. Habitat loss is therefore worrisome, since the ratio between natural and artificial is only 0.99. The massive presence of agricultural land is due to a vast reclamation work performed during XX century. This PA has still much higher degree of naturalness when compared with the “twin” PA “2A Cattolica”.

Source: <http://www.parchideltapo.it/life.natura2000.po.delta/pdf/PianoDiGestioneValliComaccioRev33.pdf>

Water pollution: Data available via European statistics (<https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>). The value reported is excellent. At site level, constant monitoring is performed by the technical institute ARP AE, which reported no abnormalities in all monitoring stations of Comacchio for bathing season 2016.

Source: https://www.arpae.it/v2_balneazione_dettaglio.asp?idlivello=243&s=906

Noise: We don't have data on noise pollution in Comacchio. The closest city for which data is available is Ravenna. High road noise levels were recorded during 2013: 78% people exposed to noise levels over 55 dB during daylight.

Source: <https://www.eea.europa.eu/data-and-maps/data/data-on-noise-exposure-2>

Waste production : From the annual report on waste production produced by the NUTS3 region of Ferrara it was possible to get the total waste generated by the municipality of Comacchio in the first eight months of 2013, which is 19.484 t. Since the inhabitants of Comacchio are 22.980, dividing the total amount by inhabitants we obtained 848 kg/inhabitant. This value is extremely alarming, but in line with the NUTS2 trend (Emilia-Romagna). We could imagine that tourism might contribute to the very high level of waste production.

Source:

http://www.provincia.fe.it/download/Resoconto_Primi_8_mesi_2013.pdf?server=sd2.provincia.fe.it&db=/intranet/internet.nsf&uid=AC7F9358A7C5D706C125753D0056D411

Light pollution: The PA has low light pollution. The data reported refer to the mean value calculated at the NUTS3 10 km-wide coastline. This good value is related to the economic features of the area, which is since decades an international attraction for birdwatching and other eco-touristic activities, being located within a Regional Nature Park.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

- Existence of a coastal planning management system: No, There is a local beach use plan
- Length of protected and defended coastline (km): 9+0.5, SICELL and SIC database are used to obtain this information
- % of tourist area and infrastructure with sea defences: 100%, SICELL and SIC database are used to obtain this information
- Cost of erosion prevention and repair measures per year (€): 547K
- Typology of coastal defense measures (to be selected from the list of the defense techniques described in Report 3.8.1 Groins, breakwaters, nourishment, 5 groins were built in 0.5 km (Lido di Spina) and breakwaters along 9 km (between Lido delle Nazioni and Porto Garibaldi)
- Cost for the maintenance of defense measures per year (€): -
- % of sites where coastal protection measures limit access to beach: 0
- Influence (positive or negative) of defense measures presence on tourist appeal of the area (Low/medium/high influence based on interviews, questionnaire etc): Medium,

Task Leader appreciation

The littoral of Comacchio, between Lido delle Nazioni and Lido di Spina, is strongly devoted to beach and eco-tourism, especially to families. The lengthening of marina jetties in '50s-'60s along the coast to improve tourism (beach and marinas/yatching) growth caused the building of one of the first shore-parallel emerged breakwaters in Porto Garibaldi, that extended northern in the following years up to Lido delle Nazioni. The area still suffers erosion and inundation problems. The cost of erosion prevention is the same for the maintenance. From 2000 to 2010, 21'900 m³ of sand were nourished to the coastline (medium cost of sand 15€/m³): the dredged sand from Logonovo Canal, that need to be clear of sediments, was

used to rebuild dunes eroded by the sea in the south of Lido di Spina. No intervention of hard defense works maintenance occurred.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	16781	Management Plan + Standard Data Forms	The vast N2000 site “Valli di Comacchio”
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	12192	Standard Data Forms	17 EU habitats occur in N2000 site “Valli di Comacchio”
Municipal waste recycled per year	ktonns/year	16.505	Municipal data	Data refer to eight-month time period in 2013
Implementation of Natura 2000 management plans	Yes/No	Yes	LIFE Project 2015	Through a successful LIFE project the PA has now a management plan
Adequacy of legislation tackling pollution	Low/Intermediate/High	Intermediate	Expert opinion	Proven efforts in tackling light pollution + restrictions from Management Plan and Conservation Measures

Task Leader appreciation

Coastal biodiversity and landscape protection

Natura 2000 site IT 4060002 SIC-ZPS “Valli di Comacchio” was established with DGR 512/09 and is included mostly in Ferrara NUTS3 region; 2403 ha are located in Ravenna NUTS3 region. The N2000 site’s territory is shared by five municipalities. The site is also a MAB UNESCO Reserve.

The N2000 site “Valli di Comacchio” includes 17 EU habitats which cover a total surface of 12192 ha. This value is high both in absolute and comparing the other PAs. PAs Rosolina Mare and Polesine only present higher extents of EU habitats – which are still part of the vast Po delta system.

The N2000 site “Valli di Comacchio” is totally included in the Regional Park Po Delta. This park was set up in 1988 through a special Regional Law (Regional Law 27/88) and it is part of the system of the protected areas of Emilia Romagna (NUTS2 region). The park is divided into six “stations” around the southern area of the Po Delta, whose northern part belongs to the Veneto Region, along the coast of Ferrara and Ravenna and near Argenta. Other 18 Natura 2000 sites are completely or partially included in the Park’s territory.

All this considered the area is officially protected at a level that should guarantee its environmental integrity in the long term.

Waste recycling

Comacchio recycles 45.9% of total waste produced (36 ktonns). Overall in fact 16.505 ktonns of recycled material were generated in the first eight months of 2013. Recycling effort is lower than the one done in the city of Ferrara (52.1%) and in all the other smaller municipalities of the NUTS3 area.

Source:

http://www.provincia.fe.it/download/Resoconto_Primi_8_mesi_2013.pdf?server=sd2.provincia.fe.it&db=/intranet/internet.nsf&uid=AC7F9358A7C5D706C125753D0056D411

Adequacy of legislation tackling pollution

In 2017 Comacchio received a national prize for best practices of public heritage management. This is due to the fact that the municipality has invested substantial resources in energy efficiency (replacement of old lighting with LED and so on).

No information about other initiatives at PA level for tackling pollution is known. For this reason, we assigned an “intermediate” value to this indicator.

At larger scale, the Delta Po Park has a consolidated and successful experience in the management of international projects, in particular in environmental protection and in the preservation of biodiversity. Over the years the park has managed to ensure a higher sustainability of the different human activities, but it is also trying to reduce the conflicts between social and economic players.

Moreover, conservation measures applicable at all Natura 2000 sites regulate the construction of new treatment plants, industrial sites and power lines.

Sources: <http://www.estense.com/?p=618746>

DGR1419-2013. Misure generali di conservazione delle zps e dei sic dell’Emilia-Romagna
Management plan “Valli di Comacchio”:
<http://www.parchideltapo.it/life.natura2000.po.delta/pdf/PianoDiGestioneValliComacchioRev33.pdf>

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/Expert Opinion	Description of the Data
Density of public transport (route kms per km2)	Number	-	-	No Data Feedback Available from PA Coordinator
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Car	Estimation	May be lacking sufficient public transport infrastructure
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	-	-	No Data Feedback Available from PA Coordinator
% of accommodations, tourism facilities and other tourist attractions accessible by public transport	Percentage	-	-	No Data Feedback Available from PA Coordinator
Ratio of travel expenses by public versus private transport inside the destination	Ratio	-	-	No Data Feedback Available from PA Coordinator
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	-	-	No Data Feedback Available from PA Coordinator
N° of dredging operations needed per year	Number	-	-	No Data Feedback Available from PA Coordinator
Volume (m3) of sediments dredged per year	m3	-	-	No Data Feedback Available from PA Coordinator
Cost of dredging operations per year (€)	€	-	-	No Data Feedback Available from PA Coordinator

Task Leader appreciation

Located by the Adriatic coast in the Italian Emilia Romagna Region, the local population of this PA is estimated very low. Therefore, a lack of public transport infrastructure can be foreseen and improvements may be crucial to enable better accessibility. The nearest airport is about 70 km away and the nearest city providing intercity bus and train connections is Ravenna, which is almost 25 km away.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.10. *Enabling Factor 3.12: Governance*

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems. However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

There is a National strategy on tourism development as well as a Regional/local plan. Coordination mechanisms for land-sea, vertical and horizontal coordination for ICZM purposes are in preparation.

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

5.11. *Priorities of the Pilot Area*

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.3: Littoralization and urbanization
- 3.8: Coastal Protection Measures
- 3.11: Transport
- 3.12: Governance

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.8: Coastal Protection Measures
- 3.9: Ecosystem Protection
- 3.12: Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	5
Littoralization and urbanization	4
Touristic fluxes and carrying capacity	3
Pollution and other anthropogenic pressures affecting ecosystems	1
Conflicts among different uses on land and sea and land-sea interaction	2

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	5
Ecosystems Protection	3
Water Cycle and Depuration	1
Transport and accessibility	2
Governance	4

6. Pilot Area 3A : Rosolina Mare

6.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

Most of the Italian littorals are experiencing high human pressures, mainly due to urbanization, tourism, and industry. Consequently, the natural dynamics of the coastal zones has been seriously modified by the increasing development of urban settlements, infrastructures, and economic activities. This phenomenon has considerably transformed the natural features of the coastal fringe reducing its resilience: dunes have been largely fragmented and frequently destroyed and the width of most sandy beaches is now reduced to a few tens of meters, sometimes a few feet.

The Adriatic coasts are mainly characterized by low sandy beaches commonly affected by significant erosion processes. Urbanization, construction of roads and railways, building of extensive defence structures, extraction of sediments from the riverbeds are just some of the most important causes that have produced drastic modifications on the littorals, either irreversible or rather difficult to correct.

In the north Adriatic coast, the combined effects of the lowering of the land-surface elevation and sea-level rise have threatened the industrial areas, the urban zones, and the surrounding vast reclaimed marshland, which have become more prone to being submerged. This has resulted in a more serious risk of flooding and inundation, particularly in view of the ongoing climate change. Subsidence has been detected in the Po river delta

Pilot Area Specific available information (From Task Leaders)

- Annual change in measured shore/beach area (in %): 14.9 m/y, Coastline variation refers to the period 2007-2012. The percentage value is not available.
- % shoreline subjected to erosion: 39%
- Extreme events on the coast per year(number): min 10, max 32, Extreme events on the coast correspond to flooding events (measured at the Venice-Chioggia station over the period 2002–2014)
- Coastal flooding events per year(number): min 10, max 32 Flooding events have been measured at the Venice-Chioggia station over the period 2002–2014

Task Leader appreciation

The Rosolina Mare coastal stretch is characterized by extended sandy beaches that undergo erosion.

In addition, along this coastal stretch, future sea-level rise could be higher than the expected values owing to the contribution of local subsidence, whose recent rates have been approximately equal to -4 mm/yr

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

6.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

Coastal Urbanization in Italy is intertemporally increasing. Between 2001 and 2012, population trends increased up to 5%. Littoralization and the subsequent urban sprawl have long been considered as one of the causes of urban functional disorganization, in terms of the use of services and transport efficiency. The national framework related to sustainable urbanization is considered as neither comprehensive nor homogenous as there are regions with experience in the use of integrated assessment procedures in urban development planning and others which adopt only general instruments without taking into account the contemporary changes in the urbanization process.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

In addition to what have been said above, the PA is surrounded by protected area and is more sensible to urban sprawl given also the growing demand of seaside tourism and ecotourism, it might be useful to experiment innovative and suitable solutions in this context.

6.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

It has been registered in the PA, during the period January-August 2014-2015, an increase 4.7% of the arrivals. Foreigners represent about 50% of the tourists.

6.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 3.90%, The value refers to NUTS3 10km wide coastline
- Percentage of bathing sites with excellent water quality: 100%, The PA has excellent water quality on its coastline
- Artificial sky brightness: 0.29 mcd/m², The PA has low light pollution. Information based on mean value measured at 10 km wide coastline
- Natural land cover classes/artificial land cover classes: 0.17, The value refers to NUTS3 10km wide coastline
- Municipal waste per capita annually produced: 531 kg/year, Data refer to the municipality of Municipality of Rosolina (year 2015)

Task Leader appreciation

Artificialization& habitat loss : The data reported for both indicators refer to the 10km-wide coastline belonging to Rovigo NUTS3 region (ITH37). The area is quite artificialized, with natural areas in fewer extent compared to artificial areas. Semi natural areas (agricultural land) are also widespread in the area. Habitat loss is alarming, since the ratio between natural and artificial is only 0.17. Most of natural land cover was in fact replaced by agriculture through reclamation work, as happened along most of Adriatic coastline during XX Century

Water pollution: Data at NUTS3 level were not available at the EU bathing water quality platform adopted for other PAs. Instead, there are on site measurements in Rosolina performed by Arpa Veneto, which cover 8 coastal sites each season. All these sites had excellent water quality in 2016 and in the past 6 years as well.

Source: http://www.arpa.veneto.it/temi-ambientali/acqua/datiacqua/balneazione_rete_details.php?id_s=8

PA coordinator also provided quantitative information on eutrophication.

Waste production :

Data were available exactly for the Municipality of Rosolina (year 2015) and revealed that waste production per capita is extremely high, also compared with the other Municipalities of the NUTS3 region. Rosolina presents actually the highest waste generation in the whole NUTS3 for the year 2015. The NUTS2 mean value is 453 kg/inhab/yr (2013). However, there is a substantial contribute from seaside tourism to seasonal waste production. Due to high touristic influence, waste production/inhab./yr should be indeed adjusted and reduced to 531 kg/yr

Light pollution: The PA has low light pollution, in comparison with the other PAs, who range from <0.1 (no light pollution) to 1 and over (high light pollution). The data reported refer to the mean value calculated at the NUTS3 10 km coastline. This good value is due to the fact that the PA is surrounded by an important Nature Park, famous for eco-touristic activities (bird-watching *in primis*).

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

6.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Appreciation all the information, it would like to add that: considering the characteristics of the area, the use of space is the main conflict.

6.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

- Existence of a coastal planning management system: Yes, Territorial regional plan conducted in 2012 for the Veneto area between Po and Piave rivers
- Length of protected and defended coastline (km): 3km
- % of tourist area and infrastructure with sea defences: 40%
- Cost of erosion prevention and repair measures per year (€): 250K-300K, Annual beach nourishment (data for the period 2015-2017)
- Typology of coastal defense measures (to be selected from the list of the defense techniques described in Report 3.8.1): Breakwater; groins, nourishment, 5 groins were built in the period from the end of '90s up to 2004; later, 4 submerged breakwaters were constructed in order to close the 4 cells. Different beach nourishment actions also were performed in the area
- Cost for the maintenance of defense measures per year (€): -50.000
- % of sites where coastal protection measures limit access to beach: -
- Influence (positive or negative) of defense measures presence on tourist appeal of the area (Low/medium/high influence based on interviews, questionnaire etc.): Neutral, Eco-friendly techniques that improved the aesthetics of the beach have been chosen

Task Leader appreciation

The “Piano Paesaggistico Regionale d'Ambito – Ambito « Arco Costiero Adriatico dal Po al Piave »” was adopted in 2012, ICZM plan («Gestione Integrata della Zona Costiera – Progetto per lo studio ed il monitoraggio della linea di costa per la definizione degli interventi di difesa dei litorali») drawn up in 2016 reported an up-to-date description of the state of the coast at a multidisciplinary level (environmental, social, morphological, anthropic, etc.) and an accurate estimate of the sedimentary balance based on knowledge of natural dynamics and of the coastal defense actions.

The Northern area of Rosolina Mare, the close one to Adige river mouth, is the most eroded and protected area, since it suffered sediment losses due to the low solid discharges coming from Adige river (around 10'000 m³/yr).

The building of groins occurred at different stages (first 2 groins were built at the end of '90s; the other two groins were built in 2001, an other in 2004, and other 2 will be planned to be built in the next years). In addition, submerged breakwaters were constructed in order to close the 4 cells. Actions of beach nourishment occurred starting from 2007, when sand pumping system was realized offshore the Adige mouth, The amount of nourished sand is estimated to be of 20-30'000 m³/year, but the erosion seems to be not stopped, due to lack in fluvial sediment supply as reported in the ICZM document (2016). Beach tourism and fishing activities are the principal economical forms developed in this area..

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

6.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	25372	Standard Data Forms	Largest coastal Adriatic N2000 site, covering whole Po delta
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	25200	Standard Data Forms	Huge Natura 2000 site with 22 EU habitats
Municipal waste recycled per year	ktonns/year	3.079	Municipal data	Data refer to Rosolina
Implementation of Natura 2000 management plans	Yes/No	No	Standard Data Forms	No management plans put in place till January 2017
Adequacy of legislation tackling pollution	Low/Intermediate/High	-	-	No data on <u>specific</u> projects in the PA tackling pollution

Task Leader appreciation

Coastal biodiversity and landscape protection

Rosolina is a small coastal village surrounded by agricultural land. Natural areas are mostly composed by wetlands and pinewood. Seaside tourism and ecotourism are the main local economy drivers, and they are overall increasing in the area.

There is a vast N2000 site in the Po Delta:

N2000 site “Delta del Po: tratto terminale e delta veneto”, 25372 ha, 22 EU habitats (25200 ha)

The area consists of different environments, each one with its own features: the countryside with paleoriverbeds, fossil dunes, embankments, fishing lagoons, lagoons or brackish inlets, and sandbars.

The Po Delta is also part of a Regional Nature Park, where many touristic activities are organized, from a simple tour by bike along the banks of the six branches of the river Po to a tour by boat or by canoe, to bird watching and photographic hunting that, thanks to concealed observation sites in the Nature Sanctuaries of Cà Mello or Cà Pisani, offers the opportunity to bring home wonderful naturalistic photos.

The PA is therefore officially protected both at regional and EU level. This fact should preserve landscape from further urbanization and industry development.

Source: <http://www.parcodeltapo.org/index.php/en/>

Waste recycling

Rosolina recycles 58.2% of waste, while the neighbouring PA of Polesine Camerini recycles a bit more, 63.5% (data 2015, from PA coordinator). As already mentioned, Rosolina is a highly touristic village, where it is more difficult to handle waste during peak season.

Overall, in 2015 3.079 ktonns were recycled in Rosolina (source: from PA Coordinator).

Noise

This is the current legislation pertinent to measures against noise pollution: DGR 4313/1993, L.R. 21/1999, L.R. 11/2001, "Regolamento Rumore Rovigo 2015". However, we are not aware of specific regulation in the PA (or in the Regional Natural Park) tackling noise pollution.

Air pollution

There is a regional plan against further air emissions-> Piano Regionale di Tutelazione dell'Atmosfera, but no local plan for regulating air emission was found.

Light pollution

In 2009 the city of Rovigo set up a plan against light pollution (Piano dell'illuminazione per il contenimento dell'inquinamento luminoso di Rovigo). In addition, there is the regional piece of legislation: L. R. 17/2009.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

6.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

6.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/ Expert Opinion	Description of the Data
Density of public transport (route kms per km ²)	Number	0.57	PA Coordinator	Data is for Province of Rovigo (No info available for PA)
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Car, Train, Bus	PA Coordinator	No detail information provided
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	-	-	No Data Feedback Available from PA Coordinator
% of accommodations, tourism facilities and other tourist attractions accessible by public transport	Percentage	-	-	No Data Feedback Available from PA Coordinator
Ratio of travel expenses by public versus private transport inside the destination	Ratio	-	-	No Data Feedback Available from PA Coordinator
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	Yes	PA Coordinator	Includes alternative fuel (CNG, electric, low sulfur fuel oil) and airborne emission monitoring for public transport, taxi and private vehicles.

				Additionally considers sustainable tourist mobility to reduce carbon footprint
N° of dredging operations needed per year	Number	-	-	No Data Feedback Available from PA Coordinator
Volume (m3) of sediments dredged per year	m3	-	-	No Data Feedback Available from PA Coordinator
Cost of dredging operations per year (€)	€	-	-	No Data Feedback Available from PA Coordinator

Task Leader appreciation

Rosolina PA is located by the Adriatic coast in the Province of Rovigo, within the Italian Veneto Region. Situated within the Po river delta, the nearest airport providing accessibility is the Venice Marco Polo Airport (almost 70 km away). This PA can be accessed by road through bus and cars (i.e. taxi, car rentals and private vehicles) and by train. However, the nearest intercity train station is Rovigo (almost 39 km away). Nearest cruise/ferry passenger port is also Venice (almost 65 km away). This PA also hosts marina with 150 mooring capacity, providing accessibility to nautical tourism and recreational boating activity. From our analysis, we assume that the local population density is very low and therefore, the public transport service frequency and infrastructure is also relatively low.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

6.10. *Enabling Factor 3.12: Governance*

General framework (From Report 3.12)

Sustainable tourism should:

“1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.

2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.

3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems. However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

6.11. Priorities of the Pilot Area

Which of the Threats and Enabling Factors analyzed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.3: Littoralization and urbanization
- 3.8: Coastal Protection Measures
- 3.9: Ecosystem Protection
- 3.12: Governance

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.8: Coastal Protection Measures
- 3.12: Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	5
Littoralization and urbanization	4
Touristic fluxes and carrying capacity	1
Pollution and other anthropogenic pressures affecting ecosystems	2
Conflicts among different uses on land and sea and land-sea interaction	3

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	5
Ecosystems Protection	3
Water Cycle and Depuration	1
Transport and accessibility	2
Governance	4

7. Pilot Area 3B: Polesine Camerini

7.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

Most of the Italian littorals are experiencing high human pressures, mainly due to urbanization, tourism, and industry. Consequently, the natural dynamics of the coastal zones has been seriously modified by the increasing development of urban settlements, infrastructures, and economic activities. This phenomenon has considerably transformed the natural features of the coastal fringe reducing its resilience: dunes have been largely fragmented and frequently destroyed and the width of most sandy beaches is now reduced to a few tens of meters, sometimes a few feet.

The Adriatic coasts are mainly characterized by low sandy beaches commonly affected by significant erosion processes. Urbanization, construction of roads and railways, building of extensive defence structures, extraction of sediments from the riverbeds are just some of the most important causes that have produced drastic modifications on the littorals, either irreversible or rather difficult to correct.

In the north Adriatic coast, the combined effects of the lowering of the land-surface elevation and sea-level rise have threatened the industrial areas, the urban zones, and the surrounding vast reclaimed marshland, which have become more prone to being submerged. This has resulted in a more serious risk of flooding and inundation, particularly in view of the ongoing climate change. Subsidence has been detected in the Po river delta

Pilot Area Specific available information (From Task Leaders)

- Annual change in measured shore/beach area (in %): -0.9 m/y, Coastline variation refers to the period 2007-2012. The percentage value is not available.
- % shoreline subjected to erosion: 15%

Task Leader appreciation

The Polesine Camerini coastal territory is a low-lying area characterized by sandy beaches and marshlands. Erosion occurs along the littorals.

One of the major threats is represented by land subsidence, which will be responsible for future higher sea-level rise than those expected by the most recent models. As a consequence, this pilot area is at risk of flooding.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

7.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

Coastal Urbanization in Italy is intertemporally increasing. Between 2001 and 2012, population trends increased up to 5%. Littoralization and the subsequent urban sprawl have long been considered as one of the causes of urban functional disorganization, in terms of the use of services and transport efficiency. The national framework related to sustainable urbanization is considered as neither comprehensive nor homogenous as there are regions with experience in the use of integrated assessment procedures in urban development planning and others which adopt only general instruments without taking into account the contemporary changes in the urbanization process.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available:(Max 300 words)

The analysis stresses a critical point as a matter of fact PA are the most sensible to this increasing threat.

7.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The pilot area is not exploited for tourism except spontaneous and uncontrolled "ecotourism" impossible to measure. Therefore the computing of the Carrying Capacity would give an important contribution to improve the correct management and possibly exploit of the site.

7.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 3.90%, The value refers to NUTS3 10km wide coastline
- Percentage of bathing sites with excellent water quality: 100%, The PA has excellent water quality on its coastline
- Artificial sky brightness: 0.29 mcd/m², The PA has low light pollution. Information based on mean value measured at 10 km wide coastline
- Natural land cover classes/artificial land cover classes: 0.17, The value refers to NUTS3 10km wide coastline
- Municipal waste per capita annually produced: 531 kg/year, Data refer to the municipality of Municipality of Rosolina (year 2015)

Task Leader appreciation

Artificialization& habitat loss

The data reported for both indicators refer to the 10km-wide coastline belonging to Rovigo NUTS3 region (ITH37). The area is quite artificialized, with natural areas in fewer extent compared to artificial areas. Habitat loss is alarming, since the ratio between natural and artificial is only 0.17. Most of the territory was actually converted into agricultural land, also in the Delta Po, where lots of wetlands have therefore disappeared.

Air pollution

There are no ON SITE measurements. However, at NUTS3 level quantitative data is available. PM10 are currently alarming in the centre of Rovigo, the administrative centre of the NUTS3, and in Porto Tolle - the municipality to which Polesine belongs.

The PA had an important industrial site which caused high air emissions, but it is now being dismissed. Source:

http://www.arpa.veneto.it/arpavinforma/bollettini/aria/aria_dati_validati.php?provincia=Rovigo

Water pollution

Data at NUTS3 level were not available at the EU bathing water quality platform adopted for other PAs. Instead, there are on site measurements in the Po Delta performed by Arpa Veneto, which cover several coastal sites each season. ALL these sites had excellent water quality in 2016 and in the past 6 years.

However, the PA is located along a channel within the Delta, where measurement stations are not available. Since there was an important industrial area in the vicinity, it is LIKELY that local waters could be polluted. We haven't assigned any value in the table since we don't rely on coastal water stations for this PA. Source: http://www.arpa.veneto.it/temi-ambientali/acqua/datiacqua/balneazione_rete_details.php?id_s=8

PA coordinator provided data on eutrophication levels in 2016 for Porto Tolle. One should take into account that this Municipality is very large, thus we can't rely too much on these values to characterize PolesineCamerini.

Waste production

PolesineCamerini is part of the municipality of Porto Tolle, which cover most of the Po Delta. Porto Tolle had in 2015 a waste production equal to 531 kg/inhab/yr, which is above the European average (400-500 kg) and above the regional NUTS2 average: 453 kg/inhab/yr (2013). Sources: from PA coordinator + http://www.arpa.veneto.it/temi-ambientali/rifiuti/dati_rifiuti/banca_dati_ru.php

Light pollution

The PA has low light pollution, in comparison with the other PAs, whose values range from <0.1 to 1 and over. The data reported refer to the mean value calculated at the NUTS3 10 km coastline. This good value is due to the fact that the PA is surrounded by an important Nature Park, famous for eco-touristic activities (bird-watching *in primis*).

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

7.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

7.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

- Existence of a coastal planning management system: Yes, Territorial regional plan conducted in 2012 for the Veneto area between Po and Piave rivers
- Length of protected and defended coastline (km): 37km
- % of tourist area and infrastructure with sea defences: -
- Cost of erosion prevention and repair measures per year (€):-
- Typology of coastal defense measures (to be selected from the list of the defense techniques described in Report 3.8.1):. Revetment, wooden groin, Rocky structures were built to allow the sediment deposit ; groin (in 2007) delimits one of the mouth of Po river (Po di Goro)
- Cost for the maintenance of defense measures per year (€):-
- % of sites where coastal protection measures limit access to beach: 0%
- Influence (positive or negative) of defense measures presence on tourist appeal of the area (Low/medium/high influence based on interviews, questionnaire etc): Neutral

Task Leader appreciation

The coastal management of the Po Delta is very complex, due to the simultaneous presence of environmental and economical values. Around 25'000 ha of Natura 2000 sites also include vulnerable dunes, subjected to sea-induced erosion, and frequently-inundated areas affected by saltwater intrusion. The “Piano Paesaggistico Regionale d'Ambito – Ambito « Arco Costiero Adriatico dal Po al Piave »” was adopted in 2012, ICZM plan (« Gestione Integrata della Zona Costiera – Progetto per lo studio ed il monitoraggio della linea di costa per la definizione degli interventi di difesa dei litorali ») drawn up in 2016 reported an up-to-date description of the state of the coast at a multidisciplinary level (environmental, social, morphological, anthropic, etc.) and an accurate estimate of the sedimentary balance based on knowledge of natural dynamics and of the coastal defense actions. The adopted

protection measures from the sea (revetments and groins), built at the beginning of 2000 years, still not have solved the erosion problem: the shoreline retreat is estimated in fact of about 5-10 m /yr from the ICZM document (2016). Eco- and beach tourism are the principal forms developed in this area.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

7.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	25372	Standard Data Forms	Largest coastal Adriatic N2000 site, covering whole Po delta
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	25200	Standard Data Forms	Huge Natura 2000 site with 22 EU habitats
Municipal waste recycled per year	ktonns/year	3.33	Municipal data	Data refer to Porto Tolle
Implementation of Natura 2000 management plans	Yes/No	No	Standard Data Forms	No management plans put in place till January 2017
Adequacy of legislation tackling pollution	Low/Intermediate/High	-	-	No data on <u>specific</u> projects in the PA tackling pollution

Task Leader appreciation

Coastal biodiversity and landscape protection

Polesine Camerini is a very small village within the Po Delta. Natural areas are mostly composed by wetlands, while most of territory is covered by arable land. Seaside tourism and ecotourism are the main local economy drivers, and they are overall increasing in the area. Fishing and agriculture are also important economic activities for the area, although they are decreasing over time.

There is a vast N2000 site in the Po Delta:

N2000 site “Delta del Po: tratto terminale e delta veneto”, 25372 ha, 22 EU habitats (25200 ha)

The area consists of different environments, each one with its own features: the countryside with paleoriverbeds, fossil dunes, embankments, fishing lagoons, lagoons or brackish inlets, and sandbars.

The Po Delta is also part of a Regional Nature Park, where many touristic activities are organized, from a simple tour by bike along the banks of the six branches of the river Po to a tour by boat or by canoe, to bird watching and photographic hunting that, thanks to concealed observation sites in the Nature Sanctuaries of Cà Mello or Cà Pisani, offers the opportunity to bring home wonderful naturalistic photos.

Source: <http://www.parcodeltapo.org/index.php/en/>

Since the PA is officially surrounded by N2000 site and Regional Nature Park, there is potential for enhancement in eco-tourism coupled with landscape protection. This favourable condition should preserve landscape from further urbanization and industry development.

Waste recycling

PolesineCamerini recycles a bit more than Rosolina (58.2% of waste, data 2015, from PA coordinator). However, Polesine's value refers to the whole municipality.

As already mentioned, Rosolina is a highly touristic village (1104733 tourists in 2016), where it is more difficult to handle waste during peak season, while Porto Tolle (municipality of PolesineCamerini) hosts only 150000 tourists (data 2014).

Noise

This is the current legislation pertinent to measures against noise pollution: DGR 4313/1993, L.R. 21/1999, L.R. 11/2001, "Regolamento Rumore Rovigo 2015". However, we are not aware of specific regulation in the PA (or in the Regional Natural Park) tackling noise pollution.

Air pollution

There is a regional plan against further air emissions-> Piano Regionale di TutelarisanamentoAtmosfera, but no local plan for regulating air emission was found.

Light pollution

In 2009 the city of Rovigo set up a plan against light pollution (Piano dell'illuminazione per il contenimento dell'inquinamento luminoso di Rovigo). In addition, there is the regional piece of legislation: L. R. 17/2009.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The presence of a no longer working industrial plant potentially could improve the site management through a conversion of the structure for ecotourism enabling development without any land use transofmrnation.l

7.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

7.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/ Expert Opinion	Description of the Data
Density of public transport (route kms per km ²)	Number	0.57	PA Coordinator	Data is for Province of Rovigo (No info available for PA)
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Car, Bus	PA Coordinator	May include intercity or sub-urban buses and taxi, rented cars or private vehicles
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	-	-	No Data Feedback Available from PA Coordinator
% of accommodations, tourism facilities and other tourist attractions accessible by public transport	Percentage	-	-	No Data Feedback Available from PA Coordinator
Ratio of travel expenses by public versus private transport inside the destination	Ratio	-	-	No Data Feedback Available from PA Coordinator
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	-	-	No Data Feedback Available from PA Coordinator
N° of dredging operations needed per year	Number	-	-	No Data Feedback Available from PA Coordinator

Volume (m3) of sediments dredged per year	m3	-	-	No Data Feedback Available from PA Coordinator
Cost of dredging operations per year (€)	€	-	-	No Data Feedback Available from PA Coordinator

Task Leader appreciation

This hospitable touristic land is located by the Adriatic coast in Province of Rovigo, within the Italian Veneto Region. Situated within the Po river delta, the nearest airport providing accessibility is the Venice Marco Polo Airport (almost 105 km away). By road this PA can be accessed through bus and cars (i.e. taxi, car rentals and private vehicles) and a good number of local tour operators provide touristic trips both on land and water. Nearest cruise/ferry passenger port is also Venice (almost 90 km away). However, there is no railway network connecting this PA and the nearest train station is Rovigo (almost 75 km away). From our analysis, we assume that the local population density is very low and therefore, the public transport service frequency and infrastructure is also relatively low.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

7.10. *Enabling Factor 3.12: Governance*

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems.

However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available:(Max 300 words)

7.11. Priorities of the Pilot Area

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.3: Littoralization and urbanization
- 3.8: Coastal Protection Measures
- 3.9: Ecosystem Protection
- 3.12: Governance

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.8: Coastal Protection Measures
- 3.12: Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	5
Littoralization and urbanization	4
Touristic fluxes and carrying capacity	1
Pollution and other anthropogenic pressures affecting ecosystems	2
Conflicts among different uses on land and sea and land-sea interaction	3

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	5
Ecosystems Protection	3
Water Cycle and Depuration	1
Transport and accessibility	2
Governance	4

8. Pilot Area 4: Valencia Port

8.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

Erosion also occurs along the Valencia littorals, mainly characterized by beaches. The coasts of this region are characterized by a very small (less than 20 cm) tidal range and low energy waves; major waves develop during storms generated by the passage of low-pressure systems from the west, which produces strong winds from NE and ENE. Storms may come through the entire year; however, the most severe events occur in November and December, when 6 m high waves with periods of 8-10 seconds have been recorded in deep water.

Over the last century, human actions have strongly influenced the equilibrium of the Valencia coast. In particular, the extraction of sand and gravel from rivers and beaches and the building of dams have reduced sediment inputs to the littorals, whereas jetties and breakwaters, harbours and recreational activities have interfered with the alongshore sediment transport, which has been strongly modified or completely stopped. Reduced sediment availability and coastal response capacity against erosion has been also caused by the destruction of littoral dunes and confinement of other sedimentary deposits due to 60's and 70's coastal developments. Moreover, at a local scale, some engineering structures may have increased the nearshore slope, also favouring an increase of the wave energy on the littorals and in turn favouring the propagation of erosion waves along the coast.

In the Valencia region, nearly 70% of the population lives in coastal municipalities and population density in the coastal zone is about four times the average further inland (782 inhabitants per square km, versus 207). The seasonal influx of tourists multiplies these values by three, so pressures on natural and urban systems are very high.

Pilot Area Specific available information (From Task Leaders)

Taking into account that pilot area is defined by the port area and the main districts visited by cruise passengers, the coastal stretch involved in the pilot is a completely artificial, entirely constituted by port infrastructures. In that sense the proposed indicators do not provided relevant information.

- Annual change in measured shore/beach area (in %): 0% artificial coastal stretch
- % shoreline subjected to erosion: 0% artificial coastal stretch
- Coastal area in degraded condition: Low, Each area within the port is used for a specific purpose, defined by the port plan
- Coastal flooding events per year(number): 0

Task Leader appreciation

Coastal erosion occurs north and south of the port. Data available collected between 2005 and 2010 and related to the southern coastal stretch and results from measurements carried from 1995 and 2011 and referred to the littoral located north.

The number of extreme events on the coast per year is not available. However, data of the significant wave height (monthly maximum values) from 2012 to 2017 show only one event, characterized by waves higher than 4.5 m (height corresponding to a return period of 50 years).

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Specifically, in the pilot area, being a totally artificial stretch, climate Change and morphological stability, do not pose a great threat.

At regional level, the Government has developed the Valencian Climate Change Strategy 2013-2020 (EVCC) which identifies as main problems related with climate change in

Valencian coast, potential changes in the frequency and/or intensity of storms, as well as possible sea level rise. With an anthropogenic origin, it also identifies as very influential in coastal stability in the short term, rivers sedimentary contributions or coastal works.

In order to prevent or mitigate the foreseeable effects of Climate Change in Valencian coasts, the EVCC proposes the following actions:

- Maintenance of discharges and rivers solid contributions
- In areas with serious problems of coastal erosion or excessive mobility on the coast, are proposed solutions such stabilization of beaches and dunes, coastal works to limit waves transport capacity or artificial sediments contributions.
- Protection of coastal natural values (PATIVEL¹)
- Delimitation and inventory of potential areas and elements affected by sea level rise, waves or tides in order to define where to apply abandonment/retreat/or protection measures.

Additionally, the Territorial Strategy of the Valencian Region (Guideline 67) recommends limiting urban growth in areas under 1 m above sea level. It also proposes prevention criteria to be taken into account in areas with risk of coastal erosion (Guideline 139).

¹ Territorial Action Plan for the Green Coastal Infrastructure (PATIVEL), currently in public information stage

8.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

Spain is among the most urbanized countries of the Northern Mediterranean. This is evident from the statistic data which shows that: a) 20% of the Spanish shoreland is occupied by urban entities, b) 29 urban areas in the coastal zone have a high urban development index and c) 80% of coastal urban areas are implicated in ICZM actions. In 2014, 56% of the population (over 20 million people) resided in coastal urban zones. However, coastal urbanization is not equally intensive among Spanish coastal areas as the South and East are completely occupied by urban areas, in contrast to the north coast which is less urbanized. Due to coastal urbanization/littoralization, degradation of coastal ecosystems and land transformations are observed. Especially for countries, such as Spain, where tourism is one of the main economic activities, the building rate for tourist resorts and second homes is very high. Regarding policy and planning issues, it should be noted that the deficient management model for coastal areas combined with the Urban Planning Regulation Law (LRAU), which allows land to be confiscated in order to "urbanize" rural areas, complicates the protection of coastal ecosystems and the sustainable development of these areas.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

P.A2.1.	Land occupied by artificial surfaces within the first 500m of coast (in %)	100% (in Pilot Area) 50% (in Valencia Region *)
P.A2.2.	% of area designated for tourism purposes	No data

* Data referred to Valencia Region not to the Pilot Area. (Source: PATIVEL. Catálogo de Playas)

Littoralization and urbanization is not a significant threat in our pilot area, due that the pilot area is focused on the port of Valencia. In any case a brief explanation is included in relation to this phenomenon in the Valencian Community:

Valencian coast has an approximate length of 500 km, 265 of them correspond to beaches. In this coast we find 60 coastal municipalities, which cover 14% of the Valencian Region area, but where 53% of the region's population lives².

Considering land cover, in the first 10 km of the coast we find the 50% of the total Valencian Region urban land, while in the area conformed by the line of 30 km to the inner end of the territory, we only find 14% of urban land.

Analysing the urban planning of the first 500 m of the coast from the outer line of the sea shore, it can be deduced that in Valencia Region 50% of the land is urban or developable, 44% is protected by environmental regulations, and the rest, 6%, is common undeveloped land.

Those coastal lands that have remained outside the urban transformation process are coastal areas of high environmental quality, and include an important percentage of the protected areas in Valencia Region, as well as agricultural areas with high productive capacity, highly valuable areas for its landscape, and elements of the hydrographic network.

All these data show that, in Valencia Region:

² Source: Territorial Strategy of the Valencian Region

- There is a marked demographic and urbanistic duality between coastal lands and inner lands.
- Coastal lands are under a great pressure, there is a strong competition between different land uses.
- Most of the coastal lands which are not protected by environmental regulations, have been classified as urban or developable lands.

This coastal urbanization, has not provided added value to the territory and has resulted in the trivialization of the coastal zone and in the loss of differentiating elements. So there are different critical sectors, from defenders of the Valencian environmental heritage, and from the tourist sector, whose have pointed out the need to re-qualify valencian tourist offer by preventing this process affect the perception of the Region as a quality destination.

In this sense, Valencian Regional Government is currently processing the Territorial Action Plan for the Green Infrastructure (PATIVEL) in order to preserve those coastal areas that are not yet protected or without an adequate protection regime. PATIVEL is a territorial planning instrument, with a supra-municipal scope.

8.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

According to the pilot area features, touristic fluxes and carrying capacity are relevant.

Its relevance does not rely on threats over ecological systems, since on one hand the area is already developed (it is part of the city) and on the other hand urban services (i.e. water supply & depuration systems, energy, etc.) are not significantly overcharged because of tourism demand.

However, on the cultural and socio-demographic side some threats can be identified, as for example those linked to the concentration of tourist demand on tourism interesting sites, particularly on cultural heritage sites and old parts of the city.

In this sense, this threat is somehow related to the effects of conflict of uses, in turn described in the sections 3.6, the last two bullet points of section 3.5., and to the strategies for setting up alternative tourist trials mentioned in section 3.11.

Visitor carrying capacity are important for cruise tourism and specifically for transit ports, as they consolidate large numbers of visitors within the destination and its attractions for short periods.

8.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 17.54%, The value refers to NUTS3 10km wide coastline
- Percentage of bathing sites with excellent water quality: 81%, Water is polluted mainly due to cruise and other vessels in the port and surrounding areas. (Maritime traffic could be one of the pollution causes, but there are others spills maybe more relevant, particularly those, punctual or diffuse, discharged from land to sea with urban agricultural or industrial origin).
- Artificial sky brightness: 2.44 mcd/m², The PA has extremely high light pollution, in comparison with the other PAs, who range from <0.1 to 1
- Natural land cover classes/artificial land cover classes: 0.93, The value refers to NUTS3 10km wide coastline
- Percentage of people exposed to road noise: 68.87%, Data refer exactly to the city of Valencia
- Municipal waste per capita annually produced: 424 kg/year, Data refer to the Comunidad Valenciana

Task Leader appreciation

Artificialization& habitat loss : The data reported for both indicators refer to the 10km-wide coastline belonging to Valencia NUTS3 region (ES523). The area is highly artificialized, with natural areas in fewer extent compared to artificial areas. Habitat loss is also very alarming, since the ratio between natural and artificial is only 0.93%.

Water pollution: Data available via European statistics (<https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>). The value reported is not good, especially compared to EU coastlines and to other PAs. 81% is in fact a low value of

bathing quality, since most of Mediterranean EU coastlines currently reach higher % of excellent bathing sites.

Waste production :

Waste generation looks quite low in comparison with other areas for which information is available, but we must point out that the value refers to NUTS2 level (ComunidadValenciana).

Light pollution: The PA has extremely high light pollution, in comparison with the other PAs, who range from <0.1 to 1. The data reported refer to the mean value calculated at the NUTS3 10 km coastline

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Taking into account the proposed indicators in *P.A4. Pollution and other anthropogenic pressures* (WP.3.16), the values for Valencia Port pilot area are:

P.A4.1.	Volume (m3) of litter collected per given length of shoreline	42m3/km	*
P.A4.2.	Rate of loss of protected areas (%)	0%	**

* During 2015 were removed 189 m³ of floating garbage (Valencia Port Authority Environmental Report, 2015). Taking into account the coastal stretch in the pilot area is 4.5 kmlength, the value of the indicator is 43 m³ (189/4.5) of garbage collected per km of coast in the study area.

** Protected areas in Valencia Region are safeguarded by regional, national and European regulations, so those protected areas are not lost. Maybe could be loss of biodiversity in these protected areas.

Taking into account that our pilot area is focused on cruise activity in the Port of Valencia and the City, the main environmental aspects to consider are:

- Air emissions:
 - o from ships(the most relevant are NO_x, CO₂, SO₂, PM_{2.5/10}). Some of them can cause health impacts for human beings, acidification of rain and can contribute to climate change).
 - o emissions from cruisers trips in the city.
- Waste generated on activities on board by passengers and crew (urban and similar, and dangerous waste)which 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)
- Noise (from cruise ships during berthing)
- Saturation problems in certain areaswith tourist attraction.
- Changes in traditional value systems, lifestyles and behaviours at destinations

8.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The pilot area is characterized by some key features that have to be taken into account when analysing the conflicts linked with land use and land/sea interaction. These features include:

- The pilot area is an urban area integrated by Valencia's port waterfront and downtown;
- According to the local case study approach, beaches and natural assets have not a key role as Valencia is basically an urban tourism destination (and neither a "sun and beach"/nautical destination nor a rural/ecotourism destination). This doesn't mean that these

natural assets are not important, but for the project purposes its consideration is not essential.

According to the above considerations, threats linked to land/sea interactions are not relevant as, although existing, they do not impact in a significant way neither the pilot area nor its role as a tourism destination.

As for the land use competition, it has to be considered not in the sense of competing uses in land development processes but in the transformation of city areas, both through urban renewal strategies and changes in the use of public spaces and private buildings.

In this sense its consideration as a threat has to do, for example, with the substitution of local shops by tourism oriented ones or with the displacement of local population from certain city areas due to the increase of housing rents. As a result of such kind of processes, which are relatively common in touristic cities, certain city areas suffer a transformation resulting in emptying them in terms of local population, uses and identity and thus, losing somehow its attractiveness.

8.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Existence of a coastal planning management system	YES/NO	NO	Expert opinion	There are present different instruments and plans related with coastal management
Length of protected and defended coastline (km)	km	4.5 km	Google Earth	Extension is from Playa de las Arenas (North) Pinedo beach (South)
% of tourist area and infrastructure with sea defenses	Percentage	100	Expert opinion	The port area is considered.
Cost of erosion prevention and repair measures per year (€)	€	N/A		To be requested to Valencia Port Authority
Typology of coastal defense measures (to be selected from the list of the defense techniques described in Report 3.8.1)	Description	Breakwaters		The defence structures are connected to the port infrastructures, i.e. rubble mound breakwaters and vertical caissons
Cost for the maintenance of defense measures per year (€)	€	N/A		To be requested to Valencia Port Authority
% of sites where coastal protection measures limit access to beach	Percentage	100		The defence structures are connected to the port area.
Influence (positive or negative) of defense measures presence on tourist appeal of the area (Low/medium/high influence based on interviews, questionnaire etc)	Low/Medium/High	N/A		To be requested to Valencia Port Authority

Task Leader appreciation

In Valencia Region there is no specific “Coastal Planning management system”. There are different instruments and plans related with coastal management (collaboration agreements between State and Regional administrations for ICZM, Territorial Strategy of the Valencia Region, or Territorial Action Plan for the Green Coastal Infrastructure among others) but there are not integrated in one management system. The pilot area extends from the far North of the port (Playa de las Arenas) to the far southern (Pinedo beach).

The pilot study is focused on the port area, so coastal defence measures are associated to port infrastructures, i.e. rubble mound breakwaters and vertical caissons. The port is very ancient (first documentation was of 1483) and was enlarged at the different moments ('50's; '70s; 2000).

Pilot Area Coordinator appreciation and additional information if available: *(Max 300 words)*

According to the statements set out in section 3.6., land/sea interactions are not relevant for the case study as, even existing, they do not threat in a significant way neither the pilot area itself nor its role as a tourism destination.

In this sense this enabling factor, which is related to the above threat, is not considered as key in this particular case.

8.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	-	-	No Natura 2000 site in the PA
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	-	-	No Natura 2000 site in the PA. However, there is a huge Natura 2000 site in the vicinity, La Albufera, with 22 EU habitats
Municipal waste recycled per year	ktonns/year	101.65	Municipal data	Data refer to one recycling site located in Valencia
Implementation of Natura 2000 management plans	Yes/No	-	-	No Natura 2000 site in the PA
Adequacy of legislation tackling pollution	Low/Intermediate/High	High	Port of Valencia	The Port of Valencia adopts several measures to reduce pollution (see discussion)

Task Leader appreciation

Coastal biodiversity and landscape protection

There are no Natura 2000 sites inside the PA; however there are wide green spaces in the urban environment of Valencia and the Park La Albufera in the vicinity of the PA, whose potential could be employed for development eco-touristic offers.

Lying to the south of the city of Valencia, the Albufera freshwater lagoon is one of the most important nature areas in the Land of Valencia. A slim strip of coastline protects it from the sea, and on this strip of land, sand dunes have formed, plus a curious Mediterranean pine forest growing in sandy soil with rich shrubbery. This area is called the Devesa del Saler, a word derived from a kind of pastureland. Three canals (two natural and a third man-made), connect the lagoon and surrounding wetlands with the sea, and each has its own characteristic flora and fauna. La Albufera is an important stopover point for migratory birds and a nesting area for resident birds.

Water pollution

Water pollution is monitored by the Regional government, who performs microbiological analysis of bathing waters (241 sampling points in 2016) during the bathing season and elaborates an annual classification of each of these points based on current regulations, differentiating the following categories: Insufficient, Sufficient, Good and Excellent (parameters measured: Intestinal Enterococci and E. coli; units: MPN or CFU/100ml).

The Port applies a scheme for reducing **water** and **air** pollution from ships in berths:

A discount of 50% on port dues (vessel rate) to liquid natural gas-driven ships on high seas or use of liquid natural gas /electricity at berth. In addition, a discount of 5% (bonus coefficient as it's called officially) on port dues (vessel rate) to encourage better environmental practice, as per art. 245.1 of Royal Legislative Decree 2011/2. The discount is applied when a vessel demonstrates compliance with certain conditions of respect for the environment, improving those required by international standards and conventions, and when the shipping company or the shipowner has signed an agreement with Puertos del Estado on good environmental practices associated with operations and permanence of ships in the port. This agreement shall provide for a set of technical and operational instructions, based on the "Guidelines of good environmental practices" approved by Puertos del Estado, whose operational compliance can be verified through an environmental management system. Ships' compliance to these rules and international conventions must be certified by accredited certification bodies belonging to the International Accreditation Forum. The compliance with the agreement signed will be verified by the Port Authority (COGEA 2017)

Waste recycling

Valencia city has treated in 2015 101.65k tons of waste

Source:

<http://www.valencia.es/ayuntamiento/catalogo.nsf/IndiceAnuario?readForm&lang=1&capitulo=12&tema=4&bdOrigen=ayuntamiento/estadistica.nsf&idApoyo=58FB3C7A3D56E414C1257DD40057EB6C>

Noise

Valencia Port monitors and controls acoustic emissions from the port through three sonometers strategically placed in the port-city interface.

The indicator currently used by the port of Valencia is the annual average value of the noise level, in the three measurement points, calculated for the three different periods of the day (day, evening, night), but not the number of people exposed.

No information regarding underwater noise for the PA.

Air pollution

Valencia Port monitors and controls air quality, specifically concentrations of PM10, PM2.5, SO2, NO2, and O3. The indicators they actually used are:

- Number of exceedances of limit values (according to the national legislation RD 102/2011) (For: SO2, NO2, O3, PM10, PM2.5)
- Annual mean value of concentration levels (For: NO2, PM10, PM2.5)

This means that there is an active monitoring for air pollution.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

In order to control the main environmental aspects derived from cruise activity and other port activities, Valencia Port Authority (VPA) has installed different monitoring and instrumentation networks to obtain information in order to take appropriate actions to reduce negative impacts derived from port activities. Might be highlighted the following ones:

VPA monitors and controls **air quality** through a monitoring network which provides continuous air quality data which can be analysed almost in real time. Specifically, the concentrations of various pollutants that affect air quality in the port area are controlled and monitored (PM10, PM2.5 and PM1, SO2, NO2 and CO) in accordance with the reference limits required by Spanish legislation.

VPA monitors and controls the **acoustic emissions** from port environment through three sonometers strategically placed in the port-city interface, which analyse the acoustic quality in near real time. Data collected are used to identify trends. When specific exceedances are detected, attempts are made to try to detect the cause and the appropriate corrective measures are taken.

VPA has various control instruments to control water quality.

One of them is and an oximeter that measures the levels of dissolved oxygen in the water with the aim of detecting possible decreases in the levels of this parameter that may affect the aquatic life present.

In addition, VPA carries out monthly campaigns to determine water quality in compliance with the provisions of the Water Framework Directive (2000/60/EC).

Additionally, VPA carries out different measures to prevent and minimize possible pollution episodes. Among these measures must be highlighted the following ones:

- Daily cleaning of the water surface with a pelican-type craft.
- An internal emergency plan and a contingency plan, in addition to different concession plans, to combat pollution caused by hydrocarbon spills.

VPA has a Plan for the reception and handling of waste from ships. In order to improve control in the **waste collection services from ships**. To encourage the use of these reception services, the VPA charges a fee to ships that dock in the port, independently of whether they use the waste reception service.

8.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

In the Port of Valencia the main consumptions of water occurs in buildings, in gardens irrigation and water supplying to ships (cruises among others).

There are some companies which reuse their wastewaters in the irrigation of their own gardens.

Among the most important impacts of tourism on water resources and sanitation in Valencia area, must be highlighted:

- Increased demand for water resources
- Increased volume of wastewater to be treated

- Deterioration of the quality of bathing waters

Valencia Region has high vulnerability to droughts and water scarcity problems, so water saving strategies and reuse of waste water has been strengthened over the past two decades to ensure agricultural, urban (gardens and street cleaning), recreational and industrial supplies.

The City of Valencia carries out different water savings strategies like:

- Low pressure network, non-potable water, for secondary uses (garden irrigation, street cleaning, ...)
- Control of infrastructures: control of the state of the network, sectorization, search of leaks, etc.
- Control of consumption
- Awareness of users through different municipal campaigns
- The municipal ordinance penalizes negligent or voluntary wasting water and protects the quality.
- Reduced tariff for low consumption
- Emergency plans for drought situations

8.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/ Expert Opinion	Description of the Data
Density of public transport (route kms per km2)	Number	1.413 km/1.000.000 hab 4.843 km/1.000 km2 (2)	-	Source: Plan de Movilidad Urbana Sostenible de Valencia
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Bus, Car, Ferry, Airplane	Estimation	Very well connected via other transport modes
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	- Year 2015: 356.282 passenger by public transport Year 2016: 433.473 Total visitors and overnight stay: 4.967.985 (2015) 6.365.489 (2016)	-	Data Available from PA Coordinator
% of accommodations, tourism facilities and other tourist attractions accessible by	Percentage	100	-	

public transport				
Ratio of travel expenses by public versus private transport inside the destination	Ratio	N/A	-	Data no Available
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	Yes	-	
N° of dredging operations needed per year	Number	0-1	-	Valencia Port Authority carries out maintenance dredging works when it is necessary to guarantee access and maneuverability. Dredging works are carried out too in the construction of new docks. During 2015 and 2016 no dredging operations have been carried out
Volume (m3) of sediments dredged per year	m3	It depends	-	
Cost of dredging operations per year (€)	€	It depends	-	

Task Leader appreciation

Valencia Port is one of the renowned cruise ports in the Mediterranean. Due to its close vicinity to the Valencia city, this PA may provide very easy accessibility, well managed and sufficient transport infrastructure. The nearest airport providing access to this PA is the Valencia airport, only about 5 km away. Besides bus, public transport within the Valencia city includes tram and metro, which is unique among all other PAs. This PA also hosts marinas with the highest number of mooring capacities among all the PAs (more than 850 mooring capacities altogether), providing accessibility to nautical tourism and recreational boating activity. Within the context of transport and accessibility, this PA may be considered as one of the best examples.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

This enabling factor is relevant for the case study.

On one hand, accessibility to Valencia as a tourist destination from abroad is a significant factor to be taken into account for the development of a cruise tourism destination, especially for a successful positioning as a home port. On the other hand, despite the tourism market in

urban areas has little influence on public transport, accessibility and transport within the pilot area and its closest metropolitan hinterland can be considered as key for its co-evolution.

In this sense, in line with the threats and opportunities shared by Mediterranean port cities in the field of sustainable mobility, the set up of particular tourism-oriented mobility strategies are able to favourably impact the quality of life in the city both for tourists and locals. The Interreg Med project SUMPORT is making progresses in this field.

On one hand, these particular mobility strategies could contribute to connect alternative points of interest with the waterfront and the downtown through new tourist trails, expanding and improving the tourism offer and benefiting other city areas as well as the day to day mobility for locals. In the case of Valencia some of these alternative points have been identified within the Interreg Med project Alter-Eco.

But above all, these particular mobility strategies could help to tackle some challenges related to cruise tourism mobility, as for example:

- how to adapt the public transport offer to the cruise mobility demand, since cruise passengers flows have very particular characteristics (eg. temporal concentration, strong dependency of tourism offer, etc),
- How to coordinate the routes with the different niches of the tourism offer; or
- how to reduce transport's contribution to the environmental impact generated by tourism activities (eg. adopting low carbon transport initiatives).

8.10. Enabling Factor 3.12: Governance

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems. However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Existence of up to date tourism plans and policies	Yes/no	Yes	Valencia Port Foundation	- Plan Nacional Integral de Turismo (Integrated National Plan for Tourism) (National level) - Region of Valencia Global Strategy for Tourism 2010 – 2020 (Regional level) - Valencia tourist, Towards 2020 (Local level) There is a rich strategic framework allowing to take coherent decisions at all level of government for sustainable tourism planning.
Degree of stakeholder participation in the planning process	(Low/medium/high)	Medium	Valencia Port Foundation	Law 27/2006, of 18 July, which regulates the rights of access to information, public participation and access to justice in environmental matters.

				<p>The experiences of participatory processes in coastal management have been rare, and mostly of a local nature. But it does seem to be increasing interest in facilitating these processes of participation, incorporating the user in managing their own environment.</p>
Existence and functioning of a representative coordinating mechanism for MSP/ICZM	Yes/no	Yes	<p>PAP/RAC http://www.pap-thecoastcentre.org/pdfs/D2.2A_Final%20global%20results%20of%20the%20stock-taking.pdf</p>	<p>Existence of such a mechanism for:</p> <ul style="list-style-type: none"> -Land and sea coordination; -Horizontal coordination; -Vertical coordination. <p>All 3 kind of coordination mechanisms for ICZM optimal functioning exist at the National level</p>

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

As far as Governance is concerned, this enabling factor is very relevant since it is a cross cutting factor, especially when the powers over the topics addressed rely in several bodies and there is a wide range of stakeholders involved.

In the pilot area of Valencia this is the case. From a spatial perspective, two different physical and administrative entities (port and municipality) share the waterfront, and from a thematic point of view, all the threats and even some of the rest of enabling factors fulfil the above-mentioned characteristics. (e.g. mobility and tourism planning & management, where different Administrations and stakeholders involved play different roles).

On the other hand, in the case of this particular pilot area, although multilateral bodies have been set up, there is still margin for development in terms of pilots and tools implementation.

8.11. *Priorities of the Pilot Area*

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.4. Touristic fluxes and carrying capacity
- 3.5. Pollution and other anthropogenic pressures affecting ecosystems
- 3.11. Transport and accessibility
- 3.12. Governance

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.4. Touristic fluxes and carrying capacity
- 3.5. Pollution and other anthropogenic pressures affecting ecosystems
- 3.12. Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience:

Climate changes and morphological stability	3
Littoralization and urbanization	1
Touristic fluxes and carrying capacity	5
Pollution and other anthropogenic pressures affecting ecosystems	4
Conflicts among different uses on land and sea and land-sea interaction	2

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience :

Coastal Protection Measures	1
Ecosystems Protection	3
Water Cycle and Depuration	2
Transport and accessibility	4
Governance	5

9. Pilot Area 5: Orb River Delta / Delta de l'Orb (HéraultWest)

9.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

The littorals of the Department of Hérault have shown that since the 1990s the anthropization and urbanization of the coast have upset the fragile balance. The reduced sand availability from dunes and the decrease of the sedimentary contribution from rivers (mainly due to canalizations, dams and extractions of sediments) have deprived the system of a considerable volume of sand. For several decades, the implementation of protection measures has locally slowed down or stopped erosion of some coastal stretches, but on the mid-term time scale, they have been responsible for negative impacts on the littorals.

At present, narrow flat beaches characterize the eastern and central stretches of the Hérault coastal zone where urbanization have locally reached the beach. The artificialization of the littorals is generally very widespread in the west sector and more limited elsewhere. Dunes are lacking or scarce; sometimes they are artificial

Another threat to coastal environments is represented by storm surges, which enhance erosion and increase flood-risk. Frequency, wave energy, and wave height of storm in the Gulf of Lions have been subject of many studies.

Locally, erosion and flooding can be favoured by subsidence, which is frequently experienced by deltaic areas.

As the southern French coast is highly anthropized and characterized by intensive tourism, all these hazards represent serious threats to population, urban environment, tourism and other economic activities. Locally, owing to this intense anthropization, the width of the flat sandy beaches has been also reduced by the expansion of the urban fronts

Pilot Area Specific available information (From Task Leaders)

- % shoreline subjected to erosion: 44%, This information refers to the period 2000-2009, but we have also information for period 1945 – 2010.
- Coastal area in degraded condition: Variable,
- Extreme events on the coast per year(number): 5 – 15, The data refer to big storms, The damages have increased over the entire period as well as the vulnerability on tourism structures
- Coastal flooding events per year(number): 0.5, On average, over the last two decades, one dangerous flooding event has occurred every two years.

Task Leader appreciation

The percentage value of annual change in shore/beach area is not available because high variability has been observed along the coastal stretch.

On average, over the last two decades, 5 to 15 big storms have occurred every year. The damages have increased over the entire period as well as the vulnerability on tourism structures.

Coastal areas close to the river mouths are likely the most threatened.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Coastal Erosion is the main issue of the Pilot Area

9.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

France, is a highly urbanized country with a densely populated coastline. According to the projections provided by UN (2014), by 2050 its urban population will have exceeded 85%. This pattern is also encountered in coastal areas. For instance, population trends in French coastal regions from 2001 to 2012 increased considerably and over 5%.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Tourism on the Languedoc coast is relatively recent, resulting for the most part from the development of the Racine Mission from the 1960s to the 1980s. New and large coastal resorts have been developed: Grande Motte, Cap Agde, Leucate, St-Cyprien. They have been accompanied by road infrastructures often made too close to the coast.

Today we must manage this legacy, and the marine threats related to the effects of climate change. On our sandy and low coasts, the risks on the populations and the goods are amplified. Damages until the end of the present century are evaluated between 5 and 20 billions for Herault.

Housing and urbanization in general, which dates back to the 1970s, do not always correspond to the demands and expectations of today's tourism.

9.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Map of Touristic fluxes in Herault



9.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 14.77%, The value refers to NUTS3 10km wide coastline
- Percentage of bathing sites with excellent water quality: 80%, The value refers to NUTS3 level
- Artificial sky brightness: 1.24 mcd/m², The PA has high light pollution, in comparison with the other PAs, who range from <0.1 to 1. Data computed at NUTS3 10 km wide coastline
- Natural land cover classes/artificial land cover classes: 0.70%, The value refers to NUTS3 10km wide coastline
- Municipal waste per capita annually produced: 517 kg/year, Data refer to the area “HAUT LANGUEDOC - OuestHerault

Task Leader appreciation

Artificialization& habitat loss : The data reported for both indicators refer to the 10km-wide coastline belonging to Herault NUTS3 region (FR813), so probably more alarming than the values at pilot area scale, which are not available. However, the area is highly artificialized, with natural areas in fewer extent compared to artificial areas. Habitat loss is also worrisome at NUTS3 10km-wide coastline, since the ratio between natural and artificial land cover classes is only 0.70%. Calculations at pilot scale would give better figures than the ones at NUTS3 level.

Water pollution: Data available via European statistics (<https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>). The value reported is not good, especially compared to EU coastlines and to other PAs. 80% is in fact a low value of bathing quality, since most of Mediterranean EU coastlines currently reach higher % of excellent bathing sites. No information on the reason behind this (intensive agriculture?).

Waste production : Plenty of information was provided by PA coordinator on waste production at various spatial scales 517 kg/capita refers to the area "HAUT LANGUEDOC - OuestHerault", to which the PA belongs. The value is slightly lower than the average waste production in France (534 kg/capita in 2011) and much lower than that in the NUTS2 Languedoc-Roussillon (645 kg/capita), to which the PA belongs. The PA Coordinator also gave us a source with the total waste produced by the "Agglomeration" of Beziers, to which the four municipalities belong. Taking this total amount of waste produced per year (2016), i.e. 37842 tonnes, and dividing it by population (91083 inhabitants), we obtain 415 kg/capita/yr. This value is better than the one we chose, but it is only an estimate generated by our calculation. Sources: internal communications from PA coordinator (DGA 2015. Le Plan de Prevention et de Gestion des Dechets Non Dangereux); Data at NUTS2 level: <http://ec.europa.eu/eurostat/web/waste/transboundary-waste-shipments/key-waste-streams/municipal-waste>

Light pollution: The PA seems to have high light pollution, in comparison with the other PAs, who range from <0.1 to 1. However, the data reported refer to the mean value calculated at the NUTS3 10 km coastline, so they could be overestimated.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

This very touristic sector is in tension, some years in a big way when the rainfall has been quite low: we enter into a drought condition, with the establishment of a crisis cell at the level of the institutional actors, and progressive obligations to the users (limited watering green spaces, crops, washing cars ...). The flow of neighboring rivers is declining while the influx of tourist population is increasing consumption.

When the tourism peak coincides with a drought, the natural resources experience great pressure. There are also problems of salinisation of the groundwater table and water quality.

9.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

9.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

- Existence of a coastal planning management system: Yes, A coastal planning management system exists since 2004, well realized at the sedimentary cell scale. It must be updated
- Length of protected and defended coastline (km): hard defense = 3 km; soft defense = 6 km
- % of tourist area and infrastructure with sea defences: 75%, 25% with hard defense, 50% with soft defense, 25% without defense
- Cost of erosion prevention and repair measures per year (€):-
- Typology of coastal defense measures (to be selected from the list of the defense techniques described in Report 3.8.1): Groins, breakwaters, dune protection, beach nourishment Hard defence structures are located west the L’Orb river mouth
- Cost for the maintenance of defense measures per year (€):50.000
- % of sites where coastal protection measures limit access to beach: 20%
- Influence (positive or negative) of defense measures presence on tourist appeal of the area (Low/medium/high influence based on interviews, questionnaire etc): Medium, Several questionnaire campaigns have been conducted during the last 10 years

Task Leader appreciation

The development of the area Valras-Plage started at the beginning of the XX century and grew rapidly, in connection with the touristic activities characterizing the Languedoc-Roussillon coast during the last decades. The lengthening of the jetties of the marina built at the mouth of the Orb river in 1968 intercepted long-shore current from West and caused a negative sediment budget in the area, and erosion started on the beach at Valras, located downstream the jetties up to 50 m of beach retreat between 1968 and 1981. To protect the

beach, a first detached breakwater was built in 1985, following the damage caused by the heavy storm of November 1982. The consequent downstream erosion lead to the construction of other 3 breakwaters in 1992, 2 in 1995 and other 5 in 1999, inducing a domino effect and a cost of 3 Millions of Euros. Also a sand nourishment of 127'000 m³ was carried out, but the area still experiences erosion and inundation. Recent interviews revealed that tourists have the clear perception of beach erosion, that prefer to contrast by means of soft and composite measures.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Since more than 40 years, we need to build coastal protection, in particular break waters and beachnourishment, to protect Valras city.

Flood risks from river and sea.

9.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	15348	Standard Data Form	Most of the PA area is part of Natura 2000 sites
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	6154	Standard Data Form	Most of the PA area is part of Natura 2000 sites, thus EU habitats have large extent
Municipal waste recycled per year	ktonns/year	37.84	PA Coordinator	The value refers to the “Agglomeration” of Beziers (see discussion)
Implementation of Natura 2000 management plans	Yes/No	Yes	Standard Data Form	Valid in the Marine N2000 site from 2016
Adequacy of legislation tackling pollution	Low/Intermediate/High	High	PA Coordinator	Strategy for enhancement of eco-tourism while protecting environment

Task Leader appreciation

Coastal biodiversity and landscape protection

The PA is a 12*3 km coastal strip which involves four small municipalities: Serignan, Valras-Plage, Vendres and Sauvian. The area is very variegated, with Natura 2000 sites and coastal protected zones (Reserve Naturelle de Orpellières), vineyards and the delta river Orb, in coexistence with an already established coastal tourism (e.g. small port of Serignan). Tourism registers 85000 presences in summertime and +6000 jobs.

Natura 2000 sites are established in most of the area, fact that is of great value. Some of them are very vast and already managed.

- Marine N2000 site “Côtés de la Méditerranée”, 8678 ha, two EU habitats (871 ha)
- N2000 site “La Grande Mère”, 424 ha, seven EU habitats (226 ha)

- N2000 site “Est et sud de Béziers”, 6102 ha, ten EU habitats (estimate – 5000 ha)
- N2000 site „Les Orpellières“, 144 ha, six EU habitats (57 ha)

Waste recycling

The value reported refer to the whole “Agglomeration” to which the four municipalities belong. When considering the municipalities of Serignan and Valras-Plage only, 2.977 and 3.701 ktonns were recycled in 2016 respectively. Overall, there was a very slight increase in waste recycling in the 2012-2016 time span.

Source: Rapport annuelsu le service public &préventionet de gestion des dechets - annee 2016

Adequacy of legislation tackling pollution

A “high” value was assigned to the adequacy of strategies so far put in place to tackle pollution, because both at NUTS3 level and a pilot level it seems that there are significant ongoing efforts in this direction.

For example, at NUTS3 level: “Plan ClimatHerauld” source: <http://observatoire.pcet-ademe.fr/pcet/fiche/216/conseil-departemental-de-l-herault#>

BEGES (Bilanévaluation des Gaz à effet de serre – assessment of Greenhouse gases emissions)is carried out since 2007.

At pilot area level: there is a strategy plan for enhancing eco-tourism opportunities in the Natura 2000 site “LesOrpellières”, where they plan to create cycling routes and preserve/restore coastal dune systems.

Source: Atout France, Report 2: Etude d’opportunités touristiques des sites dejasse-neuve& des Orpellières à Serignan Valras.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Note a very interesting site called Les Orpellières, where you can find :

- the highest dunes of Languedoc coasts,
- a lot of endemic species.

A traffic management plan was adopted at the end of 2016 on the natural part of Les Orpellières, an area very complementary to neighboring tourist areas. This approach could be partly prolonged. There is also the SMVOL and the SMETA (mixed river unions, the Asante tablecloth) of which the Department is an important member - see link below.

Concerning the reinforcement of the knowledge of the site: attached Useful Internet links to understand the problematic of the Pilot Site, the Zone in tension.

<http://www.astien.com/>

<http://www.vallees-orb-libron.fr/sage/>

CASTWATER Project.

9.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

This very touristic sector is in tension, some years in a big way when the rainfall has been quite low: we enter into a drought condition, with the establishment of a crisis cell at the level of the institutional actors, and progressive obligations to the users (limited watering green spaces, crops, washing cars ...). The flow of neighboring rivers is declining while the influx of tourist population is increasing consumption.

Salinisation of the groundwater is an issue.

There are conflicts between water uses.

There are quantitative and qualitative issues of water supply.

9.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/ Expert Opinion	Description of the Data
Density of public transport (route kms per km2)	Number	-	-	No Data Feedback Available from PA Coordinator
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Car, Train, Airplane	PA Coordinator	Most tourists use cars (90%)
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	8.29%	PA Coordinator	5,800 persons transported by local public transport for tourism prposes and 70,000 persons use individual transport
% of accommodations, tourism facilities and other tourist attractions accessible by public transport	Percentage	60%	PA Coordinator	More or less well served as indicated in the value
Ratio of travel expenses by public versus private transport inside the destination	Ratio	15%	PA Coordinator	The ratio indicates tourists tend to expend more on private transport modes
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	No	PA Coordinator	Data provided with low confidence
N° of dredging operations needed per year	Number	-		No cruise/ferry ports in this PA

				_ PA Coordinator
Volume (m3) of sediments dredged per year	m3	-	-	No Data Feedback Available from PA Coordinator
Cost of dredging operations per year (€)	€	-	-	No Data Feedback Available from PA Coordinator

Task Leader appreciation

The nearest airport providing accessibility to this PA is the Beziers Airport (almost 10 km away). Most of the tourists prefer to use cars to access this PA. Special focus has been made on the accessibility for elderly tourists and persons with reduced mobility – for the public transport vehicles, hotels and resort access and enabling beach accessibility by constructing special pavements. Public transport authority maintains an environmental plan and promotes sustainable tourist mobility by encouraging to use public transport instead of private cars, in order to reduce carbon footprint. The nearest intercity train station is in Beziers with almost the same distance as the airport. Nearest passenger port is Sete (almost 60 km away) and this PA also hosts three marinas with hinterland accessibility via public transports. These marinas provide accessibility to nautical tourism and recreational boating activity. Recent infrastructural development plans include constructing new roads in the coastline.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

9.10. Enabling Factor 3.12: Governance

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems.

However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific indicators	Measure	Value	Data Source/ Expert opinion	Description of the data
Existence of up to date tourism plans and policies	Yes/no	Yes	Department of Herault	<ul style="list-style-type: none"> - La stratégie tourisme (Tourism Strategy - National level) - Le schéma régional de Développement du Tourisme et des Loisirs (regional pattern of development of tourism (Subnational level) <p>There is a rich strategic framework allowing to take coherent decisions at all level of government for sustainable tourism planning.</p>
Existence of a land use or development plan	Yes/no	Yes	French government http://www.cohesion-territoires.gouv.fr/plan-local-d-urbanisme-intercommunal-	<ul style="list-style-type: none"> - Plan local d'urbanisme intercommunal; - Plan local d'urbanisme

			plui-et-plan-local- d-urbanisme-plu	
Degree of stakeholder participation in the planning process	(Low/medium/high)	High	Department of Hérault	The "Regional Tourism Assemblies" have been running since the end of 2015. They allow a wide consultation of tourism actors and of the wider public as well as of visitors. There will be a participatory process in the framework of Co-Evolve.
Existence and functioning of a representative coordinating mechanism for MSP/ICZM	Yes/no	Yes	PAP/RAC http://www.pap-thecoastcentre.org/pdfs/D2.2A_Final%20global%20results%20of%20the%20stock-taking.pdf	Existence of such a mechanism for: -Land and sea coordination; -Horizontal coordination; -Vertical coordination. All 3 kind of coordination mechanisms for ICZM optimal functioning exist at the National level

Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The links between global level and local level are done by means of:
 At the level of integration in the policies of regional planning, urban planning, environment:
 Scheme of Territorial Coherence, Coastal Law, Others: TRInondations, PPRInondations

At the level of public policies for the preservation of the natural environment:
 Great Sites, Natura 2000.

At the level of public policies of the Domaine de l'Eau:
 Master Plan of Development and Management of Waters
 Scheme of Development and Management of Waters.

9.11. *Priorities of the Pilot Area*

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.3: Littoralization and urbanization
- 3.8: Coastal Protection Measures
- 3.9: Ecosystem Protection
- 3.10 : Water supply and depuration.
- 3.12: Governance

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.8: Coastal Protection Measures
- 3.10 : Water supply and depuration.

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	5
Littoralization and urbanization	3
Touristic fluxes and carrying capacity	2
Pollution and other anthropogenic pressures affecting ecosystems	4
Conflicts among different uses on land and sea and land-sea interaction	1

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	3
Ecosystems Protection	5
Water supply and Depuration	4
Transport and accessibility	1
Governance	2

10. Pilot Area 6: Kastela bay coastal area

10.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

In Croatia, the coastal strip is very narrow (few km wide) and is separated from the hinterland by chains of mountains, the slopes of which often correspond to the shoreline. Only two large coastal plains, the western part of the Istrian coast and the northern Dalmatia coast, lie between the towns of Zadar and Sibenik. The coast is steep and indented and mainly composed of carbonate rocks. Owing to its lithological characteristics, flysch is generally subjected to erosion, also favoured by marine abrasion and anthropogenic impacts. In particular, road construction and the rapid development of littoral urbanization and tourism in narrow coastal zones characterized by flyschoid formations have led to increasingly frequency of rockfalls that have endangered roads and beaches.

In Croatia, tourism has a long tradition and is mainly focused on the coast. It has been changed especially in the last 15-20 years, producing an increase of the related activities (traffic, urbanization, agriculture and commerce). The consequent human impacts, in addition to hydrotechnical interventions along the rivers, coastal defences and harbours, have led to a modification of sediment supply and its distribution along the littorals, preventing the natural beach nourishment and favouring erosion.

Until now, along the Croatian littorals different trends in sea-level rise have been observed; they are probably the result of differential local uplift and subsidence of the coast. Analysis of data collected between 1956 and 1991 from tide gauge stations has provided the following results: 0.82 mm/y and in the Dubrovnik area.

The Neretva coastal zone has been identified as possibly vulnerable to to a sea-level increase.

Pilot Area Specific available information (From Task Leaders)

- Coastal area in degraded condition: High
- Extreme events on the coast per year(number) : 1 – 2, This information refers to the last four years.
- Coastal flooding events per year(number): 1 – 2, This information refers to the last four years.

Task Leader appreciation

The Kaštela Bay PA is the largest bay of the central coastal area of Croatia.

In less than four decades, this attractive area with high tourism potential have turned into an extremely degraded environment with highly polluted coastal sea, inadequate economic structure, inadequate urban infrastructure and numerous demographic and social problems. So, it has been considered in degraded conditions.

As regards the number of extreme events on the coast per year, in the period 1995-2010 storms and hails have caused 26% of the total damages produced by natural hazard on the entire Split-Dalmatia County.

The expected sea level rise (Tab. 1), in addition to storm events, could increase the risk of flooding.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Coastal zone is not conveniently organized to face with sea level rise and wave strikes. Built coastal zone of public purpose occupies 5430m namely 28% of coastal line and generally includes the area of Kaštela settlements namely their historic cores – fortifications, old ports or harbors, maintained improvised piers and coastal promenade. Actual condition of coastal buildings is not in adequate state as these are at significant part more or less degraded and

somewhere almost in dilapidated condition which all suggests the necessity of sanitation namely a need to plan the sustainable maintenance. Additional problem presents occasional flooding of coast mostly due to the acting of waves under conditions of increased sea level. Natural coast is only with its smaller part well organized mostly directly along the cores of Kaštela settlements and it refers to sand or pebble beaches namely to regulated coastal path mostly with concrete walls. Actual condition is not satisfactory as regards capacity, level of equipment and on major locations there is a need for correction of beach material forms and appertaining stabilization buildings.

10.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

During the last thirty years, the Croatian population depending on agricultural resources and production has been decreasing, while the proportion of urban population is continuously increasing and is expected to exceed 70% by 2050.

In coastal areas, where population increases considerably during the summer because of tourism activity, urbanization is not as intensive as in other Mediterranean countries (e.g. France, Malta). Regarding the policy framework, it is not considered adequate, however ICZM initiatives could be supported by existing sets of instruments related to spatial planning, such as urban areas sanitation plans, transportation, communal and other infrastructure.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

City of Kaštela has 38.667 inhabitants (2011.) and comparing with 2001. it is 13,4% more inhabitants. Trend is that people are moving from the historic cores. At the same time there is a problem of high number of unplanned houses, mostly at the edge part of the city.

10.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

City Kaštela is using its geographical and transport position (Airport Split is situated in Kaštela, position of the city is between two UNESCO cities Split and Trogir). Every year in Kaštela there is a growth in tourist flow (40% more overnights in 2016. comparing with 2015.)

10.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 51%, Pilot Area data retrieved from the report delivered by Pilot Area Coordinator show that the coastline suffers from littoralisation
- Percentage of bathing sites with excellent water quality: 55%, Pilot Area data retrieved from the report delivered by Pilot Area Coordinator show that 6 bathing sites out of 11 have excellent water quality
- Artificial sky brightness: 0.25 mcd/m², The PA has mid-low light pollution, in comparison with the other PAs, who range from <0.1 to 1
- Natural land cover classes/artificial land cover classes: 0.97%, Pilot Area data retrieved from the report delivered by Pilot Area Coordinator show that the coastline suffers from significant reduction in naturalness
- Percentage of people exposed to road noise: <25%, The value refers to the municipality of Split

Task Leader appreciation

According to Petrov&Stenek (2014), Kaštela coastal zone is exposed to constant threat of sea level rise, whose unfavourable effects shall increase in the incoming periods due to the consequences of climate changes like increased frequency and intensity of waves strokes, penetration of salt water in coastal aquifer and so on. Besides that, the analysed coastal zone suffers the consequences of long term negative anthropogenic influence of not systematic sector governance which was characterised by inappropriate construction of industrial plants and not systematic construction and maintenance of coastal infrastructure, littoralisation of coast in non-systematic and not adequate way. Natural habitats of Kaštela are also additionally threatened by not controlled increase of tourist capacities. Due to above-mentioned

high industrialization, the area also suffered from very heavy water pollution in the past.

The analysis performed on this pilot area concerning pollution and other anthropogenic pressures to coastal ecosystems can be summarized in the following points:

Artificialization& habitat loss

Built coast for commercial and other purpose includes mostly area east from Kaštel Sućurac and refers to the sections of coast like commercial and industrial ports, marinas, appertaining operative coast, military purpose coast and similar. The natural coastline is smaller than the artificial one.

Water pollution

Starting from the information stated in Petrov&Stenek (2014) "The development of industry though caused worrying pollution of Kaštela bay waters. According to the 1985 data more than 25% of waste waters from Split saturated with detergents and other chemicals with heavy metals and chlorinated hydrocarbon reached the sea in Kaštela", we could elicit how impressive was water pollution pressure in the bay. Till the '90s the Kastela Bay has been used as a recipient of the total amount of untreated urban waste waters of Trogir, Kastela, Solin, and about 40 % of the total amount of the town of Split, as well as total, partially treated, industrial waste waters of the whole industry in the region. Kastela Bay has been reported as one of the "coastal pollution hotspots" in the Adriatic Sea (EEA 2006).

Noise

Since the reported value refers to the municipality of Split, we can imagine that Kastela Bay, being less populated than the major city of Split has lower pressure from road noise. The area is intersected by a single major road which connects the very touristic city of Split to its international airport. No railway exists in support of road transportation, so during summer time the major road can be congested.

Waste production

No detailed information on the area could be found; however, the generation of municipal waste in Croatia has increased from 0.98 tonnes in 1995 to 1.63 tonnes in 2010 i.e. 369 kg per capita. The level peaked in 2008 with 403 kg per capita (CBC IT-HR Environmental Report 2012).

Light pollution

Light pollution is mid-low in comparison with the other areas analysed. The data reported refer to the mean value calculated at the NUTS3 10-km wide coastline.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Since there is no more chemical industry in Kaštela, and the project ECO Kaštela bay is going on (building sewage system and water supply system), the results are visible. According to Ministry of Environment and Energy in peak season there is a weekly monitoring of sea bathing water and for PA 6 of 11 bathing sites have excellent quality. The sea is very clean and that is the result of deindustrialisation, building sewage system and tourism growth.

Kaštela has lower pressure from road noise than Split, but Split Airport is situated in AKaštela, so Kaštela has higher pressure from airplane noise.

Concerning pollution, in one part of ex industrial zone there is protected postponed radioactive slag (Kaštel Sućurac).

10.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Main problem can be interaction between tourism as one of the main economic activity and marine transport (namely marinas) concerning pollution and sustainability of building new marinas as a potential danger for ecosystem. Other potential danger for pollution is vicinity of cement industry and industrial port.

10.6. *Enabling Factor 3.8: Coastal protection measures*

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

- Existence of a coastal planning management system: NO, There is a document on Guidelines for City of Kaštela coastal zone governance, but there is no coastal planning management system
- Length of protected and defended coastline (km): 19.5 km
- % of tourist area and infrastructure with sea defenses > 80%
- Cost of erosion prevention and repair measures per year (€): 95.000
- Typology of coastal defense measures (to be selected from the list of the defense techniques described in Report 3.8.1): Revetment and Seawall
- Cost for the maintenance of defense measures per year (€): 40.000

Task Leader appreciation

There is a document on Guidelines for City of Kaštela coastal zone governance, but there is no coastal planning management system. Almost all the coastline of Kastela Bay, around 80%, is devoted to beach tourism activities. Uses are distributed as follows: built coast devoted to public purposes: 5-6 km (28% - coastal promenade, moorings, old piers, public traffic ports); built coast devoted to commercial and other purposes: 4-5 km (23% - commercial and industrial ports and operative coast, marinas, military purpose coast); natural coast: 10 km (44% - arranged and not arranged beaches, coast not unfit for swimming).

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

After every winter Local authorities do the maintenance and repair measures in the coast. Specificity of Kaštela is 7 parts (7 Kaštel) which increase maintenance costs.

10.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	48.20	N2000 Standard data form	HR3000459 PantanDivulje It is the only N2000 in the PA
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	11	N2000 Standard data form	The Annex I (Habitats Directive) habitat types are: 1. Coastal lagoons 2. Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 3. Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)
Municipal waste recycled per year	ktonns/year	-	-	Data weren't provided by PA and only information at NUTS0 level is available.
Implementation of Natura 2000 management plans	Yes/No	No	N2000 Standard data form	Information updated till 2015, it may have changed now
Adequacy of legislation tackling pollution	Low/Intermediate/High	Intermediate	Expert opinion	Own interpretation (see discussion)

Task Leader appreciation

Coastal biodiversity and landscape protection

Considering the manifold threats above identified, the declared aim of Kaštela is to reach a more systematic and sustainable model of coastal zone governance. As the coastal zone is exposed to special burden during tourist season as tourism is the main promotor of

economic activities on that area with the constant increase trends, alternative forms of tourism towards sustainability should put in place. The report by Petrov&Stenek 2014 highlights this need for sustainable tourism: “as the natural environment preserved is a pre-condition for future development of tourism, protection of marine environment and coastal zone should have priority”.

Regarding landscape preservation, Croatia more in general still has great treasure and diversity with the high degree of value and conservation of biological and landscape diversity especially in the frameworks of west and central Europe but unfortunately no adequate measures to preserve it have been put in place (Strategy and action plan of Republic of Croatia biological and landscape diversity - OG 13/08).

COASTGAP project strives to promote and provide the implementation of the article 8 of the Protocol on integrated governance of Mediterranean coastal zone which defines the 100 m distance zone from the coastal line as the area where no construction is allowed.

Coastal zones have high degree of biodiversity including many endemic species, special sensitive habitats and ecosystems. There is no complete inventory of flora and fauna of this territory. However, lists of rare and endangered bird and mammal species are reported in Petrov&Stenek 2014. The PA hosts a single and very limited Natura 2000 site, where management plan is not put in place yet.

Water pollution

Heavy water pollution has been tackled in the past through the specific project “Eco Kaštela Bay”.

Waste recycling

No detailed information on the area could be found. However, coastal Croatia seems to be very far from adequate standards for recycling. Indeed, recycling of municipal waste only started in 2007 and the recycling rate is still low at 4% (CBC IT-HR Environmental Report 2012). Other sources state that 22% of waste was recycled on national level, in any case far from EU standards (Plan gospodarenja otpadom republike hrvatske za razdoblje 2016-2022).

Adequacy of legislation tackling pollution

Based on the evidence found (Petrov&Stenek 2014), we can see that many efforts were done in the past to tackle water pollution (Project Eco-Kastela Bay), however probably not enough is done at present.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Deindustrialisation and the project Eco Kaštela Bay are the main reasons because there is no more water pollution. Recycling is still low and far from EU standards even community work on it. There are so called “green islands” with separated waste collection but it is still in voluntary base, no punish if somebody doesn’t do recycling.

10.8. Enabling Factor 3.10: Water supply and depuration

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Deindustrialisation and the project Eco Kaštela Bay are the main reasons because there is no more water pollution. Project ECO Kaštela bay is going on (building sewage system and water supply system), the results are visible. According to Ministry of Environment and Energy in peak season there is a weekly monitoring of sea bathing water and for PA 6 of 11 bathing sites have excellent quality. The sea is very clean and that is the result of deindustrialisation, building sewage system and tourism growth.

10.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/ Expert Opinion	Description of the Data
Density of public transport (route kms per km2)	Number	-	-	No Data Feedback Available from PA Coordinator
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Bus, Car, Ferry, Airplane	Estimation	Well connected with Split Airport and Passenger Port
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	-	-	No Data Feedback Available from PA Coordinator
% of accommodations, tourism facilities and other tourist attractions accessible by public transport	Percentage	-	-	No Data Feedback Available from PA Coordinator
Ratio of travel expenses by public versus private transport inside the destination	Ratio	-	-	No Data Feedback Available from PA Coordinator
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	-	-	No Data Feedback Available from PA Coordinator
N° of dredging operations needed per year	Number	-	-	No Data Feedback Available from PA Coordinator
Volume (m3) of sediments dredged per year	m3	-	-	No Data Feedback

				Available from PA Coordinator
Cost of dredging operations per year (€)	€	-	-	No Data Feedback Available from PA Coordinator

Task Leader appreciation

This PA is consisted of five Kastels or Castles establishment along the shores of the Kastela Bay. Close vicinity to the Split international airport and Split ferry passenger port enables easy accessibility to this PA for the overseas tourists. Regular ferry lines serve with the other Adriatic countries like Italy (Ancona, Bari) and Greece. The historic city of Split built around a Roman Empire castle, can be reached by public transport buses, although the frequency may be increased.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

City Kaštela is using its geographical and transport position (Airport Split is situated in Kaštela, position of the city is between two UNESCO cities Split and Trogir)

10.10. Enabling Factor 3.12: Governance

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems. However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

An active plan for tourist development and coastal zone governance is needed. Also there is a financial problem because maintenance and repair of 19,5 km of coast line is expensive.

10.11. Priorities of the Pilot Area

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.3: Littoralization and urbanization
- 3.8: Coastal Protection Measures
- 3.9: Ecosystem Protection
- 3.12: Governance
- All of Threats and Enabling factors are important.

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

- 3.2: Climate change and morphological stability
- 3.8: Coastal Protection Measures

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	1
Littoralization and urbanization	4
Touristic fluxes and carrying capacity	2
Pollution and other anthropogenic pressures affecting ecosystems	3
Conflicts among different uses on land and sea and land-sea interaction	5

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	5
Ecosystems Protection	3
Water Cycle and Depuration	1
Transport and accessibility	2
Governance	4

11. Pilot Area 7: Neretva River Delta

11.1. Threat 3.2: Climate Change and morphological stability

General framework (From Report 3.2.2)

In Croatia, the coastal strip is very narrow (few km wide) and is separated from the hinterland by chains of mountains, the slopes of which often correspond to the shoreline. Only two large coastal plains, the western part of the Istrian coast and the northern Dalmatia coast, lie between the towns of Zadar and Sibenik. The coast is steep and indented and mainly composed of carbonate rocks. Owing to its lithological characteristics, flysch is generally subjected to erosion, also favoured by marine abrasion and anthropogenic impacts. In particular, road construction and the rapid development of littoral urbanization and tourism in narrow coastal zones characterized by flyschoid formations have led to increasingly frequency of rockfalls that have endangered roads and beaches.

In Croatia, tourism has a long tradition and is mainly focused on the coast. It has been changed especially in the last 15-20 years, producing an increase of the related activities (traffic, urbanization, agriculture and commerce). The consequent human impacts, in addition to hydrotechnical interventions along the rivers, coastal defences and harbours, have led to a modification of sediment supply and its distribution along the littorals, preventing the natural beach nourishment and favouring erosion

Until now, along the Croatian littorals different trends in sea-level rise have been observed; they are probably the result of differential local uplift and subsidence of the coast.

The Neretva coastal zone has been identified as possibly vulnerable to to a sea-level increase.

Pilot Area Specific available information (From Task Leaders)

- Coastal area in degraded condition: Medium

Task Leader appreciation

As regards to the number of extreme events on the coast per year, in the period 1995-2010 storms and hails have caused 24% of the total damages produced by natural hazard on the entire Dubrovnik-Neretva County.

Coastal floodplain in the Neretva River Delta area (Ploče, Opuzen and Slivno administrative units) is considered the biggest Croatian area that could be potentially flooded.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Climate Change is an important issue for the area. The coastal area of the Neretva River Delta is vulnerable to flooding even with a moderate Sea Level Rise.

11.2. Threat 3.3: Littoralization and Urbanization

General framework (From Report 3.3.1)

During the last thirty years, the Croatian population depending on agricultural resources and production has been decreasing, while the proportion of urban population is continuously increasing and is expected to exceed 70% by 2050.

In coastal areas, where population increases considerably during the summer because of tourism activity, urbanization is not as intensive as in other Mediterranean countries (e.g. France, Malta). Regarding the policy framework, it is not considered adequate, however ICZM initiatives could be supported by existing sets of instruments related to spatial planning, such as urbanisation plans, transportation, communal and other infrastructure.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Today the Neretva river delta coastal area is not urbanised because it is a protected area: Ramsar Convention, Ecological Reserve and Ornithological Reserve, Natura 2000. Littoralization could be an issue in the future that is why DUNEA wants to work with local stakeholders and the County on the spatial planning process. The main idea is to give to the local people guidelines for development of sustainable touristic activities focused on rural traditional villages that are subject of cultural and natural heritage. In this way we would delimit tourism activities inland and not on the sensitive coastline.

11.3. Threat 3.4: Touristic fluxes and Carrying Capacity

General framework (From Report 3.4.1 & 3.4.2)

The concept of carrying capacity surfaced in early 1960's as an attempt to set limits on the maximum number of visitors that a tourist attraction or a destination could cope with.

Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity relies on the perception that tourism cannot grow indefinitely in a particular region without causing irreversible damage to the local system. The debate over the limits of growth in tourism began in the 1930's but it was in the 1990's that the concept of sustainable tourism development was related to carrying capacity since both concepts shared the idea that sustainability itself implies a limit.

Carrying Capacity (CC) concept still allows for various definitions according to the scope under which tourism sustainability is approached. The multidimensional nature of the TCC that crosses various scientific fields such as, environmental studies, economics, social and policy sciences and planning has facilitated in a sense the interest of scholars and practitioners of different scientific backgrounds and has resulted to the development of various conceptual models of TCC.

The capacity of these systems may be defined by various limits based on three main groups of indicators reflecting its parameters: (a) physical-ecological, (b) socio-demographic and (c) political-economic. Especially for coastal and marine space, both ICZM and MSP provide the necessary context for the utilization of TCC concept towards a more sustainable management of tourism development.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

In Croatia, as well as in the area of the Dubrovnik-Neretva County, tourism is established as one of the main players in economic activity and one of the undisputed development priorities. Tourist activity in the Neretva Delta river area has not yet been developed in accordance with the potential of the available resource-attraction base. According to data from the Neretva Sustainable Tourism Development Plan 2015 - 2025, besides the poor and insufficiently profiled accommodation offer, the entire Neretva cluster is characterized by the relative rarity and insufficient profile of tourist facilities as well as the low level of development of other, tourism-related, service activities. The Neretva Sustainable Tourism Development Plan was developed for the needs of the Neretva local self-government units and as an input for the Amendments to the Spatial Plan of the Dubrovnik-Neretva County (2016). The recommendations for tourism is that all Neretva cluster units should systematically build an original, well rounded, mutually complementary and internationally competitive tourist offer for different market segments that can be commercialized for most of the year. According to Dubrovnik Neretva County Tourist Board data, in the total tourist turnover achieved in the Dubrovnik Neretva County area in 2014, the Neretva cluster participated with a slight 1.9% arrivals and 2.9% overnight stays. One of the possible portfolios of Neretva cluster tourism products is thus in the domain of sustainable tourism (rural tourism, cultural tourism, ecotourism, cyclotourism, bird watching, enogastronomic tourism, hiking, sports and adventure tourism), where diversification of tourist experience and increased satisfaction potential visitors. The quality of the resource-attraction bases of the Neretva cluster, the protected parts of nature and Natura 2000 network, in particular the Neretva river basin, interesting history and peculiar material and immaterial cultural heritage, are the basis for the dynamism of tourism development.

11.4. Threat 3.5: Pollution and other anthropogenic pressures affecting ecosystems

General framework (From Report 3.5.2, 3.5.3)

General categorization of direct impacts from tourism, where the so-called “social” impacts are excluded:

- Resource use
 - Energy consumption
 - Water consumption
- Pollution and waste outputs
 - Water quality
 - Air quality
 - Habitat/Ecosystem alteration and Fragmentation
 - Impacts on Wildlife

Concentration of populations (resident and non-resident) and human activities around the Mediterranean basin present considerable threats to coastal ecosystems and resources in four major areas:

- On the structure and function of natural ecosystems as a result of the construction and operation of facilities for human activities and the associated urbanisation and activities development;
- on the quality and quantity of natural resources (forests, soils, water, fisheries, beaches, etc.) as a result of increasing concentrations of people and activities adding to the demand for their use and exploitation and subsequent disposal of wastes;
- On the coastal zones as a consequence of the development of different human activities and associated facilities as well as on the competition among conflicting users;
- On the natural and man-made landscape as a result of the changes of activities, and of size and scale of related facilities and associated development.

Pilot Area Specific available information (From Task Leaders)

- Percentage of artificial land cover classes with respect to total surface: 2.5%, The value refers to NUTS3 10km wide coastline
- Percentage of bathing sites with excellent water quality: 89%, Water is often polluted mainly due to intensive agriculture
- Artificial sky brightness: 0.14 mcd/m², The PA has mid-low light pollution, in comparison with the other PAs, who range from <0.1 to 1
- Natural land cover classes/artificial land cover classes: 27.6%, The value refers to NUTS3 10km wide coastline

Task Leader appreciation

Artificialization& habitat loss

The data reported for both indicators refer to the 10km-wide coastline belonging to Dubrovnik County (HR037), thus including the city of Dubrovnik as well. Even so, natural areas are much more extended than artificial areas on the coastal strip, and habitat loss is also not at all alarming, compared to the other PAs. Overall the PA has still favourable ratio natural/artificial and artificial areas are very limited.

Intensive traffic through the cities was identified as main factor for air pollution in this area, especially traffic of freight vehicles in Ploče.

Water pollution

Data available via European statistics (<https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>). The value reported is not very good, especially compared to EU coastlines and to other PAs. 89% is an average value of bathing quality, but most of coastlines now reach higher % of excellent bathing sites. The PA coordinator reports in support of our results that the water is often polluted by salt, and its quality is mostly harmed by intensive agriculture. The water from sources near the river

mouth is bacteriologically polluted and is, despite this fact, used by the local population, as well as by people living on nearby islands (<http://www.casopis-gradievinar.hr/assets/Uploads/JCE-55-2003-12-08.pdf>).

Noise

No data on noise pollution exist.

Waste production

Exact data weren't provided by PA and we couldn't find precise data at NUTS3 level. However, of the total amount of municipal waste produced in the Dubrovnik Neretva County in the period 2011 – 2013 most of the communal waste was delivered to landfill (above 90%) (Dubrovnik Neretva County Environmental Report 2014), meaning that recycling is still underdeveloped in the area. The generation of municipal waste in Croatia has increased from 0.98 tonnes in 1995 to 1.63 tonnes in 2010 i.e. 369 kg per capita. The level peaked in 2008 with 403 kg per capita (CBC IT-HR Environmental Report 2015).

Marine litter

Although we haven't included this indicator in the list, there is qualitative information from the PA. Dubrovnik Neretva County is under large influence for marine litter taken by the sea currents from neighbouring countries, due to its position on the Adriatic shoreline (it is the southmost area in the country). There are periods where huge amounts of marine litter cover specific beaches along the coast, thus disrupting the complete picture for visitors and local community. In 2010, an extraordinary case of sea pollution with marine litter occurred in the County of Dubrovnik-Neretva on the pilot area of Neretva River Delta, where due to adverse meteorological and hydrological conditions, the area was polluted with large quantities of waste brought via Otrant and Neretva River. Exact amounts of marine litter are not available.

Light pollution

Light pollution is mid-low in comparison with the other areas analysed. The data reported refer to the mean value calculated at the NUTS3 10 km coastline.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

River and groundwater pollution is an issue at Neretva River Delta. The pollution is linked to local agricultural activities: pesticides and fertilizers but also to important water abstractions from other countries. Abstractions from the groundwater table and the river have led to high levels of salinity of the river and disturbed the natural replenishment of the groundwater table. International coordination is necessary in order to manage this problem.

11.5. Threat 3.6: Conflicts among different uses on land and at sea and land-sea interaction

General framework (From Report 3.6.1 & 3.6.2)

The Mediterranean Sea and its coast has long been the focal point of interactions between different and often conflicting socio-economic activities. The coexistence of activities provides a ground for synergies' development but also creates a conflict grid which poses pressures to the hosting regions. The cumulative impacts from socio-economic activities and the constant competition over the allocation of natural resources have led to severe alterations in the balance of the Mediterranean coastal and marine ecosystems.

Identification of coastal and maritime activities and their impacts on coastal ecosystems:

- Coastal and maritime tourism
- Fisheries and Aquaculture
- Energy extraction and exploration
- Agriculture
- Maritime transport

Tourism is highly depending on a healthy environment, the key areas of conflict regarding the coexistence of touristic activities and other economic sectors are:

- Conflicts concerning the use of space
- Exploitation of the same coastal and marine resources
- Conflicts related to the degradation of natural ecosystems

The multi-uses taking place in coasts make them highly vulnerable to both human and natural hazards, causing adverse effects on each other (land use conflicts) and on the coastal marine environment (anthropogenic activities – marine environment conflicts). These conflicts weaken the ability of the ocean and coastal areas to provide the necessary ecosystem services upon which humans and all other life on earth depend

Intensity of interactions between tourism and major economic activities per country

Italy	Spain	France	Greece	Croatia	Cyprus	Malta	Slovenia	
								Tourism & Fisheries
								Tourism & Aquaculture
								Tourism & Energy extraction
								Tourism & Agriculture
								Tourism & Maritime Transport

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Today locally Agriculture and Nature Protection co-exist without conflict. Future conflicts of land use between tourism and Nature protection will be an issue. That is why we want to produce a spatial planning document delimiting Eco-tourism activities and infrastructure away from the coastal line

11.6. Enabling Factor 3.8: Coastal protection measures

General framework (From Report 3.8.1)

Coast has a significant value for the tourism industry and this makes its protection management important for the connected social-economical activities. Indeed, beach protection under different pressures of climate change is one of the principal challenges that, not only engineers, but also coastal managers, might deal with, since they should carry out a delicate balance between economic, social and environmental features of the coast.

A “step-by-step” approach for the definition of an integrated planning strategy have been proposed and described in the framework of sustainable tourism development, with the aim to conjugate the design of coastal protection measures in a tourist area. The 4 steps constituting the approach have been declined, as preliminary considerations, initial assessment, critical issue identification and analysis of solutions, and strategy for the management.

The interaction between the engineering approaches to cope with coastal erosion and design protection measures and the beach appeal requirements for the development of the different typologies of coastal tourism is turned out to be an important issue to be considered in an integrated beach management. In particular, the approaches of “Holding the line” and “Managed retreat” are commonly adopted in urban and touristic areas, and engineering actions including reshaping of the existing hard structures or the implementation of soft measures, as sand nourishment and dune restoration, have been resulted as the most suitable ones for touristic activities.

Tools for efficient prediction and analysis of the effects of coastal management actions have been also included, reporting an overview of the commonly adopted monitoring and numerical tools.

Pilot Area Specific available information (From Task Leaders)

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Task Leader appreciation

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Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

We have no information on coastal protection measures except of the port infrastructure.

11.7. Enabling Factor 3.9: Ecosystems protection

General framework (From Report 3.9.2-3.9.3)

Environmental asset constitutes the milestone of a healthy socioeconomic development for any country. Therefore, appropriate decision making and measures should take place for the integrated protection and management of such a precious and vulnerable resource. However, given the wide diversity of marine ecosystems, multitude of pressures affecting it and the still poor understanding on linkages between those, hence, several separate approaches can be used to give support for management measures.

The concept of “sustainable tourism” has appeared in order to tackle a variety of problems, such as ecological degradation, loss of cultural heritage and economic dependence occurring from coastal tourism. Sustainable tourism aims to meet the needs of tourists (e.g. infrastructures, but also beauty and natural perceptions of recreational sites), taking into account the local population, the current accommodation capacity and the environment. On the other side sustainable tourism practices (eg. Ecotourism) can promote virtuous effects by contributing to further stimulate nature protection.

The aim of CO-EVOLVE is to highlight the main threats toward tourism existing in the Mediterranean Basin and by proposing adequate trade-offs and enabling factors in response to them which meet sustainability of tourism.

Pilot Area Specific available information (From Task Leaders)

Pilot area-specific data	Measure	Value	Data Source/ Expert opinion	Description of the data
Extent of Natura 2000 sites	ha	23814	N2000 Standard data form	Huge and very diverse Natura 2000 site
Area of natural and semi-natural habitat (based on Natura 2000 sites and EU habitats)	ha	4804	N2000 Standard data form + PA Coordinator	Neretva Delta contains 15 EU habitat types (listed in the discussion section)
Municipal waste recycled per year	ktonns/year	-	-	Data weren't provided by PA and only information at NUTS0 level is available.
Implementation of Natura 2000 management plans	Yes/No	Yes	PA Coordinator	Natura 2000 site is implemented by Public institution for the management of protected parts of nature of the Dubrovnik Neretva County
Adequacy of legislation tackling pollution	Low/Intermediate/High	Low	PA Coordinator	No specific regulation at local level

Task Leader appreciation

Coastal biodiversity and landscape protection

Neretva Delta is also one of the most important sites regarding species richness and high biological diversity in the Mediterranean bio-geographical region of Croatia. In the Neretva Delta, at least 313 bird species have been registered. Altogether there are around 193 regularly occurring species out of which around 89 are breeding birds. The area is important

stop over place during migrations of birds from Middle and NE Europe to Africa, situated on the route of Central European (Black Sea/Mediterranean) Flyway. It is also of great importance for wintering. About 1/3 of registered species are wintering birds, accompanied with residents during the winter. The river mouth with its shoals, sandbanks and saltmarshes is of greatest importance for migration of waders, the Spoonbill (*Platalealeucorodia*), terns and gulls as well as for breeding of the Kentish Plover (*Charadrius alexandrinus*) and the Stilt (*Himantopus himantopus*). Neretva and its tributaries are exceptionally rich in fish species. Out of almost 150 species that use watercourses and/or estuary in some stage of their life, 49 are freshwater fishes and out of them even 19 are endemic for Eastern Adriatic catchment area while 4 are endemic for Croatia. Due to its high biological production, the Neretva mouth is a feeding ground for many kinds of fish. The delta, lagoons and bodies of brackish water present spawning sites and nurseries for fish and crayfish which spend the rest of their lives in fresh or salt water. These waterbodies are important for many species concerning their migrations, like the European eel (*Anguilla anguilla*).

One of the main characteristics of the Neretva Delta is a great diversity of habitat types. It is part of a huge Natura 2000 site, which includes 15 habitat types important on European level, listed in Annex I of the EU Habitats Directive and in the Resolution 4 of the Bern Convention.

They are: Sandbanks which are slightly covered by sea water all the time; Estuaries; Mudflats and sandflats not covered by seawater at low tide; Coastal lagoons; Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocorneteafruticosi*); Embryonic shifting dunes; Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelleteauniflorae* and/or of the *Isoëto-Nanojuncetea*; Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelleteauniflorae* and/or of the *Isoëto-Nanojuncetea*; Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.; Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation; Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*; Eastern sub-Mediterranean dry grasslands (*Scorzonerataliavillosae*); Caves not open to the public; Southern riparian galleries and thickets (*Nerio-Tamaricetea* and *Securinegiontinctoriae*).

There are three groups of valuable natural habitat types: river mouth with its shallow marine waters, tidal flats and salt marshes; wide delta valley with inland wetland habitats; and habitats of the karst hills that surround the delta, including underground waters and springs. Such complex of habitat types, especially the combination of Mediterranean wetland and karst habitats, is unique, not only for Croatian coast but also on international level.

Water pollution

No detailed information on measures taken to tackle water pollution has been retrieved.

Waste recycling

No detailed information on the area could be found, but the Dubrovnik Neretva County Environmental Report states that only about 7% of municipal waste is recycled.

However, coastal Croatia seems to be very far from adequate standards for recycling. Indeed, recycling of municipal waste only started in 2007 and the recycling rate is still low at 4% (CBC IT-HR Environmental Report 2012). Other sources state that 22% of waste was recycled on national level, in any case far from EU standard (Plangospodarenjaotpadomrepublikehrvatskezarazdoblje 2016-2022).

Noise

At national level, there is a Law on noise protection (http://narodnenovine.nn.hr/clanci/sluzbeni/full/2009_03_30_648.html).

No information regarding underwater noise for the PA.

Air pollution

These are the main pieces of legislation tackling air pollution at country level:

- Law on Air Protection of the Republic of Croatia http://narodne-novine.nn.hr/clanci/sluzbeni/2017_06_61_1381.html
- Regulation on unit charges, corrective coefficients and closer criteria and criteria for the determination of sulfur oxide sulfur dioxide and oxide oxide nitrogen oxides expressed as nitrogen dioxide http://narodne-novine.nn.hr/clanci/sluzbeni/2015_10_115_2193.html
- Regulation on the quality of biofuels http://narodne-novine.nn.hr/clanci/sluzbeni/2011_03_33_746.html
- Decision on Acceptance of the National Plan for the Implementation of the Stockholm Convention Persistent organic pollutants http://narodne-novine.nn.hr/clanci/sluzbeni/2008_12_145_3971.html
- Decision on acceptance of the plan for reducing the emissions of sulfur dioxide, nitrogen oxides and solid particles in large combustion plants and gas turbines in the territory of the Republic of Croatia http://narodne-novine.nn.hr/clanci/sluzbeni/2008_12_151_4117.html
- Program for the gradual reduction of emissions for certain pollutants in the Republic Croatia for the period up to the end of 2010, with emission projections for the period from 2010 to 2020 http://narodne-novine.nn.hr/clanci/sluzbeni/2009_12_152_3712.html

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

We believe that nature protection should be the main Enabling Factor and great advantage of the Neretva River Delta for future Ecotourism development.

The area is an important Nature 2000 protected area, listed as Ramsar site, ecological and ornithological reserve and also an ichthyological and marine reserve.

11.8. *Enabling Factor 3.10: Water supply and depuration*

General framework (From Report 3.10.1)

As water resources become ever scarcer, needs are on the rise because of three factors: a growing population, urbanisation and rising demand for irrigation.

Moreover, coastal tourism can have serious impacts on the environment, such as freshwater and seawater pollution from discharged wastewater and fly tipping of large volumes of solid waste.

This pressure on water resources has a direct impact on the pollutant content of water discharged into the sea – since these flows are rarer, they contain higher levels of pollutants.

The affected countries adopt various strategies to mitigate the consequences of water scarcity:

- building reservoir dams;
- introducing seawater desalination systems
- reusing wastewater.

This practice comes in many different forms:

- reusing wastewater with minimal treatment for certain types of personal or collective use
- injecting extensively treated wastewater back into underground aquifers
- reusing wastewater in agriculture, although only for certain types of practice (arboriculture, cereal crops, and industrial crops such as cotton). In the long run, this transportation-related energy issues because treatment plants are located in urban areas and the treated wastewater is not suitable for market gardening crops which tend to surround towns and cities.
- changing farming practices (revegetation, improving irrigation pressure).

This situation is linked to yet another aspect of water use – the fact that losses and waste account for an estimated 40% of total water demand.

These losses stem from several factors:

- significant losses during pumping;
- leaks caused by ageing and poorly maintained urban pipe networks;
- theft (e.g. in Istanbul and the wider conurbation);
- and waste from irrigation systems. Plan Bleu records show that, in like-for-like circumstances, agricultural water use can vary by a factor of 20 (from 21 m³ to 420 m³) according to the types of irrigation technique used.

Pilot Area Specific available information (From Task Leaders)

-

Task Leader appreciation

-

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

As mentioned above river and groundwater salinisation is an important issue and international collaboration is necessary for better water resources management

11.9. Enabling Factor 3.11: Transport and accessibility

General framework (From Report 3.11.1)

Transport has been considered a key factor in the success of sustainable tourism development. Accessibility for a touristic destination in order to attract tourists largely depends on the availability and efficiency of transports needed to travel to that destination. In the contrary, the extent of influence of poor accessibility on destinations can discourage visitors from attempting to reach these places altogether. In rural areas, transport systems also lend themselves to a provision of access for tourism and rural transport may be characterized and driven by tourism requirements in regions where there is a high level of importance attributed to the revenue leisure visitors can bring to peripheral areas. This presents an argument to support increased attention on transport services in rural communities while the tourism market in urban areas has little influence on public transport, which is generally centered on the local population requirements.

Effective transport systems are fundamental to destination development and therefore the ability to generate sustainable visitor markets

The fluctuating relationship between transport systems and tourism markets is therefore reciprocal in nature since together they will reinforce and influence each other and the actions and effectiveness of one party will directly affect the other.

Pilot Area Specific available information (From Task Leaders)

Pilot Area Specific Data	Measure	Value	Data Source/ Expert Opinion	Description of the Data
Density of public transport (route kms per km2)	Number	-	-	No Data Feedback Available from PA Coordinator
Modes of transport used by tourists to reach destination (airplane, car, rail, bicycle, walking, other)	Description	Airplane, Bus, Car	Estimation	Cars may include taxi, rented cars and private vehicles
Number of passengers transported by local public transport for tourism / leisure purposes (compared to number of tourists using individual transport)	Ratio	-	-	No Data Feedback Available from PA Coordinator
% of accommodations, tourism facilities and other tourist attractions accessible by public transport	Percentage	-	-	No Data Feedback Available from PA Coordinator
Ratio of travel expenses by public versus private transport inside the destination	Ratio	-	-	No Data Feedback Available from PA Coordinator
Implementation of an integrated environmentally sound transport planning strategy (yes / no)	YES/NO	No	PA Coordinator	No Data Feedback Available from PA Coordinator
N° of dredging operations needed per year	Number	-	PA Coordinator	No statistics available, two ports located in the PA - Ploče and Metković

Volume (m3) of sediments dredged per year	m3	-	-	No Data Feedback Available from PA Coordinator
Cost of dredging operations per year (€)	€	-	-	No Data Feedback Available from PA Coordinator

Task Leader appreciation

Road transport network in the area of Dubrovnik-Neretva County consists of 17 state roads, 33 county roads and 72 local roads and inadequately connects the County with other parts of Croatia and beyond. Within this PA, state road D9 Metković - border with Bosnia and Herzegovina - Opuzen with road D8 has traffic congestion problem as it goes through the city of Metković and the same road passes all the transit traffic in the direction of Bosnia and Herzegovina. On the very edge of Metković, the state border crossing creates traffic congestion deep in Metković. The air traffic is the only aspect of traffic that the County is connected to in a satisfactory manner with other parts of Croatia and the world via Dubrovnik Airport (almost 115 km away). Additionally plans have been considered to introduce high speed train linking this PA with Bosnia-Herzegovina and Hungary by constructing one additional railway track along with the existing single track. The prime objective of the main Development Plan for the Functional Region of South Dalmatia is to improve accessibility in international passenger traffic over long distances by investing in infrastructure and linkages with major transit corridors with a vision to make this Region most competitive and important part of the European market. The economic backbone for this area is the Ploče cargo seaport, second in Croatia by the amount of trans-shipment. Flooding has been considered as the main risk for this PA.

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

The pilot area has good accessibility by highway, by airplane and by boat. Accessibility is not a problem.

Public transport is good and it is organized for the service of local population, most tourists will have a private car in order to visit the area.

The kind of tourism we want to promote is Ecotourism and for this we want to promote the use of trekking, cycling etc, and limit the car use within the protected area and the coastal area.

11.10. Enabling Factor 3.12: Governance

General framework (From Report 3.12)

Sustainable tourism should:

- “1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- 2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- 3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation”.

Taking into account all these dimensions requests at the same time leadership, collaboration and partnership among stakeholders both in planning and implementing tourism development.

There is also a need to have strong institutional, legal and strategic frameworks in order to regulate and to guide the process. This can be achieved through proper governance.

Most negative impacts associated with tourism are related to the excessive number of visitors and/or inability and reluctance of the local governance to cope with the problems.

However, there is a whole range of instruments and tools countries and DMO has at their disposal to enhance sustainability. Some of them belong to so called hard and some to soft instruments/measures. Hard measures relate to rules and restrictions while soft measures relate to marketing/management, education, planning and coordination.

They are most usually grouped into:

- **Institutional** instruments /measures (hard measures which are most commonly defined by laws, rules or special institutional agreements);
- **Economic** instruments/measures (mixture of hard and soft measures);
- **Managerial** instruments /measures (mostly soft measures); and some also add
- **Technological** instruments /measures (mostly soft measures).

Pilot Area Specific available information (From Task Leaders)

-

Task Leader appreciation

-

Pilot Area Coordinator appreciation and additional information if available: (Max 300 words)

Governance is the most important issue in our Pilot Area. A management plan for the protected areas is in progress and almost finished. So during the Pilot Testing this plan will be available.

The 7 local governments on the Pilot Area have no common planning documents and this is an issue. The county which includes 21 local governments (including the 7 local governments of the PA) has just completed a new spatial planning document. DUNEA in collaboration with the county and the 7 local governments wants to work on the “specifications” of spatial planning for the villages within the PA so as to give technical specification for Eco-tourism establishments and relative infrastructure. The main idea is to promote Eco-tourism within and near the existing settlements and away (maybe a kilometre far) from the coastline.

We want to promote Eco-tourism and the construction of new buildings and new infrastructure but not on the coastline. Today in the protected area it is not possible to build tourism infrastructure (ex. Swimming pools). We want, within the Co-evolve project, to give

the technical specifications for sustainable tourism for building infrastructure and private investments that will respect the local traditional architecture and the natural landscape.

11.11. Priorities of the Pilot Area

Which of the Threats and Enabling Factors analysed above is important for your Pilot Area based on your experience and local stakeholders opinion:

3.12: Governance

3.9: Ecosystem Protection

Which of the Threats and Enabling Factors analysed above would you like to address on your Pilot Area within the CO-EVOLVE project based on your experience and local stakeholders opinion:

3.12: Governance

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Threats of Sustainable Tourism based on your experience and local stakeholders opinion:

Climate changes and morphological stability	2
Littoralization and urbanization	5
Touristic fluxes and carrying capacity	1
Pollution and other anthropogenic pressures affecting ecosystems	3
Conflicts among different uses on land and sea and land-sea interaction	4

Give a single annotation from 1 to 5 (5 the most important) for the relative importance of Enabling Factors of Sustainable Tourism based on your experience and local stakeholders opinion:

Coastal Protection Measures	2
Ecosystems Protection	5
Water Cycle and Depuration	1
Transport and accessibility	3
Governance	4

Annex: Pilot Area Profiles

PILOT AREA: Alexandroupoli**AREA COORDINATOR: Region of East Macedonia - Thrace****1. Geographic characteristics**

Area (km ²)	1.231,5
Administrative status (authorities governing the area)	Municipality
Geomorphology and natural resources (water & soil resources, agricultural land)	<ul style="list-style-type: none"> • A multitude of rivers and streams • Evros River: its delta (188 km²) among the most important wetlands in the Balkans • 39.74% agricultural land, 47.19% forests and semi-natural areas, 8.5% wetlands/water bodies, 9.81% artificial land

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	Population (2011): 72.959 (City Population: 57.812)
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	<ul style="list-style-type: none"> • economically active population (2011): 41.4% • unemployed population (2011): 17.12% • Employment by sector (2011): 7.57% primary sector, 12.77% manufacturing industry, 79.66% service sector • Tourism, Trade, PFishery, Aquaculture

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	<ul style="list-style-type: none"> • 7 NATURA 2000 areas • Evros Delta: under Ramsar Convention • Evros Delta National Park • Protected Areas under Greek legislation
Cultural resources (UNESCO sites, historic city centres)	-
Other	-

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	<ul style="list-style-type: none"> • urban sprawl (residential/tourist settlements) over the coastal zone
Coastal and maritime infrastructure (ports, marinas, fisheries etc)	<ul style="list-style-type: none"> • port of Alexandroupoli
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	seaside tourism, ecotourism, wellness tourism

5. Institutional and planning framework

Administrative framework (institutional arrangements)	<ul style="list-style-type: none"> • Special Framework for Spatial Planning and Sustainable Development for Tourism • Regional Plan of Eastern Macedonia – Thrace • Regional Operational Program of EMTH
Development strategies relevant with tourism	-
Management policy, plans and other arrangements	<ul style="list-style-type: none"> • Urban/Land-uses Plan of Alexandroupoli

6. Key priorities and challenges in relation to coastal and maritime tourism

1. Conflicts between fishery/aquaculture and tourism
2. Measures for ecosystem/Land degradation on coastal zone due to urban sprawl (mainly of touristic resorts)
3. Need for improvement the quality of tourism product

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.

PILOT AREA: Keramoti - Thassos

AREA COORDINATOR: Region of East Macedonia - Thrace

1. Geographic characteristics

Area (km ²)	Keramoti: 115.4 (Mun. of Nestos: 678.9) Mun. of Thassos: 385
Administrative status (authorities governing the area)	Municipalities
Geomorphology and natural resources (water & soil resources, agricultural land)	<p>Keramoti</p> <ul style="list-style-type: none"> • Lowland area with coastal lagoons (Keramoti and Agiasmatos) • Nestos River: among the most important wetlands in Greece • 61.04% agricultural land, 7.37% forests and semi-natural areas, 25.58% wetlands/water bodies, 6.01% artificial land <p>Mun. of Thassos</p> <ul style="list-style-type: none"> • Mountainous terrain with dense relief • Seaside settlements • 17.38% agricultural land, 78.26% forests and semi-natural areas, 2.68% wetlands/water bodies, 1.68% artificial land

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	Population (2011) of Keramoti: 5.202 (Population of Mun. of Nestos: 22.331), Population (2011) of Thassos: 13.770
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	<p>Mun. of Nestos</p> <ul style="list-style-type: none"> • economically active population (2011): 38.83% • unemployed population (2011): 18.59% • Employment by sector (2011): 29.43% primary sector, 19.29% manufacturing industry, 51.27% service sector (In Keramoti: 52.1% primary sector, 19.3% manufacturing industry, 28.6% service sector) <p>Tourism, Agriculture, Fishery, Aquaculture</p> <p>Mun. of Thassos</p> <ul style="list-style-type: none"> • economically active population (2011): 39.71% • unemployed population (2011): 18.11% • Employment by sector (2011): 14.47% primary sector, 19.07% manufacturing industry, 66.46% service sector <p>Tourism, Agriculture, Fishery, Aquaculture</p>

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	Keramoti: <ul style="list-style-type: none"> • Nestos Delta: under Ramsar Convention, NATURA 2000 area • National Park of Nestos Delta and Lakes Vistonida-Ismarida • 2 Corine Biotopes • Protected areas under Greek legislation Thassos <ul style="list-style-type: none"> • 2 NATURA 2000 areas • 2 Corine Biotopes • Protected areas under Greek legislation
Cultural resources (UNESCO sites, historic city centres)	Thassos: <ul style="list-style-type: none"> • 8 traditional settlements
Other	Thassos: <ul style="list-style-type: none"> • Archaeological sites

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	Thassos: <ul style="list-style-type: none"> • sprawl of tourist settlements over the coastal zone
Coastal and maritime infrastructure (ports, marinas, fisheries etc)	<ul style="list-style-type: none"> • Port of Keramoti • Port of Thassos
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	seaside tourism, ecotourism

5. Institutional and planning framework

Administrative framework (institutional arrangements)	<ul style="list-style-type: none"> • Special Framework for Spatial Planning and Sustainable Development for Tourism • Regional Plan of Eastern Macedonia – Thrace • Regional Operational Program of EMTH
Development strategies relevant with tourism	-
Management policy, plans and other arrangements	-

6. Key priorities and challenges in relation to coastal and maritime tourism

1. Measures for sprawl of tourist settlements
2. Need for improvement the quality of tourism product
3.

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.

PILOT AREA CATTOLICA**AREA COORDINATOR: Roberto Montanari, Christian Marasmi****1. Geographic characteristics**

Area (km ²)	6,2 km ²
Administrative status (authorities governing the area)	Municipality
Geomorphology and natural resources (water & soil resources, agricultural land)	31% agricultural land. Costal area characterized by the presence of an hill area (Torre Conca) and two rivers (Tavollo and Ventena)

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	population 17.230
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	Tourism, Agriculture, Industry

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	Landscape protected area of Conca River
Cultural resources (UNESCO sites, historic city centres)	
Other	

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	(Rimini province 2016 vs 2015) +1% housing, - 1,5% agriculture, +1,5% industry, +12,3% export, +3,1 tourism
Coastal and maritime infrastructure (ports, marinas, fisheries etc)	Port, marinas, fisheries, shipyard
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	seaside tourism

5. Institutional and planning framework

Administrative framework (institutional arrangements)	Agreement with Municipality for the pilot site testing
Development strategies relevant with tourism	Developing a Plan for sustainable tourism
Management policy, plans and other arrangements	Land use plan, shoreline plan

6. Key priorities and challenges in relation to coastal and maritime tourism

1. reduction of dredging impacts
2. sedimentary monitoring of the whole port area
3. de-silting device installation in a critical site and monitoring
relaunch of maritime and coastal tourism, linked to the port activities, sustainability

oriented

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.

- formulation of an integrated Plan for the re-launching of the area (harbor and coast), through a participatory process with main stakeholders and the citizens;
- Small Scale Investment: acquisition and installation of a sand trap device line (jet-suction ejector system) for sediment management, against harbor silting;

PILOT AREA COMACCHIO**AREA COORDINATOR: Roberto Montanari, Christian Marasmi****1. Geographic characteristics**

Area (km ²)	284,13 km ²
Administrative status (authorities governing the area)	Municipality
Geomorphology and natural resources (water & soil resources, agricultural land)	the territory is characterized by a lagoon system (Valli di Comacchio) and a flood plain designed in the last century by the land reclamation activities

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	population 22.399
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	Tourism, Agriculture,

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	Parco Delta Po – Comacchio valleys Unesco MAB
Cultural resources (UNESCO sites, historic city centres)	historic city center
Other	

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	(Ferrara province 2016 vs 2015) , +1,5% agriculture, -13% industry, -70% export, +2,1 tourism
Coastal and maritime infrastructure (ports, marinas, fisheries etc)	Port (Porto Garibaldi), fisheries, marinas
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	seaside tourism, ecotourism

5. Institutional and planning framework

Administrative framework (institutional arrangements)	Agreement with Municipality for the pilot site testing
Development strategies relevant with tourism	Developing a Plan for sustainable tourism
Management policy, plans and other arrangements	Land use plan, shoreline plan

6. Key priorities and challenges in relation to coastal and maritime tourism

1. environmental restoration and requalification of a coastal stretch and dune system, with facilitated access
2. relaunch of coastal tourism, linked to the pilot area, with sustainability concepts and oriented also to persons with disabilities.

3. connections with the paths of the Comacchio valley master plan
4.

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.

- formulation of an integrated Plan for the renaturation, sustainable fruition /handicap accessibility and re-launching of the area, through a participatory process with main stakeholders and the citizens;
- Small Scale Investment: renaturation of the dune system, realization of a naturalistic path with catwalks and movable bathing structure facilities, high accessibility for handicap;

PILOT AREA ROSOLINA
AREA COORDINATOR: Marco Gottardi

1. Geographic characteristics

Area (km ²)	73 Km ²
Administrative status (authorities governing the area)	Municipality
Geomorphology and natural resources (water & soil resources, agricultural land)	The territory characterized by the Po river delta and reclamation activity. Wetlands dominate the landscape, besides pinewood and agriculture.

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	Population 2357
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	Aquaculture, tourism, agriculture

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	Natura 2000 site, Regional Park, UNESCO MAB Biosphere Reserve
Cultural resources (UNESCO sites, historic city centres)	--
Other	-

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	(Rovigo province 2016 vs 2015) , -19,95% agriculture, +2,51% industry, +5,95 services, - 5,25% export, +3 tourism. Population trend of last 5 years in constant decrease.
Coastal and maritime infrastructure (ports, marinas, fisheries etc)	Fisheries and mollusc aquaculture
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	seaside tourism, ecotourism

5. Institutional and planning framework

Administrative framework (institutional arrangements)	Agreement with Municipality for the pilot site testing
Development strategies relevant with tourism	Strategic Plan 2016-2018 for tourism <i>"Po e il suo delta"</i>
Management policy, plans and other arrangements	Environmental Plan of Po delta Veneto Regional Park , MAB Action Plan

6. Key priorities and challenges in relation to coastal and maritime tourism

1. Requalification of existing structure for seaside tourism, improvement of sustainability
2. Coastal tourism valorisation, linked to the pilot area, towards sustainability

3. Costal evolution

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.

- formulation of an integrated Plan for the re-launching of the area (harbor and coast), through a participatory process with main stakeholders and the citizens;
- Small Scale Investment: acquisition and installation of a sand trap device line (jet-suction ejector system) for sediment management, against harbor silting;

PILOT AREA POLESINE CAMERINI
AREA COORDINATOR: Marco Gottardi

1. Geographic characteristics

Area (km ²)	257 Km ²
Administrative status (authorities governing the area)	Municipality
Geomorphology and natural resources (water & soil resources, agricultural land)	The territory characterized by the Po river delta and reclamation activity of last century. Therefore mainly arable land and wetlands

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	Population 3.620
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	Agriculture, fishery, aquaculture

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	Natura 2000 site, Regional Park, UNESCO MAB Biosphere Reserve
Cultural resources (UNESCO sites, historic city centres)	-
Other	-

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	(Rovigo province 2016 vs 2015) , -19,95% agriculture, +2,51% industry, +5,95 services, - 5,25% export, +3 tourism. Population trend of last 5 years in decrease.
Coastal and maritime infrastructure (ports, marinas, fisheries etc)	Fisheries and mollusc aquaculture,
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	seaside tourism, ecotourism

5. Institutional and planning framework

Administrative framework (institutional arrangements)	Not yet implemented.
Development strategies relevant with tourism	Strategic Plan 2016-2018 for tourism <i>"Po e il suo delta"</i>
Management policy, plans and other arrangements	Environmental Plan of Po delta Veneto Regional Park , MAB Action Plan

6. Key priorities and challenges in relation to coastal and maritime tourism

1. Change of use of industrial structure decommissioned
2. Use of the structure as visiting, information and dissemination centre
3. Use of industrial structure for monitoring and research centre

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.

- formulation of an integrated Plan for the re-launching of the area (harbor and coast), through a participatory process with main stakeholders and the citizens;
- Small Scale Investment: acquisition and installation of a sand trap device line (jet-suction ejector system) for sediment management, against harbor silting;

PILOT AREA Port of Valencia

AREA COORDINATOR: Valencia port Foundation

1. Geographic characteristics

Area (km ²)	City of Valencia: 137,5 km ² Port of Valencia: Total Area: 5.486.000 m ² Floating Area: 5.851.000 m ²
Administrative status (authorities governing the area)	Central Government
Geomorphology and natural resources (water & soil resources, agricultural land)	

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	Population city (2016): 791.632 Population Valencia Community (20116): 4.953.482 Inhabitants. Economic data: (Valencian Community) • GDP (2016): 105,000 million euros • GDP per cápita (2016): 21,296€
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	Valencian Community Services weighed 71% of the regional GDP in 2016 – Tourism represents a high share (c.13% of GDP) The industrial sector represented 20% of the regional GDP in 2016 – The industrial base includes automotive, food and beverages, chemical, building materials and textile companies – The automotive industry represented 28% of regional exports. Highly-intensive in exports, compared to Spain: 27% of Valencia's GDP (vs 23% in Spain)

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	Natural Spaces: La Albufera Natural Park (21.120 Ha) and Dehesa del Saler. Green zones, parks and gardens: Around 5kms ² Bioparc: Zoo 10 Ha of ground Oceanografic: aquarium: 11Ha Beaches: around 19 km
Cultural resources (UNESCO sites, historic city centres)	World Heritage Monuments: Lonja de la Seda (the silk Exchange) and Tribunal de las Aguas. Ventral Market, Estación del Norte, the Torres the Serrano and Torres the Quart, The Cathedral, the Plaza Redonda, and the Basilica and Palacio de la Generalitat. 47 Museums 13 Theatres Palau de la Musica

	Palau de les Arts Reina Sofia Valencia boasts cultural jewels over one thousand years old, construction that change color, cutting edge icons and building that watch over the environment. Spectacular range of architecture contrast from Middle Ages to the 21 st century merely by turning the corner.
Other	

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	Cruise Passenger (2015) 374.566 Cruise Passenger (2016) 403.564 Cruise Passenger (2020) 600.000 Overnight stays (2015) 4.106.365 Overnight stays (2016) 4.448.642 Visitors (2015) 1.867.677 Visitors (2016) 1.907.847 Economic Impact of tourist activity, Millions (2015) 1.157 Economic Impact of tourist activity, Millions (2016) 1.383
Coastal and maritime infrastructure (ports, marinas, fisheries etc.)	Moorings in sporting marinas: 1466 in the Royal Nautical Club and 820 in Marina Valencia. Port de Valencia
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	Valencia cruise Passenger (2016) 403.564 Valencia Cruise Calls (2016) 181 Average number passengers in each cruise line (2016) 2.230 Prominence of the Albufera and cultural offers in all promotion actions.

5. Institutional and planning framework

Administrative framework (institutional arrangements)	Collaboration agreement and combined actions with Valencia Tourism Agency and the Provincial Tourist Board of Valencia.
Development strategies relevant with tourism	2016-2020 Valencia Tourism Strategy Plan Strategy Plan Marina the Valencia Revitalisation of the Municipal Tourism Committee Creation and reinforcement of the Municipal Tourism Services
Management policy, plans and other arrangements	Greater prominence of businesses in management Setting up of the new participation and co-management model via product programmes Frequent meetings of an inter-departmental committee to Coordinate the issues related to tourism. Working group on cruise sector Design of a plan for accessibility and sustainability.

	Valencia has begun to work on the quantification of the tourist offer, without having yet moved it to the definition and application of concrete measures for its management and the means for its fulfilment.
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6. **Key priorities and challenges in relation to coastal and maritime tourism**

1. Increase of “sustainable” awareness and search for quality. But tourists look for ‘authentic experiences’; promotion of only ‘sustainability’ is not enough
2. Ageing society and evolutions in spending capacity
3. Persisting strong seasonality of visits poses issues of sustainability

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.

PILOT AREA KAŠTELA BAY

AREA COORDINATOR: Srečko Radnić, Mili Novak

1. Geographic characteristics

Area (km ²)	57 km ²
Administrative status (authorities governing the area)	City
Geomorphology and natural resources (water & soil resources, agricultural land)	Coastal area about 15 km long, characterized by the presence of an hill area (Kozjak) on north side. About 24% agricultural land.

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	population 38.667 (2011.) GDP data at local level N/A
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc	Tourism, Agriculture, Industry (cement), Air transport

3. Natural and cultural assets

Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc)	Ecological network area HR3000459 Pantan Divulje <i>Area of preservation significant for internationally important species and habitats types Natura 2000*</i> HR2001363 Trogir hinterland <i>Area of preservation important for internationally important species and habitat types</i> * it is in Kaštela bay, administratively it is City Trogir
Cultural resources (UNESCO sites, historic city centres)	City centre (7 city areas) protected by Ministry of culture
Other	Monument of park architecture* (Botanic garden, Vitturi park – Kaštel Lukšić, park in Kaštel Stari) Monument of nature* (Olive tree in Kaštel Štafilić, Oak tree in Kaštel Gomilica) * According to Protected area categories in Croatia

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	(City Kaštela 2016 vs 2015) Tourism +40% (overnight staying), Air transport (+14,6 % passengers in Airport)
Coastal and maritime infrastructure (ports, marinas, fisheries etc)	marina, fisheries, small ports, small shipyard
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	seaside tourism

5. Institutional and planning framework

Administrative framework (institutional arrangements)	Agreement with City for the pilot site testing
Development strategies relevant with tourism	Development Strategy of Kaštela, Cultural strategy of Kaštela
Management policy, plans and other arrangements	Urban plan, Guidelines for coastal zone governance

6. Key priorities and challenges in relation to coastal and maritime tourism

climatic change adjustment
sedimentary monitoring of the marina area

PILOT AREA:
DELTA NERETVA RIVER
AREA COORDINATOR:
DUBROVNIK NERETVA REGIONAL DEVELOPMENT AGENCY DUNEA



1. Geographic characteristics

Area (km ²)	120 km ²
Administrative status (authorities governing the area)	7 local government units, 3 cities (Ploče, Metković, Opuzen) and 4 municipalities (Slivno, Zračblje, Kula Norinska, Pojezerje).
Geomorphology and natural resources (water & soil resources, agricultural land)	<i>Neretva Delta is the river delta of the Neretva, a river that flows through Bosnia and Herzegovina and Croatia and empties in the Adriatic Sea. Due to very specific way of life of local people who have co-existed with the wetland through centuries, Neretva Delta represents the unique landscape in Europe. It is characterized by diversity of wetland habitats mixed with agricultural land surrounded by karst hills as well as with the sea at the river mouth. In many ways, the Neretva delta is different from other parts of coastal Croatia. Furthermore, Neretva is the only river in this region with a delta at its mouth. In spite of the conversion of wilderness into tamed waters and arable land, the landscape around the Neretva delta has preserved its beauty and romance. The alluvial plains in the carst setting have become both the inspiration for artists and a topic of scientific research. The unique landscape and the specific culture have made the Neretva delta an attraction for both Croatian and international tourists.</i>

2. Socio-economic characteristics (NUTS III, municipal, city, area level)

General socio-economic profile (population, GDP)	<i>Population of 35 672 inhabitants (2011) in Delta Neretva area. Dubrovnik Neretva county in general has total population of 122 568 inhabitants (2011) and GDP of 9.969 EUR per capita (2013).</i>
Economic- sectoral characteristics, employment/unemployment, basic sector distribution, etc.	<i>The backbone of the economy in this area is cargo seaport in Ploče, second in Croatia by the amount of transshipment, a multi-purpose port for transshipment of almost all kinds of commodities represented in international maritime transport.</i>

An integral part of the port of Ploče is Metković port which is located 20 km upstream on the river Neretva. It specializes in the transshipment of cement and granulated stone. Total annual cargo handling capacity port of Ploče is estimated at more than 5 million tons of general and bulk cargo (excluding terminal under construction), while the total storage volume of liquid cargo around 600,000 tons. The area of the Neretva Valley has all the potential for considerable benefits from dynamism of tourism development, due to its quality of natural attractions, with particular reference to the watercourse / delta Neretva, a relatively long and usable sea coast, Baćinska jezera, a favourable climate, ichthyologic / ornithological reserves and interesting protected wetland and other areas, numerous caves and karst phenomena, the centuries-old tradition of life and work culture, interesting history and peculiar material and immaterial cultural heritage. Unfortunately, tourism in this area is underdeveloped and should be seriously taken into consideration. For now, agriculture is the most important economic activity in Delta Neretva and it is the majority of the population living resources. Of agricultural crops dominates the tangerine and vegetable crops. Mild climate, fertile alluvial soil and plenty of water allow multiple harvesting both in open air and in plastic production. Delta Neretva is also the connection point of main roads, rail and maritime transport. Although the region of Neretva delta has always had an extraordinary biological and ecological importance, it is still relatively insufficiently explored. This greatly hinders an accurate assessment and protection of this highly endangered region. It is particularly worrisome that the extensive melioration, which took place about thirty years ago with the financial support of the Food and Agriculture Organization (FAO), was conducted in the absence of any biological-ecological studies. As a result, a significant proportion of the area has been completely transformed from wetland into agricultural land. At the same time, the protection of nature was not taken into account. The most significant transformation of the delta took place in the recent decades with the intense and long-term melioration, the purpose of which was to create agricultural land and to protect the region from floods. The further expansion of the port and settlement of Ploče, building of holiday homes, industry, and the pollution of water from neighbouring countries and other sources, still endangers marshy valleys of the Neretva river. Man has caused changes and a series of adverse changes in the hydrography and the plant-animal world. There is the emission of many pollutants, primarily in soil and water, which are all reflected in the quality of life. Therefore, the future of this area should be based on balancing the need for further development and the need to protect natural resources. It is also necessary to coordinate the development of different and sometimes conflicting activities and needs, such as agriculture, tourism, water management, infrastructure construction, industry, increasing the quality of

	<i>life etc.</i>
3. Natural and cultural assets	
Protected areas (NATURA 2000, Marine Protected Areas, Specially Protected Areas, etc.)	<i>The delta is a unique landscape in southern Croatia and a wetland that is listed under the Ramsar Convention. A total of 1,620 ha of the delta are designated protected areas: ornithological reserves (Prud, Orepak and Podgredom), ornithological and ichthyologic reserve at the river mouth protected landscape (lake Modro oko). The major part of the area is under NATURA 2000 protection. The list of specially protected objects of nature, composed in 1991 by the Ministry of Environment, does not mention the protected regions of the municipality of Ploče. These are Parila, Bačinska lakes and part of the region around Modro oko. Furthermore, the list does not include the area of the lake Kuti (ornithological reserve) because of the lack of agreement between conservationists and the local businesses. The Kuti area combines wetland, lakes, and carst landscape, and is abundant with marshland vegetation and freshwater fish, in particular eel. Numerous strong streams supply the area with water.</i>
Cultural resources (UNESCO sites, historic city centres)	<i>Traditional old villages, historical sites such as fort Kula Norinska. Archaeological research conducted at the Plečašove štale site in 1995 and 1996 led to a sensational discovery of the remains of a Roman temple – the Augusteum – and 17 marble statues, both outsized and in natural height. These finds inspired the idea of presenting this unique archaeological site in an integral fashion, including both architectural remains and other specimens of the ample archaeological materials. The cornerstone of the future museum was laid on 19 July 2004. The Narona Archaeological Museum was established by a directive passed by Croatia's Government in 2005 and, after exceptionally demanding construction works, it was formally inaugurated on 18 May 2007 as the first in situ museum in Croatia. Such an approach to the presentation of an archaeological site has enriched Croatia's museum scene and has few peers at the European or even global level. Thus far, the Museum has received three awards, including the Vladimir Nazor Award conferred to architect Goran Rako for the Museum's design, the Cemex Award conferred to the contractor MGA of Metković for its construction efforts, and the Croatian Tourism Board's Blue Flower Award conferred to the Narona Archaeological Museum for its special contribution to enriching Croatia's tourism product. The exhibition includes a total of roughly 900 finds, allowing us to track the city's history from the end of the third century BC through the fifteenth century AD.</i>
Other	N/A

4. Development patterns

Development trends (e.g. urban growth, linear development of activities)	<i>Basics for urban growth is the specific location of the area (connection point of main roads), Ploče port, specific protected areas that should be natural capital for further sustainable development.</i>
Coastal and maritime infrastructure (ports, marinas, fisheries etc.)	<i>Ploče port, Metković port.</i>
Emphasis on coastal and maritime tourism characteristics (types of tourism, e.g. ecotourism) and the interaction of the sector with the other activities	<i>Sustainable development of tourism in order to preserve protected natural areas. Use of natural protected areas for adequate touristic activities. Natural areas as a natural capital for development.</i>

5. Institutional and planning framework

Administrative framework (institutional arrangements)	<i>3 cities and 4 municipalities.</i>
Development strategies relevant with tourism	<i>Development plan for Neretva cluster (2016).</i>
Management policy, plans and other arrangements	<i>Not available.</i>

6. Key priorities and challenges in relation to coastal and maritime tourism

<i>1. Preservation of protected natural sites</i>
<i>2. Sustainable tourism development – natural sites as a natural capital</i>
<i>3. Tourism development plan outside the construction area sites</i>

About the priorities and the challenges we would like you to suggest possible preventive and resolution measures.