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Case Study #1 Var

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ACRONYMS

<i>AMCRE</i>	<i>Assemblée Maritime Pour la Croissance Régionale et l'Environnement</i> (Maritime assembly for regional growth and the environment)
<i>APAM</i>	<i>Association pour une pêche et des activités maritimes durables</i> (Association for sustainable fisheries and maritime activities)
<i>AOT</i>	<i>Autorisation d'occupation temporaire</i> (temporary occupation permit)
<i>CAMP</i>	Coastal area management Plan (<i>Plan d'aménagement côtier -PAC</i>)
<i>CBD</i>	UN Convention on Biological Diversity
<i>CCRM</i>	<i>Conseil consultatif régional pour la mer</i> (Regional Maritime Consultative Council)
<i>CEREMA</i>	<i>Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement</i> (Centre for studies and expertise on risks, the environment, mobility and spatial planning)
<i>CPRI</i>	Common-pool resources institutions
<i>CRI</i>	Coastal Risk Index
<i>CRF</i>	Common Regional Framework
<i>DOCOB</i>	<i>Document d'objectifs</i> (Objective documents)
<i>DSF</i>	<i>Document stratégique de façade</i> (Seafront Strategy Document)
<i>EBSA</i>	Ecologically or Biologically Significant Marine Areas
<i>EEZ</i>	Exclusive Economic Zone
<i>EU</i>	European Union
<i>FLAG</i>	Fisheries Local Action Group
<i>GIP</i>	<i>Groupement d'intérêt public</i> (<i>Public Interest Group</i>)
<i>ICZM</i>	Integrated coastal zone management
<i>IMO</i>	International Maritime Organisation
<i>IUCN</i>	International Union for Conservation of Nature
<i>IWRM</i>	Integrated water resources management
<i>LNG</i>	Liquefied natural gas
<i>LMMA</i>	Locally managed marine area
<i>LSI</i>	Land-sea interface
<i>MPA/MMA</i>	Marine protected area/Marine managed area
<i>MSFD</i>	Marine Strategy Framework Directive
<i>MSSD</i>	Mediterranean sustainable development strategy
<i>MSP</i>	Maritime Spatial Planning
<i>NGO</i>	Non-governmental organisation
<i>OECM</i>	Other effective area-based conservation measures
<i>OHM</i>	<i>Observatoire Hommes-Milieus Littoral Méditerranéen</i> (Observatory Man-Mediterranean Coastal environments)
<i>PAMM</i>	<i>Plan d'action milieu marin</i> (Marine Action Plan)
<i>PGRl</i>	<i>Plan de gestion des risques d'inondation</i> (Flood risks management plan)
<i>PSSA</i>	Particularly Sensitive Sea Area
<i>RAMOGE</i>	Saint R A phaël M O naco G E nova
<i>SCOT</i>	<i>Schéma de cohérence territoriale</i> (Scheme for territorial coherence)

<i>SDAGE</i>	<i>Schéma directeur d'aménagement et de gestion de l'eau</i> (Framework for water planning and management)
<i>SDML</i>	<i>Schéma départemental de la mer et du littoral</i> (County scheme for the coast and the sea)
GIS	Geographical information system
<i>SNML</i>	<i>Stratégie nationale mer et littoral</i> (National strategy for the sea and the coast)
SPAMI	Specially Protected Areas and Biological Diversity in the Mediterranean
<i>SRDAM</i>	<i>Schéma régional directeur pour l'aquaculture marine</i> (national framework scheme for marine aquaculture)
<i>SRML</i>	<i>Stratégie régionale pour la mer et le littoral</i> (Regional Coastal and Maritime Strategy)
<i>SSECM</i>	<i>Schéma structurel des établissements de cultures marines</i> (Structural scheme for the establishment of marine cultures)
UNESCO	United Nations Educational, Scientific and Cultural Organisation

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EXECUTIVE SUMMARY

Within the SIMMEDWEST project PAP/RAC aims at demonstrating the implementation of MSP, linked with ICZM, in the framework of the Barcelona Convention, drawing on the reflections carried out within two 'Coastal Area Management Programme' (CAMP) projects, in France and Italy, as a regular activity of PAP/RAC. In line with the SIMWESTMED project document, PAP/RAC focused its activities within two pilot cases in the two countries -Var County in France (Sud Region) and the Tyrrhenian case with two pilot sites (Tuscany & Sardinia) in Italy-, looking more particularly at the land-sea interactions (LSI) and governance mechanism aspects. Therefore, there are two ranges of scale that are at stake in the SIMWESTMED project: at sub-basin level with transnational considerations, and at more local scale (CAMPs related) with considerations on LSI and stakeholders' involvement as required in the MSP approach.

This report will present the reflections carried out in the framework of the Var case study. In the frame of the Marine Strategy Framework Directive (MSFD), the overall area (French and Italian sides) and its pilot sites (CAMPs) have been through a thorough diagnostic of their environmental state and are now managed following the measures included in the respective 'Marine Action Plans'.

On the French side, the 'Marine Action Plan' (PAMM) and its programme of measures are articulated with the Water management Master Plan (SDAGE) whilst representing the environmental pillar of the 'Seafront Master Plan' (in preparation) covering the entire EEZ. At the scale of the Var county, the LSI analysis corresponds to the landward and seaward boundaries of Territorial Coherence Scheme (SCOT) as a multi-local government (municipalities) land-use and coastal sea (3 miles offshore) management articulated plans. It is at that scale and within such plans that stakeholders' participation take place as regards the many coastal and maritime activities which, combined with natural hazards, inflict cumulative pressures on the natural environment.

From such an analysis (coastal and maritime activities and associated cumulated pressures), compatibility of activities are estimated leading to 'vocation' maps as in the case of one ('Grimaud and Saint-Tropez') of the three SCOTs established along the Var coast in the specific socio-economic context of the Sud Region. Previous studies made under the CAMP-Var project showed that there were many instruments and ongoing approaches for the Var coastal and maritime areas management, sometimes overlapping but all contributing to ICZM Protocol application at local level.

Future efforts for better ICZM-MSP local implementation should address the dissemination of useful knowledge for management through more participatory research between scientists and local stakeholders, coherence and coordination between the diverse instruments and their action plans, and articulation between coastal and maritime governance. In doing this, the local networking of the many existing MPAs and Other Effective area-based Conservation Measures (OECMs) is considered to be crucial, requiring a double-track approach: from the bottom, from the identification of local MPA/OECM leaders as in the case of the Adriatic Protected Areas Network (ADRIAPAN), and from the top which, in this case, would be the Sud Region, in the frame of its coastal and maritime regional strategy and its new Maritime Assembly (AMCRE).

Besides the PAP/RAC CAMPs in Italy (Tuscany and Sardinia) and France (Var county), there are many other local initiatives that could potentially become elements of transnational grassroots networks to help considering the MSP social and distributive impacts in the region and in support for the already existing transnational agreements which, in relation with the Var county, are the Pelagos Sanctuary and

the RAMOGE framework that could very well set up an MSP multi-stakeholders dedicated working group to share experiences and make proposals to decision-makers from both countries.

Though, throughout the SIMWESTMED project, a series of meeting have been organized by PAP/RAC, with the support of the *Conservatoire du Littoral*, to steer the dialogue between project partners and stakeholders from both countries and beyond, much efforts and resources are still needed to steer an incremental dialogue reaching the transboundary level, between EU countries and in the entire Mediterranean basin, engaging local and regional actors and their initiatives towards strategic planning and operational levels.

FOREWORD

The SIMWESTMED project is in line with the Programme of Work of PAP/RAC regarding the definition of a Common Regional Framework (CRF) for Integrated Coastal Zone Management (ICZM) and a Conceptual framework for MSP in the Mediterranean, feeding the current discussion about the Marine Spatial Planning (MSP) within the Barcelona Convention system.

Namely, UN Environment/MAP Programme of Work approved for 2016-2017 envisages the preparation of a Conceptual Framework for MSP as an emerging issue in the entire Mediterranean Region. This Conceptual Framework is fully interlinked with CRF, which makes it necessary to put them into relation and establish a clear hierarchy between them.

Moreover, and as reported in the UNEP/MAP Mid-Term Strategy 2016-2021 (MTS), the Contracting Parties, at COP 18 recommended to strengthen MAP activities in the field of Marine Spatial Planning (MSP) in order to contribute to GES, investigate in more details connections between land and sea areas and propose coherent and sustainable land and sea-use planning frameworks relating with key economic sectors and activities that may affect the coastal and marine resources.

Although MSP is not expressly mentioned in the Protocol on ICZM in the Mediterranean, spatial planning of the coastal zone is considered an essential instrument of the implementation of the same Protocol. One of the main objectives of ICZM is to *“facilitate, through the rational **planning of activities**, the sustainable development of coastal zones by ensuring that the environment and landscapes are taken into account in harmony with economic, social and cultural development”* (art. 5). Planning is recalled also in other articles of the Protocol, as in the case articles dealing with the protection of wetlands, estuaries and marine habitats (art. 10) or the protection of coastal landscape (art. 11).

According to art. 3 the area to which the Protocol applies (i.e. the coastal zones) is the area between:

- the seaward limit of the coastal zone, which shall be the external limit of the territorial sea of Parties; and
- the landward limit of the coastal zone, which shall be the limit of the competent coastal units as defined by the Parties.

The geographic scope of the Protocol includes both the land and the sea and it follows that planning should be equally applied to both components of the coastal zones. While MSP is a relatively new term within the Barcelona Convention frame, it is clear that planning of the marine space is a concept already taken on board by the Protocol. In this perspective MSP can be considered the main tool/process for the implementation of the ICZM Protocol in the marine part of the coastal zone and specifically for its sustainable planning and management. Art. 3 of the ICZM Protocol also defines the geographic scope of the operational application of MSP that shall focus on the marine area following within the territorial sea of a country. Requirement to take land-sea interactions into account is specified in Art. 6.

Within the SIMMEDWEST project PAP/RAC aims at demonstrating the implementation of MSP, linked with ICZM, in the framework of the Barcelona Convention, drawing on the reflections carried out within two pilot cases called ‘Coastal Area Management Programme’ (CAMP), in France and Italy, as a regular activity of PAP/RAC. In line with the SIMWESTMED project document, PAP/RAC will focus its activities within these pilot cases in the two countries, looking more particularly at the land-sea interactions (LSI) and governance mechanism aspects.

The two ‘CAMP’ case studies, under the supervision of PAP/RAC and coordination of each country, are the Var County in France (Sud Region) and the Tyrrhenian two pilot sites (Tuscany & Sardinia) in Italy.

As a prerequisite, it must be stated that, within the SIMWESTMED project, the coastal and marine spatial planning boundaries will be of two kinds: large boundaries (sub-basins) for analysis and

transnational considerations, and more focused areas for effective cross-management between the two CAMPs (France and Italy).

1. INTRODUCTION

1.1. Synergies with past and ongoing activities

The SIMWESTMED project entered its operational phase in February 2017. As of the beginning of the project, and then building on the inputs from the Initial Assessment, PAP/RAC has already started drafting possible approaches for the Var and Tuscany-Sardinia pilots in line with the project document and general objectives. Particular attention was paid on drawing a rational path for the activities in the pilots, considering the following points:

- **Capitalise** on previous activities that are related to the implementation of ICZM within the framework of the Barcelona Convention (mainly coming from [CAMP projects](#))
The CAMP projects are coastal management support programmes of the Mediterranean Action Plan, implemented by the PAP/RAC. The objectives of the CAMP projects are to support in a specific way, in a defined territory, the implementation of the principles of the Barcelona Convention and in particular the ICZM Protocol for the Mediterranean. The purpose of the CAMPs are as follows:
 - ✓ To facilitate the implementation of the ICZM Protocol in the States parties to the Barcelona Convention;
 - ✓ Develop, identify and implement tools and methodologies for the sustainable development of project areas;
 - ✓ To contribute to capacity-building at local, national and regional levels, in particular in terms of governance;
 - ✓ To draw replicable outputs, and to ensure a wide dissemination of the results obtained.
- **Encourage** synergies with other projects, programmes and initiatives;
- Address transboundary issues according to the available time and resources, taking into consideration the transboundary approach, as required by the ICZM Protocol.
“The Parties shall endeavour, directly or with the assistance of the Organization or the competent international organizations, bilaterally or multilaterally, to coordinate, where appropriate, their national coastal strategies, plans and programmes related to contiguous coastal zones. Relevant domestic administrative bodies shall be associated with such coordination.” (ICZM Protocol Article 28 – Transboundary cooperation);
- **Support** EU Member States in the implementation of the MSP directive in their waters and/or to initiate or establish concrete cross-border cooperation between Member States. This second objective corresponds to article 20 of the MSP Directive, which calls on States to cooperate and to set up relevant mechanisms.
Art. 20. “ Member States should consult and coordinate their plans with the relevant Member States and should cooperate with third-country authorities in the marine region concerned in conformity with the rights and obligations of those Member States and of the third countries concerned under Union and international law. Effective cross-border cooperation between Member States and with neighbouring third countries requires that the competent authorities in each Member State be identified. Member States therefore need to designate the competent authority or authorities responsible for the implementation of this Directive. Given the differences between various marine

regions or sub-regions and coastal zones, it is not appropriate to prescribe in detail in this Directive the form which those cooperation mechanisms should take.

The SIMWESTMED activities benefited from the established links, shared experience, vision and expertise from the CAMP network put into sub-national, national and transnational context. In particular, it allowed the SIMWESTMED project partners to get valuable feedbacks on specific themes, difficulties, good practices, etc. which contribute to the wider picture of the reflexions on a harmonious MSP implementation in the EU member states. Moreover, it also helped strengthen ties within the CAMP network building on the challenges of MSP implementation. The very principle of this project exercise was, as much as possible, to take advantage of what already exists whilst promoting synergies and articulating geographic and governance scales.

1.2. Large scale boundaries and overall characteristics of the SIMWESTMED area

From the oceanographic point of view, the common marine area is characterized by the Liguro-Provençal current going up along the coast of Sardinia and Tuscany and then along the coast of the Liguria and Sud regions. We are thus dealing with a well-characterized sub-basin area with the so-called 'Thyrrhenian sea' in its South-Eastern part and the 'Ligurian sea' in the North, North-Western part.

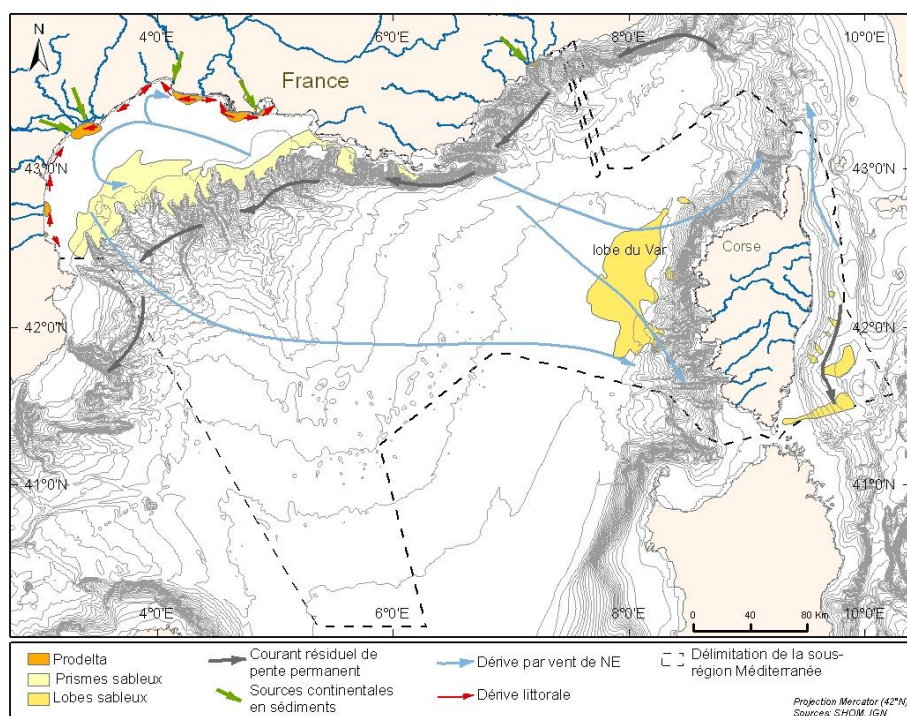


Figure1: Main sedimentary transits and main features in the Mediterranean region

Under the international Law of the Sea (ratified by both countries), the sub-basin political boundaries are the Italian Ecological Protection Zone (EPZ) in the Eastern part and the French Exclusive Economic Zone (EEZ) on the Western part.

The area includes the biggest international marine protected area in the Mediterranean which is the 'Marine Mammals Sanctuary' or 'Pelagos Sanctuary'. It was established between France, Italy and Monaco in 1999 and entered into force in 2002. Its main objective is to protect endangered and endemic marine mammals on an area of about 90,000 km² of internal, territorial, and adjacent high seas

waters, between Toulon (Var, Sud region), Cape Falcone (North-western Sardinia), Cape Ferro (North-eastern Sardinia) and Fosso Chiarone (Tuscany). In 2001, the Pelagos Sanctuary was included in the list of Specially protected Areas of Mediterranean importance (SPAMI), provided by the 1995 Protocol Concerning Mediterranean Specially protected areas and Biological Diversity in the Mediterranean under the Barcelona Convention, calling upon Contracting Parties to respect the protective status of the transnational/high seas MPA. In 2005, the Extraordinary Meeting of the Barcelona Convention Contracting Parties agreed on the opportunity to include the Pelagos Sanctuary in the UNESCO World Heritage list and of its designation as a Particularly Sensitive Sea Area (PSSA) under the IMO Convention.

Besides and superposed to the high seas Pelagos Sanctuary, the sub-basin coastal areas are well covered with all kind of national and local MPAs (National Parks, Natura 2000 at sea, etc.), often close to port areas including many small recreational ports and several industrial ports like Toulon, Livorno, Piombino or Porto Torres.

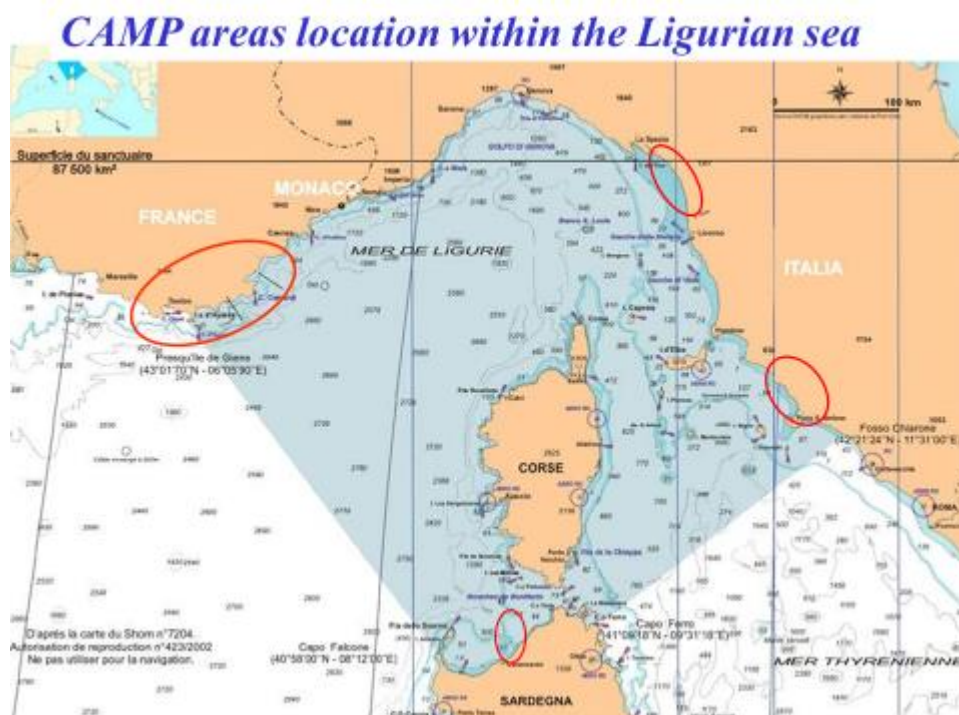


Figure 2: CAMP areas location within the Ligurian sea

2. LAND SEA INTERACTIONS (LSI): THE VAR CASE STUDY (FRANCE)

The analysis carried out for the initial assessment and the country fiches (C 1.1.1.) preparation in the framework of the SIMWESTMED project provides some overall relevant elements on how LSI can be approached within MSP, what are the challenges and what are the most common interactions across the Western-Mediterranean countries.

2.1. The LSI approach

Land-sea interactions and related processes constitute the central issue of the 3rd Mid-Term Strategy 2016-2021 of UNEP-MAP, and correspond to the first objective of the Mediterranean sustainable development strategy (MSSD) and to the Sustainable Development Goals 14 ('Life below water') and 15 ('Life on Land'), strictly interconnected through LSIs.

Land-sea interactions were always the focus of ICZM¹. However, its activities in the past were focused predominantly (although not exclusively) on the land part of the coastal system. By the adoption of the ICZM Protocol, inclusion of the territorial sea in ICZM has become compulsory. MSP on the other hand, does not extend its remit further inland than the high-water mark, although it has to take land-sea interactions into consideration, as well. Both ICZM and MSP need a full range of processes and links among themselves to be effective. MSP faces more uncertainties, since we still know less about the sea than about the land where we live, and it is a more complex issue given that it has to provide for three levels/dimensions (surface, water column, and sea bed), the time factor being important for both ICZM and MSP.

Interestingly, in parallel with SIMWESTMED, the EU ‘SUPREME’ (Supporting maritime spatial planning in the Eastern Mediterranean) project identified several important points that may help in linking LSI analysis outcomes to relevant planning context² in a given region, including:

- River basin management plans prepared under the WFD provisions, their articulation with the MSFD Marine Action plan, and ICZM initiatives (ICZM Protocol) should all be considered to assess and manage LSI interactions ;
- Sectoral plans should as well be considered when assessing LSI interactions since maritime activities have strong connections with land and land-use planning for the development of their own facilities (ports, cables, pipelines, etc.).

In such a planning context, the proposed phased process to account for LSI is, 1) LSI scoping (context and background); 2) LSI analysis, and 3) feeding LSI assessment into plans (landward and seaward).

But all this will be difficult to achieve without local stakeholders’ awareness and sense of process ownership. It is why a SIMWESTMED workshop was organized in June 2018 in La Seyne Sur Mer. One of the raised issues was at which scale should the stakeholders meet together in order to generate genuine exchanges between them. The CAMP-Var experience of a sea-land forum at the scale of large clusters of municipalities (Departement) showed that it was workable provided it was sustained by well-established local social networks. In that regard, local environmental education NGOs have a key role to play. Among the different notions that should be promoted figure the ‘green infrastructure’ one leading to strategic planning of a high ecological value network offering a large range of ecosystem services whilst protecting biodiversity. To such end, the mapping of high ecological value areas, including MPAs, is essential in order to support the decision making process, considering that the cumulated impacts are not just addressing MPAs but the entire coastal and marine ecosystem. Therefore, MPAs should be considered as totally embedded in ‘ordinary natural environment’ and as integrated management laboratories. We will come back later on this MSP crucial point when talking about MPA networking.

2.2. Introduction to the French legal and institutional frameworks

In France, the EU Maritime Spatial Planning (MSP) directive is formalized through an Integrated Coastal and Ocean Management (ICZM) approach as stated in the ‘Grenelle 2’ Act (12 July 2010) and included in the Environment Code (art. L219-1 to L219-18). On the French Mediterranean seafront, the MSP approach is part of the Seafront Strategy Document (DSF) and its environmental pillar which is the

¹ SIMWESTMED.2018. Recommendations and Guidelines to support common understanding on a regional scale on MSP, including synergic implementation of regionally relevant policy instruments 1.3.1.2./1.3.1.4.

² SUPREME. 2018. How to perform analysis of land-sea interactions, combining MSP and ICZM in the considered project area. Deliverable No 1.3.7

Marine Action Plan (PAMM). The Seafront Strategy Document for the French Mediterranean is therefore the MSP framework while representing the regional implementation of the national Ocean and Coast Integrated Strategy (SNML). This legal document is prepared under the authority of one of the Prefects of the regions in each Seafront (State representative) and the Maritime Prefect for the entire French Mediterranean EEZ.

The Seafront Strategy Document (DSF) gives the guidelines for maritime activities development, ecosystems protection, monitoring and surveillance, equipment and space attribution to the various uses, as well as the measures for implementation.

At the land-sea interface, it is the ‘Littoral’ Act (1986) that prevails, requiring from any urban or regional planning document to be compatible with the content of the law. Among these (planning documents), the most appropriate to the ICZM/MSP approach is the Territorial Coherence Scheme (SCOT) on land and (though not yet developed) at sea (3 miles offshore).

While the Var County has a ‘Sea and Coast Scheme’, it must be considered in the framework of the Sud region’s ‘Sea and Coast Strategy’. In brief, the most important planning documents to be taken into consideration within the SIMWESTMED project are:

- The SCOT, at the land-sea interface;
- The Port-Cros National park charter and other diverse MPAs boundaries;
- The Regional marine aquaculture development scheme (SRDAM) and the Marine culture farm structure schemes (SSECM).³

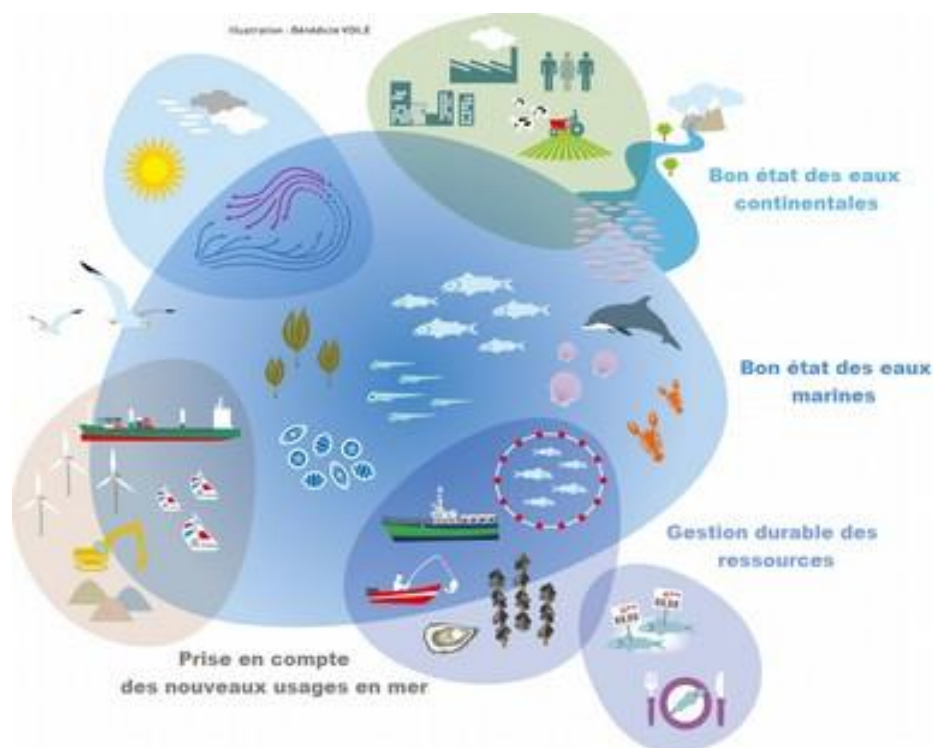


Figure3. Interpretation of LSI (DIRM Sud-Atlantique, 2018)

³ Document stratégique de façade méditerranéenne – Etat des lieux. Chapitre 6 – Les initiatives locales de planification et de gestion intégrée de la mer et du littoral. Septembre 2017

<http://www.dirm.mediterranee.developpement-durable.gouv.fr/le-document-strategique-de-facade-r335.html>

2.3. Environmental state and programme of measures

In the frame of the Marine Strategy Framework Directive (MSFD), the overall area (French and Italian sides) and its pilot sites (CAMPs) have been through a thorough diagnostic of their environmental state and are now managed following the measures included in the respective 'Marine Action Plans'.

On the French side, the 'Marine Action Plan' (PAMM) is the environmental pillar of the future 'Seafront Master Plan' covering the entire EEZ. The latter is being prepared by the 'Seafront Maritime Board' for the French Western Mediterranean.

Regarding MSP and the SIMWESTMED project, the French Marine Action Plan has a number of relevant measures under the three following environmental objectives :

- **Objective D:** *maintain or restore marine mammal populations in a good state of conservation (directly linked to the Pelagos sanctuary);*
- **Objective L:** *Strengthen the international cooperation tools for the MSFD implementation in the Western Mediterranean marine sub-region; (the same requirement of transnationality as for the MSP directive);*
- **Objective M:** *Inform and sensitize the coastal and maritime stakeholders to the issues related to the good state of marine ecosystems within the marine sub-region and following the PAMM objectives.*

Some of the details of the corresponding measures give important indication regarding the management of maritime activities like 'maritime uses control in regard to their impact on marine mammal populations'. Since the whole area is covered by the Pelagos Sanctuary, these measures cannot be ignored when planning maritime activities in the same area.

As regards the 'Objective L', there are two important measures which first cover a multilateral international agreement for the MSFD coherent implementation between France, Italy, Spain, and Monaco. Between France, Italy and Monaco, the RAMOGE agreement is mentioned as the existing legal framework to be used. The second measure concern the French MPAs to be acknowledged as Specially Protected Areas of Mediterranean Importance (SPAMI) as it is already the case for the Pelagos Sanctuary.

We will come back to this important transnational governance issue.

The other key aspect in regard to planning is, at the land-sea interface, the coherence and articulation between the French Water Management Master Plan (SDAGE) and the Marine Action Plan, provided the first one deal with the freshwater 'good ecological state' while the second one deal with the 'good environmental state' including the interactions between impacting activities and the natural environment in a three dimension system. Keeping this consideration in mind, the issues more particularly at stake are the following : pollutants runoff from rivers (including Rhône river), pollutant runoff from big cities and port and industry complex, coastal artificialisation and erosion. The last issue (coastal erosion), which is one of the major issues in most of the CAMP sites, is tackled through the implementation of the National Strategy for the Coastline Integrated Management with an action plan focused on observation development, stakeholders' participation, spatial redistribution, and financing mechanisms.

2.4. LSI in the Var coastal area

The Var coast stretches over 432 km, with two main archipelagos and numerous islands and islets. It is under huge pressure in a Department that ranks second in France regarding the number of tourist arrivals in addition to a continuous increase in permanent population. Its coastal 'good environmental

state' has now to be considered in connection with the French Western Mediterranean 'Marine action plan' as described above.

The geographic scope of the following LSI analysis for the Var coastal and maritime areas, corresponds to the landward and seaward boundaries of the three SCOTs (Territorial Coherence Scheme) that cover the Var administrative Department. On the land side, it includes clusters of municipalities that may extend as far as 10kms from the shore, and, on the seaside, it goes 3 miles offshore as legally agreed between the State and the local governments. The extension of the SCOT at sea, including the land-sea interface, is called the 'SCOT coastal and maritime section'. This probably represents the most relevant operational administrative unit where activities development policy and regulation may be applied at the land-sea interface.

Table 1. Land-sea interactions in the Var coastal areas

Sea-land interactions <i>Economic activities/natural phenomena</i>	Land-sea interactions <i>Economic activities/natural phenomena</i>
<p><u>Specific human activities</u></p> <p><i>Defence and security</i></p> <p><i>Fishing</i></p> <p><i>Marine aquaculture</i></p> <p><i>Recreational diving</i></p> <p><i>Sea surface recreation</i></p> <p><i>Maritime transport (ferries, cruising, freight)</i></p> <p><i>Ports, moorings, pleasure boats</i></p> <p><i>MPAs and OECMs (Other Effective area-based Conservation Measures) (Natura 2000, Port Cros National Park, Pelagos sanctuary)</i></p> <p><i>Marine reserves (fisheries)</i></p>	<p><u>Specific human activities</u></p> <p><i>Land use</i></p> <p><i>Natural resource use (water abstraction, sand dredging, quarries)</i></p> <p><i>Agriculture and livestock farming</i></p> <p><i>Industry</i></p> <p><i>Energy industry</i></p> <p><i>Infrastructures (roads, urban areas, rivers, ports)</i></p> <p><i>Port activity</i></p> <p><i>Transports (cars, train, planes)</i></p> <p><i>Tourism, sports and recreation</i></p> <p><i>Natural protected areas</i></p>
<p><u>General human activities</u></p> <p><i>Waste (marine litter)</i></p>	<p><u>General human activities</u></p> <p><i>Urban plants</i></p> <p><i>Waste (micro-, and macro-pollutants)</i></p> <p><i>Services network (i.e. sewage system)</i></p>
<p><u>Natural hazards</u></p> <p><i>Extreme events (storms, surges)</i></p> <p><i>Sea-level rise</i></p> <p><i>Coastal erosion and marine flooding</i></p> <p><i>Phytoplankton, jellyfishes blooms</i></p>	<p><u>Natural hazards</u></p> <p><i>Soil erosion, Subsidence</i></p> <p><i>Transport of river sediments</i></p> <p><i>Coastal forest fire</i></p> <p><i>Flooding</i></p>

2.4.1. [Sea-Land interactions](#)

Specific and general human activities

Defense and security

The Toulon naval base gathers 70% of the national Marine fleet. With more than 25.000 jobs, 2.500 companies, it is one of the main economic engines of the region, including the naval industry. Its spatial coverage at the LSI is quite important, more particularly in Toulon, Saint Mandrier and Hyères municipalities (superficy: 290 ha). From the 'protection and defence' point of view, the maritime areas

at stake are the waters that are forbidden to civil navigation and fisheries, to which must be added a number of trial and training areas that are not permanent but only used when needed⁴.

Generally speaking, the impacts of military activities are poorly known, on one hand on sea bed and habitats and, on the other hand, regarding the submarine noise and sonar waves on the marine fauna behavior, more especially the Cetaceans since part of the military activities take place within the Pelagos sanctuary area. While new classes of war ships and nuclear submarines are expected to be stationed in the Toulon naval base, huge infrastructure works will be required in the port area (dredging, new platforms, jetty strengthening, etc.). With military activities on the rise, new navigation constraints ('Grande Rade' and 'Petite Rade') on the surface and water column are expected in the coming years.

For a number of years, the naval base developed an environment-friendly approach. They are an active member of the Toulon Bay Contract, a State+local governments planning tool for preservation and enhancement of Toulon Bay water quality. Actually, they are in most of the steering committees of varied initiatives like Natura 2000, Port Cros National Park, etc., and participate to the different quality labelling industrial think tanks. They have their own laboratories for pollutant analysis and monitoring (water and atmosphere). They not only operate warships but other vessels devoted to the 'State intervention at sea' like the coast guards and others.

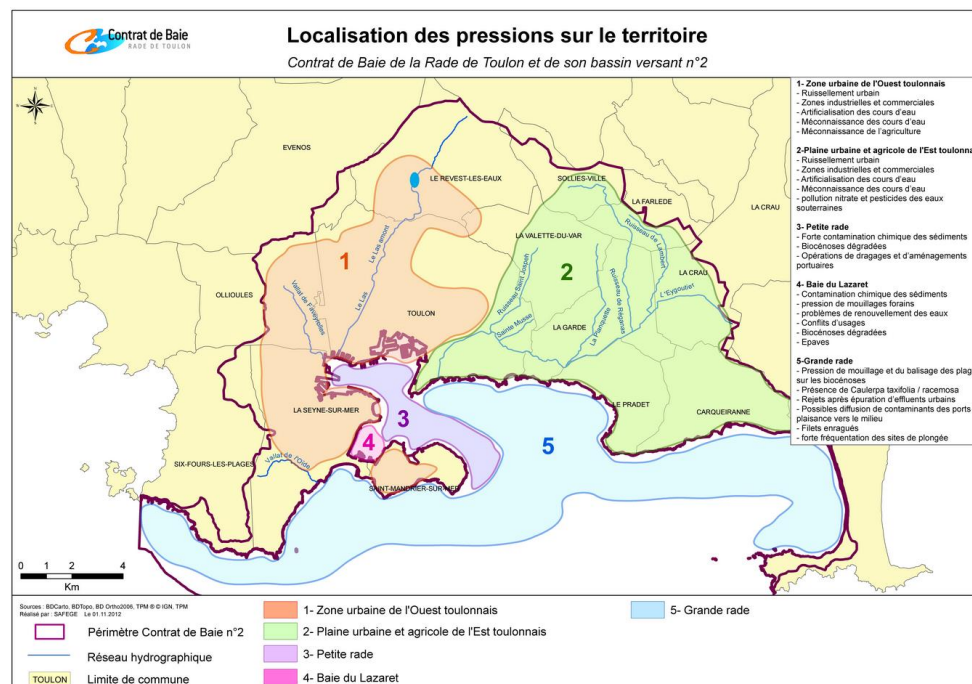


Figure 4. Bay Contract, localization of pressures on the territory

Fishing and marine aquaculture

There are about 280 artisanal fishers for a total catch of about 2500 tons. 84% of the fishing fleet fish is within the 3 nautical miles strip. It is a highly polyvalent small-scale fishing distributed among 14 local cooperatives called 'Prudhomies'. 2/3rd of the fishers and boats are located in the Toulon area. In addition, there are 7 coral fishers.

⁴ Maps are available in : 'SCOT Provence Méditerranée. Livre Bleu. Eléments de cadrage pour l'élaboration du chapitre individualisé valant schéma de mise en valeur de la mer dit « volet littoral et maritime » du SCOT Provence méditerranée (2012).

All in all, fishers and their organizations accommodate rather well with the other activities, the main concerns being:

- The development of nautical sport and activities with increasing frequentation, especially in summer with damages on fishing nets (leisure boats anchor);
- Ferries navigation close to islands like Porquerolles;
- Fishing competition with recreational fishing;
- Potential conflicts in case of aquaculture development.

Fishers from the surrounding municipalities passed a special agreement (charter) with the Port Cros National Park in regard to fishing within the area. The Var is one of the European Maritime and Fisheries Fund (EMFF) application area in the Mediterranean. There are seven Fisheries Local Action Groups (FLAGs) on the French Mediterranean coasts: Calanques Islands, Esterel Côte d'Azur (managed by APAM, an association of actors from the Var County), Corsica, Camargue, Thau, Aude, Mediterranean Pyrenees.

Recreational fishing is significant but accurate data are missing (summer and autumn). The main pressure is anchoring in shallow areas. It is already prohibited in a number of areas like the military ones, close to water treatment plants emissaries, fishing reserves, around the Porquerolles, Port Cros and Levant islands. Sport fishing is less seasonal, from March to October. Good practices are encouraged by the government and its local services in the Var.

Recreational fishing is competing for space and resources with professional fishing and may be a threat to the security of scuba diving, which is quite developed in the region.

Marine aquaculture is mainly about shellfishes (mussel and oyster). It includes 56 'concessions' along the coast (within the 3 miles strip) with average superficies of 50 acres. They are located in the Toulon Bay and, more in the East, in front of Saint Raphaël. In the same locations, there are some fish farms (seabass) producing about 400 tons/year.

A major constraint to the extension of marine aquaculture is the protection status of the Posidonia beds, more particularly in the Sud Region where they are the most developed.

There is no particular conflict with the other activities maybe excepting the intense coastal navigation that can hamper the quietness of the locations (turbulences, noise).

Recreational diving

Recreational diving is intensively practiced in the region (110 clubs with about 7000 members), from March to October, on a number of outstanding and well-known sites: 20.000-35.000 dives/year in La Gabinière (Port Cros), 35.000 dives/year on two wreckage site, etc.

The direct effect of this intense practice is mechanical degradation of the seabed and fishes behavior perturbation due to human presence and lighting. More indirect effect relates to the mooring of boats with 10 to 20 moorings/day in some sites.

To be noticed that the 'Toulon Provence Méditerranée agglomération community' has been engaged in the past in an INTERREG III-B MEDOCC programme devoted to transnational cooperation (Emilia Romagna region) for the sustainable development of recreational diving in the Med (including professional fishing as well). One of the main activities has been the development of adapted mooring devices.

In some shallow areas, conflicts with fishermen happened in the past.

In the last years, a new activity has been developing: submarine trails design. There are now 15 or 20 of them along the Var coast, in general rather close to the shore.

Sea surface recreation

Surface recreation concerns a bunch of varied activities: bathing, slight sailing boats, snorkeling, motorboating, canoe and kayak, surfing (bodyboard, longboard, bodysurf, etc.), windsurf and kitesurf, water skiing.

All these activities are practiced in the Var coastal areas, close to the shore and around some of the islands (from 300m to 1 mile for motorboating), some of them in very specific sites (Almanarre spot for windsurf, Hyères bay) where national and international competitions are regularly held.

The Var region has a nationally and internationally renowned site which is the Pampelonne beach. In 2000, in front of increasing pressures, this heavily coveted site was legally declared an 'outstanding natural coastal site' (*'espace naturel remarquable du littoral'*) in application of the 'Littoral Act' devoted to the limitation of coastal urbanization. This recognition gave the right to the concerned municipality (Ramatuelle) to develop an integrated management plan for the entire beach and its dune system. After a thorough diagnostic, a plan was then proposed and adopted by decree in 2015, with the following two main objectives:

- Ensure the beach stability, make it resilient to climate change and, if possible, extend its superficity;
- Maintain recreational activities by making them sustainable.

The setting up of the plan required to make two different systems compatible: the naturally moving dune system in a changing climate, and the recreational activities system, with fixed equipment and infrastructures, some of them being there since almost 50 years, hence making the site a major and vital tourism product for the local economy (Ramatuelle municipality and the whole Saint Tropez peninsula).

The LSI typical challenge is therefore to find out the right balance between an outstanding natural site and the maintenance of economically and socially vital tourist activity on both, land and sea.

This plan is compatible and articulated with the larger scale SCOT of Grimaud and Saint Tropez, first landward, and very recently, seaward (SCOT maritime section), which makes it a major planning element at the land-sea interface.

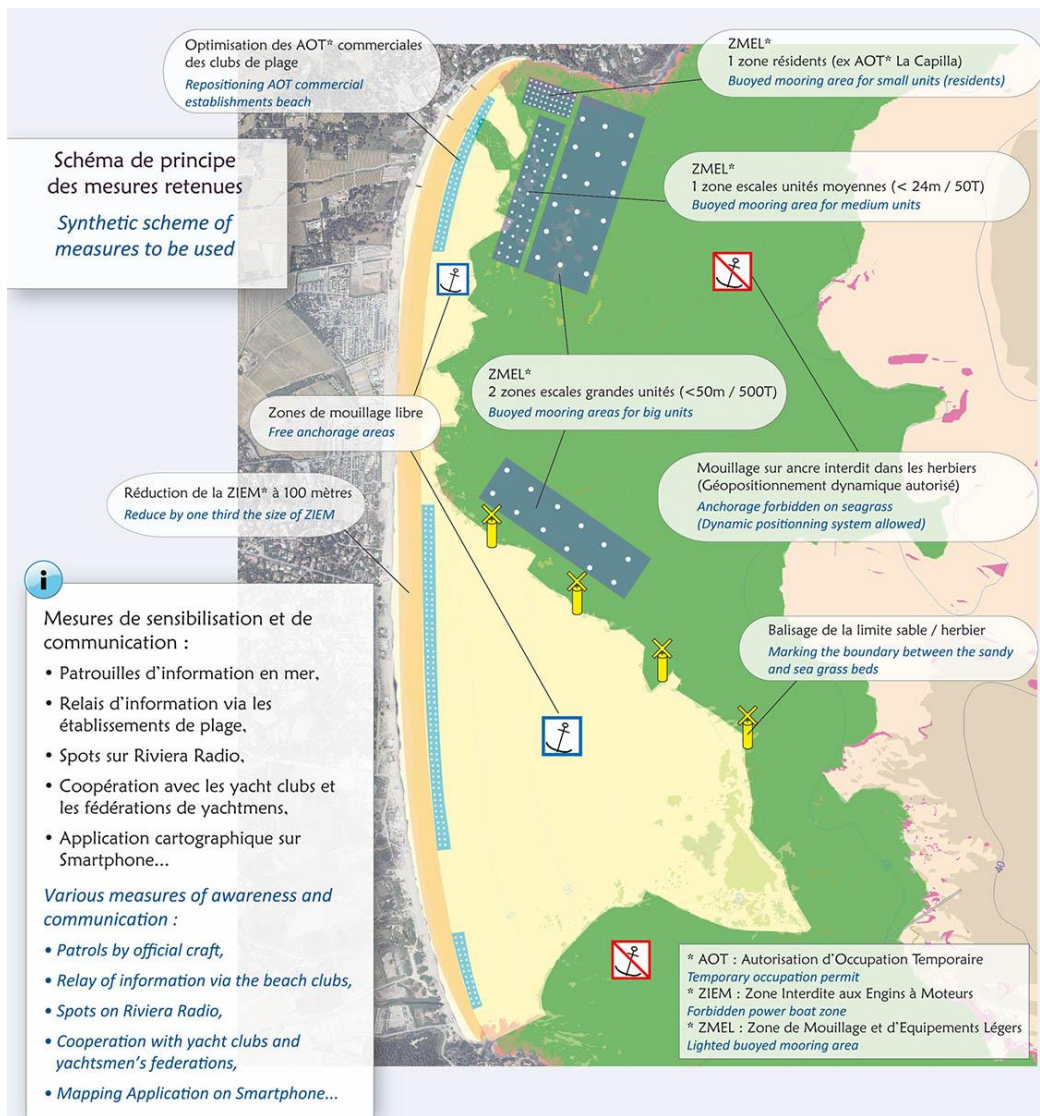


Figure 5. Scheme of measures to be used at Pampelonne beach (©Observatoire marin du Golf de Saint-Tropez)

Port, mooring and pleasure boats

There are 56 ports with 47 of more than 20 mooring spots. In all, they represent a little less than 26.000 mooring spots, all of them in use all along the year (demand keeps increasing). About 30 ports are equipped with one or two slipways, a slipway being the equivalent of 100 mooring spots in terms of flux (seaward/landward).

Coastal mooring is very much developed, especially in summer. They are either of the open anchorage type (still very frequent) or on mooring buoys legally set up in devoted areas (AOT: *Autorisation d'Occupation Temporaire*)⁵. There are now about 100 AOT sites with some of them with a capacity exceeding 100 mooring buoys, but still there are insufficient as regards ever-increasing needs.

The use of mooring sites has varied impacts:

- Seabed degradation in the mooring vicinity, chains and anchors being the most destructive more particularly to Posidonia seabeds (leisure boats and professional yachting are concerned);
- Organic and bacterial pollution from used waters coming from boats and vessels;

⁵ See 'Stratégie méditerranéenne de gestion des mouillages des navires de plaisance' (CETE, 2009).

- Macro-wastes (plastic, packing stuff, food wastes) directly thrown away⁶.

It is estimated that about 2000 big yachts (25% of the world fleet) are visiting or wintering in the Sud Region, between Toulon and Nice.

The kind of impacts on the natural environment is about the same as for the leisure boats. RAMOGE undertook a study and developed a good practice guide for the mooring of professional yachts.



Figure 6. Pampelonne beach and Saint Tropez peninsula (@Observatoire marin du Golf de Saint-Tropez)

Again, the case of Pampelonne is worth mentioning: to avoid the above exponential non controlled and highly impacting mooring situation (up to 300 boats at anchor including 70 yachts) in a Natura 2000 area, a planning scheme, articulated with the beach management scheme (as described before), will be put in practice in 2019. The plan will include more than 200 mooring spots, adapted to leisure boats and bigger yachts, at a cost estimated at 5 million Euros. Two workshops were conducted in 2012 with representatives of yachting federations, ports, yachting industries, consultants, beach clubs, municipalities and maritime administration. These exchanges lead to measures that will be phased from 2019, so that human activities can be balanced with the protection of natural habitats (mainly Posidonia bed) in the bay of Pampelonne. Since 2015, several communication measures have been introduced like leaflets distributed through sea patrols and beach clubs, and spots on Riviera Radio (contact@observatoire-marin.com).

The growing attraction exerted by the Var, as a navigation basin (recreational use of the sea), is leading to a growing demand on the ports, which the existing infrastructures are no longer able to absorb. As a result of this growing issue, new land storage areas develop to accommodate the additional ships that cannot find a parking solution. In addition, a large number of shipowners use dry storage areas, either because they do not use their vessels and wish to protect them from the ageing they would undergo if stored at sea, either because they do not have the financial means to afford a port place, often very expensive. All these factors contribute to the development of on land dry storage areas. However, these new forms of land use are singular and they bring with them new activities and spatial organisation as well as new actors. The dry storage activity of ships is still unknown and is not dealt with in any spatial planning document, so it seemed interesting to look at these storage areas and the overall problem in

⁶ See Programme de mesures du SDAGE

which they fit. To this end a study was launched in the CAMP Var project, in close cooperation with the inter-communality of St Tropez Gulf, at the time of the full negotiations on the SCoT's first maritime provisions. PAP/RAC conducted this study on the identification and monitoring of land-based ship storage areas at the scale of the three SCoT coasts of the Var under the "ports and navigation basins" component. Its purpose was to identify, and characterize through field work, companies offering dry storage in the Var and how they fit into their territories and in the systems of actors, to support for the integration of this phenomenon with the maritime components of the 3 SCoTs of the Var County.

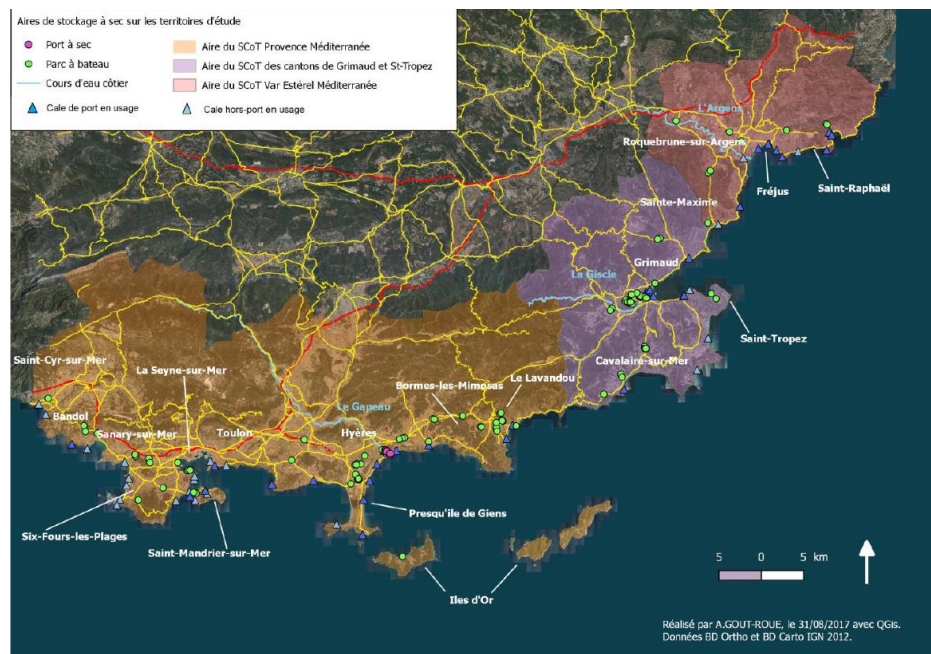


Figure 7. Localisation of land storage area for ships

The land storage areas for vessels and the complex set of problematics linked to it need to be taken into account within the framework of an integrated coastal zone management policy: This activity perfectly illustrates the Sea-Land interactions, it is a subject of great diversity (economy, society, environment...), and it concerns a wide variety of actors (elected representatives, planners, tourist operators, actors of the yachting and leisure boating, coastal and sea users, other economic activities related to boating or simply adjacent to storage areas). In this sense, dry storage activities deserve to be considered within the framework of an inclusive policy, which articulates the environment and issues, but also the policies and actors involved or affected by the phenomenon. Thus, the treatment of this subject within the framework of the SCoTs and their maritime components seems relevant, since the purpose of this document is to coordinate territorial policies on the intercommunal scale and its maritime component, to achieve coherence and a link between land and maritime policies (e.g. articulating river basin contracts with bay contracts, etc.).

A tool kit was developed to provide guidance to decision makers for the stocktaking and monitoring of the phenomenon.⁷ This tool has been designed to be able to be reused in other territories and different scales.

Maritime transport

⁷ PAC Var, *Livret méthodologique pour le recensement et le suivi des zones de stockage terrestre des navires* Alice GOUT-ROUE, 2017 (<http://iczmplatform.org/storage/documents/iRpiCS4k6aRoYqVDefM31eOUV4F5DvVEvgBCfih.pdf>)

Urban and inter-urban passenger lines

There are about 31 regular lines, either annual (5) or seasonal (26), covering 5 coastal basins: Western Var, Toulon Provence Méditerranée, Maures coastal area, gulf of St Tropez, Eastern Var.

The 'Golden islands' archipelago is the main destination though 44% of the flux is takes place within Toulon bay.

The number of ships involved is of about 80 representing about 9000 sits, allowing a total of about 2.6 million passengers/year.

Trans-Mediterranean passenger lines and freight transport

The major destination is Corsica with more than 1.5 million passengers/year.

Cruising vessels are on the rise with stops in Toulon, St Tropez, and other areas, totaling about 275,000 passengers. The booming of the cruising industry in the Mediterranean could, among others, have a major impact on marine mammals in the Med, more particularly in the Pelagos sanctuary area.

Freight transport is mainly concentrated in Toulon (containers) with a little bit more than 1million tons/year.

Marine protected areas (MPAs) and Other Effective area-based Conservation Measures (OECMs)

Following the '2016 status of marine protected areas in the Med'⁸, waters off the Northern shores and within the western basin of the Mediterranean are better covered compared to other regions, largely due to EU Natura 2000 sites and the Pelagos Sanctuary for marine mammals, the Var coastal areas are part of it.

The Pelagos sanctuary, managed between France, Monaco and Italy, is dedicated to concertation between parties in regard to the development of human activities in harmony with the natural environment and species, more especially Cetaceans, the habitats and food web that support them.

There are 11 Natura 2000 sites totally or partially marine. They are mostly devoted to the protection of birds and habitats but not all of them are still really managed. Actually, only three of them have a management plan or 'DOCOB': Sicié Cape, Estérel, and Hyères Islands.

There is one major National Park with an extended marine area: *Parc National de Port Cros*, and another one located along the *Calanques* of Marseille but with an 'adjacent marine area' covering the Var coastal waters as well.

There is an important local OECM initiative with the *SIVOM* of *Maures* coastal areas, and one Fisheries restricted area in Cape Roux, close to Saint Raphaël and within a Natura 2000 area.

In addition, there are five *Conservatoire du Littoral* sites at the land-sea interface, the management of which is entrusted to local governments and/or associations, and follows at the same time the national Strategy for site acquisition.

In spite of the existence of observatories like the *Observatoire de la Biodiversité et des Usages Marins Littoraux*⁹, it is still very difficult to have a more precise idea of the actual 'good' impact of MPAs and OECMs on the natural coastal and marine environment and its resources.

As we will see later, a more ecosystem-based management approach is needed at regional level through the fostering of MPA/OECM networks.

⁸ MedPAN/UNEP-RAC/SPA (2016) The 2016 Status of marine protected areas in the Mediterranean. Main Findings.

⁹ <http://www.portcros-parcnational.fr/fr/des-connaissances/lacquisition-et-la-diffusion-de-la-connaissance/lacquisition-de-donnees/les-suivis>

Marine litter

Although the majority of marine litter came from land-based sources, the Mediterranean Sea is strongly affected by the presence of floating litter and on the sea bottom where it is trapped into deep canyons. The Var is no exception with additional (to the land-based one) plastic trash coming from the heavy offshore activity.

Another vector is the *Liguro-Provençal* current running from East to West for all kind of pollutants including marine litter. Typically, whatever the source of marine litter, currents make it a transnational issue. In 2017, the two transnational agreements in the region (RAMOGE and Pelagos) dedicated a conference¹⁰ to that common issue. On the French side, the Marine Action Plan (PAMM) has several measures regarding the reduction of marine litter and more particularly plastic. Among others, the 'Riverine Input' project (*Surfrider Foundation Europe*) analyzing marine litter running off from the Var river showed that 89% of marine litter is made of plastic.

Natural hazards including climate change impacts

There is not much consideration of global changes local impacts in studies and plans but most of them are reflected in what is called 'coastal natural risks' which are mainly about coastal erosion and flooding (sea surges). Beaches are permanently threatened, some of them would have already disappeared if they were not artificially replenished with sand. But it is well-known to everybody, including the local officials, that the coastline evolution is depending on other factors than just climate change, which are geologic, hydrologic, and overall a question of water basin management.

Marine surges (submersion) may occur and damage infrastructures, coastal dunes, and cause flooding when they overflow defense infrastructures. Locally and along the Var coastline, little is known about actual sea-level rise and frequency of storms. We will come back to the legal and planning tools at use. As regards climate change related-trends throughout the 21st century, Sud Region and more particularly the Var county are no exception¹¹:

- Climate will continue warming up whatever the scenario adopted;
- Without climate change reduction policy, there could be an increase of over 4°C at the 2071-2100 horizon, in comparison with the 1976-2005 period;
- Annual precipitations will not change much but seasonal contracts will be much sharper;
- The number of freezing days will keep decreasing and the number of heat days will keep increasing whatever the scenario adopted;
- Soils will more and more dry up at all seasons.

Clearly, though far less than in the southern Mediterranean, water resource scarcity will become more and more a problem whilst water and sediments input into coastal areas will globally decrease, exacerbating the nutriments and erosion issues.

2.4.2. Land-Sea interactions and main impacts

¹⁰ <http://ramoge.org/documents/Atti%20del%20convegno%20RAMOGE-Pelagos%20Insieme%20per%20ridurre%20i%20rifiuti%20marini.pdf>

¹¹ AIR-GREC-PACA. 2016. Les enjeux du changement climatique en PACA. Association pour la Sauvegarde du patrimoine naturel de la Région PACA / Association des Maires du Var. www.air.climat.org

Main pressures

As identified in the first MSFD diagnostic for the marine Western Mediterranean sub-region¹², the main pressures are:

- **Chemical**: where runoff coming from rivers, rainwaters, and used waters treatment plant emissaries, represent 88% of the total input;
- **Coastal artificialisation** including port infrastructures (especially in urban areas like around the Toulon bay) impacting shallow rich habitats (like the Posidonia beds) with important nurseries properties;
- All along the Var coast, the high pressure of leisure boats and yacht **coastal mooring** and, much more locally, the use of small fishing trawling device (*gangui*) in shallow waters (Posidonia bed);
- **Sand extraction** (for beach replenishment) and **river embankment** (Var river) that reduce sediment supply to the sea;
- Heavy concentration of **wastes**, especially close to urban areas and along the Corso-Liguro-Provençal current, including micro-particles (plastic) from the beach to the high seas;
- Introduction of **invasive species** (31 currently identified in the region) through maritime transport (ballast waters, hull) and marine aquaculture;
- **Climate change** already occurring or potential impacts: rising temperatures and more frequent heatwaves, more frequent droughts, water shortage, rising risk of fire (forest), biodiversity alteration like jellyfishes or microalgae blooms.

¹² Plan d'action pour le milieu marin ; sous-région marine Méditerranée Occidentale. Evaluation initiale des eaux marines. PAMM Méditerranée Occidentale.

Table 2. Activities/main pressures (adapted from PAMM Diagnostic, 2010)

In dark: significant to strong pressure

Activities	Physical loss		Physical degradation			Other degradations			Hydrology	Hazardous substances		Nutriments		Biological perturbation	
	Smothering	Clogging	Sediment turbidity	Abrasion Habitats	Extraction	Sound (noise)	Wastes	Disturb fauna collision	Salinity modification	Synthetic components	Non synthetic substances	Nutriments	Organic matter	Non indigen. species	Extraction sp. mortality
Maritime transport															
Dredging/dumping															
Marine infrastructure															
Port development															
River civil engineering															
Sand extraction															
Fishing trawling device															
Recreational fishing															
Aquaculture															
Shellfish farming															
Agriculture/Livestock															
Industry															
Urban development															
Sea surface recreation															
Recreational diving															
Pleasure boat/yachting															
Defence															
Marine research cruise															

In the frame of SIMWESTMED, CEREMA and PAP/RAC carried out a survey on coastal users' needs regarding coastal and maritime space¹³. Out of 22 qualitative interviews, it appeared that:

- The main litigation problems happen between professional and non-professional stakeholders/users;
- 'problematic interaction' often means and leads to security issues;
- There is a relative awareness regarding one's activity impact on the environment, though knowledge and understanding of protected areas like Natura 2000 are not clear;
- Their prioritization of management objectives is about biodiversity conservation, administrative paperwork simplification, and non-professional security strengthening.

¹³ C 1.3.2. Spatial demands and future trends for maritime sectors and marine conservation

On the side of local authorities' managers, MSP should be built on reinforcing existing regulations, development of environment-friendly technology, building capacity in adapting to changes, and taking into consideration new activities and their potential conflicts.

Cumulated impacts on specific communities/and coastal habitats

Reading the above table vertically shows cumulative impacts from a number of activities, more particularly regarding physical degradation (sediment modification and turbidity; abrasion of habitats), sound (though still poorly known), wastes (multisource), hazardous substances (pollutants), and sometimes nutriment. These cumulated impacts are therefore directly related to the land-sea interface area where they are particularly evidenced.

Among the impacted communities, we found the marine mammals (sound/collisions, hazardous substances, and accidental fishing), the birds (disturbance, invasive species), turtles (marine litter, accidental fishing, reproductive grounds eradication), benthic and pelagic fishes (habitats degradation, hazardous substances, fishing), shellfishes (hazardous substances, microbial contamination), seagrass (physical damage, turbidity, wastes, invasive species), and more generally speaking the alteration of the food web, the basic element being the phytoplankton (sediment modification and turbidity, hazardous substances).

Since the Var coastal region is at the core of a very rich shallow marine habitats area, it is particularly sensitive to cumulated impacts related to direct or indirect physical damage, wastes, and invasive species.

As shown by the Carpe Diem project covered by one of the SIMWESTMED studies on cumulative impact approaches¹⁴, the 'descriptive statistical and spatial data on human activities, pressures and ecosystem components should be then distributed across a marine gridded map for benthic and pelagic assessment'. The gridded maps used in the Carpe Diem project cover all the French EEZ and parts of the neighborhood countries seas to allow transboundary analysis like in the case of the SIMWESTMED project. This can be performed with data (activities, pressures, and ecological components as mentioned above) integrated in a mesh of the same resolution and sharing the same identifier for each mesh, allowing the inclusion of land-sea interaction data as well.

But it has to be reminded that mapping LSI and maritime activities does not represent all activities that generate pressures since many of them are located on land, especially agricultural and industrial activities which generate significant pressures on marine habitats and ecological functions. The Var county is no exception hence the necessity of combining the marine LSI and marine pressures mapping with the already known pressures issued from the Rhone-Mediterranean-Corsica Water Agency databank system.

¹⁴ SIMWESTMED. 2018. C 1.3.4.1. Interactions between uses, between uses and environment, including cumulative impacts. Review of evaluation methods carried out in France, Spain and Italy.

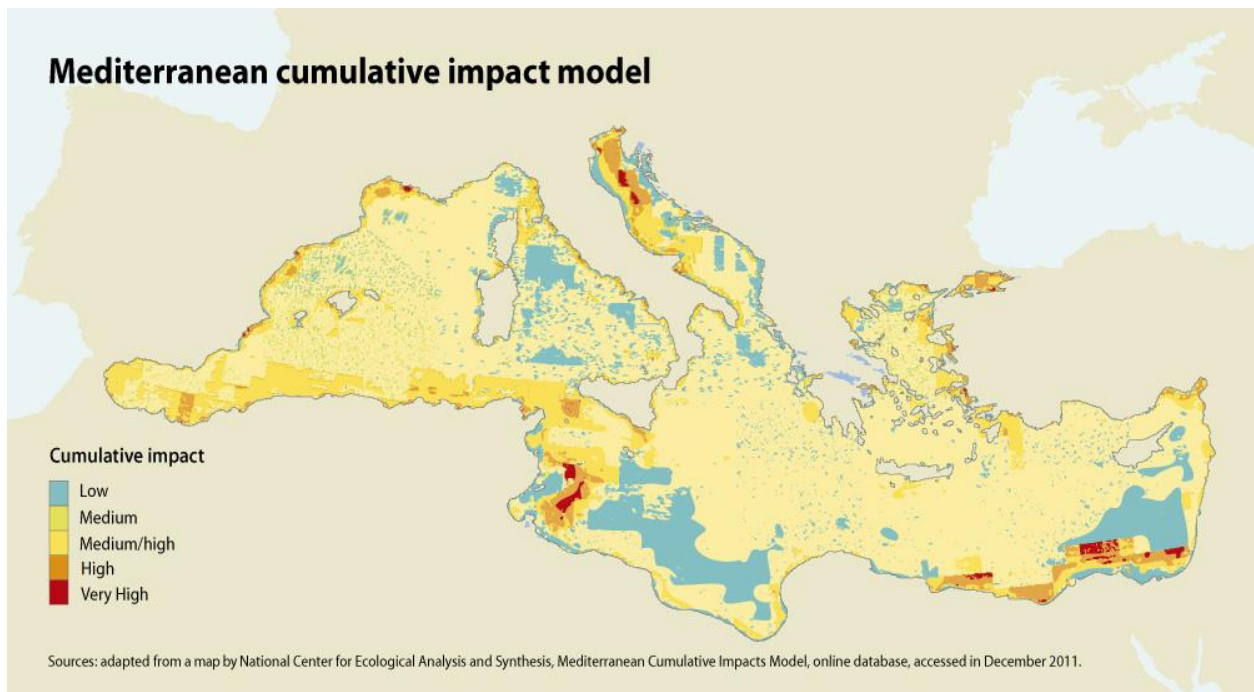


Figure 8. Mediterranean cumulative impact model from GRID-Arendal, 2013 (<http://globalmarine.nceas.ucsb.edu/mediterranean/>)

The last UNEP/GRID Arendal report on the State of the Mediterranean Marine and Coastal Environment (2012)¹⁵, mentioned a study (NCEAS, 2008)¹⁶ concluding that pressures that exert the greatest impacts on Mediterranean marine ecosystems are climate change¹⁷, demersal fishing, ship traffic, and, in coastal areas like in the case of the Var county ones, run-off from land and invasive non-indigenous species (e.g. the seaweed *Caulerpa taxifolia* a few years ago). As emphasized, this kind of overall modelling of cumulative impacts only suggests areas for ground-truthing and systematic monitoring as implemented through the MSFD marine action plans.

Compatibility of activities

The analysis of compatibility among human activities and uses, most of them dependent on the development of infrastructures in the LSI area, as well as the implementation of the related tools, constitute a critical process in the procedures of prioritization and decision making which are an essential part of an effective MSP. The matrix below is built upon the previous observations and focuses on the main activities at stake in the coastal areas of the Var region.

¹⁵ <http://www.grida.no/publications/192>

¹⁶ NCEAS. 2008. A map of cumulative human impacts on Mediterranean marine ecosystems. (WWW) National Center for Ecological Analysis and Synthesis. University of California.

¹⁷ Lionello, P. & Scarascia, I., 2018. The relation between climate change in the Mediterranean region and global warming. Reg. Environ. Change 18, pp 1481-1493. Reporting that future warming in the Mediterranean region is expected to exceed global rates by 25%, notably with summer warming at a pace 40% larger than the global average.

Table 3. Estimates of compatibility of individual forms of use in the Var coastal area

	Maritime transport	Port development	Fishing	Aquaculture	Shellfish farming	Recreational fishing	Recreational diving	Sea surface recreation	Pleasure boats ,Yachting	Defence and security	MPAs and OECMs	Marine research
Maritime transport (freight, passengers, cruising)			Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Blue	Blue	Dark grey	Blue
Port development				Blue	Blue	Blue	Dark grey	Dark grey			Dark grey	Blue
Fishing	Dark grey			Blue	Blue	Blue	Blue	Dark grey	Blue	Dark grey	Blue	
Aquaculture	Dark grey	Blue	Blue		Blue	Blue	Dark grey	Dark grey	Dark grey	Dark grey	Blue	
Shellfish farming	Dark grey	Blue	Blue	Blue		Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Blue	
Recreational fishing	Dark grey	Blue	Blue	Blue	Dark grey		Blue	Blue	Blue	Dark grey	Blue	
Recreational diving	Dark grey	Dark grey	Blue	Dark grey	Dark grey	Blue		Dark grey	Blue	Dark grey	Blue	
Sea surface recreation	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Blue	Dark grey		Blue	Dark grey	Dark grey	
Pleasure boats, Yachting	Blue		Blue	Blue	Dark grey	Blue	Blue	Blue		Dark grey	Blue	
Defence and security	Blue		Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey		Dark grey	Blue
MPAs and OECMs	Dark grey	Dark grey	Blue	Blue	Blue	Blue	Blue	Dark grey	Blue	Dark grey		
Marine research	Blue	Blue								Blue		

White: compatible – Grey: conditionally compatible – Dark grey: incompatible uses

Given the variety and complexity (3 dimensions at sea: surface, water column, sea bottom) of the varied human activities taking place with the coastal and marine areas of the Var region, interactions (synergies or conflicts) among sea uses are inevitable. When talking compatibility, conditional compatibility, or incompatibility, four types of interactions have to be considered:

- Activities competing for the same space (e.g. recreational diving and sea surface recreation)
- Activities competing for the same resource (e.g. fisheries and recreational fishing)
- Conflicting and incompatible uses in the same area (e.g. MPAs and maritime transport)
- Synergetic interaction among uses in the same area (e.g. aquaculture and shellfish farming)

Since the Var continental shelf is rather narrow (from 800m, at Cape Lardier, to 6km at the level of the Saint-Tropez peninsula), most of the above activities are quite concentrated within a narrow strip. More offshore, follows immediately the deep waters with steep slope-submarine canyons generally North-South oriented. These canyon valleys end up at about 2000m depth, at the level of the abyssal plain. Therefore, the seaward side of the LSI area of influence may be said to be rather limited with a very high concentration of tourism-related activities, highly seasonal, within a narrow strip of ecologically rich shallow waters. Nevertheless, many other activities are developing and will develop in the future (e.g. marine renewable energy) adding a lot of pressure to the marine shallow ecosystems which have been comparatively assessed in a general state of 'good quality' thanks to the coordinated development of monitoring networks at the land-sea interface.

In this regard, the current Rhone Mediterranean water use management master plan (SDAGE 2016-2021) integrate the climate change considerations and has been set up in articulation with the MSFD

Marine Action Plan and more local Flood Risk Management Plans (PGRI). Since 2013, the Rhone Mediterranean Corsica Water Agency publish the Mediterranean Atlas featuring monitoring development at the land-sea interface (<http://sierm.eaurmc.fr/surveillance/eaux-littorales/index.php>). As it was shown by several studies and more particularly the very comprehensive one carried out for the preparation of the Var county sea and coast strategic plan (SDML)¹⁸, it is in the shallow waters (0 to 100 m deep comprising the infra- and circalittoral compartments) that there is the highest biodiversity including more particularly one of the most important habitats in the Mediterranean which is the Posidonia beds (infralittoral), well developed in the Var coastal areas.

Vocation map

There are three Territorial Coherence Schemes (SCOTs - Provence Méditerranée ; Grimaud and Saint-Tropez ; Var estérel) for land-use planning, corresponding to legally clustered municipalities all along the Var region coast. By the law, these SCOTs may be prolonged at sea (3miles) in order to fully deal with the LSI interactions. It is called the SCOT coastal and maritime section which are now under preparation.

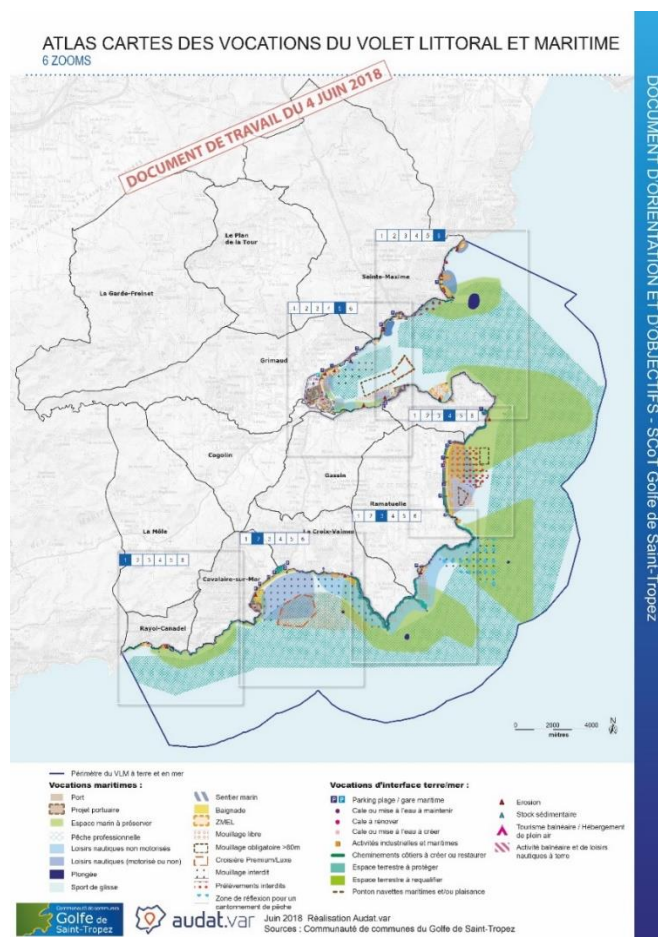


Figure 9. Vocation map, SCOT 'coastal and maritime' (Communauté de Communes du Golf de St Tropez, 2018)

The most advanced, i.e. completed and under negotiation with the State (June 2018), is the SCOT of the Gulf of Saint Tropez. Based on locally negotiated orientations and vocations for the whole area a 'vocation map' has been established as shown in Fig. 8.

¹⁸ Conseil Général du Var. 2011. Schéma départemental de la mer et du littoral. Volet environnemental. Etat des lieux. Rapport Andromède – Egis eau.

This map is the reflection of the LSI local strategy that has been agreed between local actors under the leadership of local governments (clusters of municipalities).

Very interestingly, it makes a distinction between the maritime vocations and the land-sea interface ones:

- the first is covering the MPAs, the mooring sites, sea-surface recreational activities, recreational diving, professional fishing, and the port areas;
- the second, the protected natural areas, the beaches, sea access ways, economic and touristic activities, coastal natural hazards, and coastal access by the sea¹⁹.

As such, and once agreed by the State, it should become one of the coastal elements (bricks) of the future French western Mediterranean coastal and marine strategic document (*Document Stratégique de Façade, DSF Ouest Méditerranée*). In any case the SCOTs will have to be compliant with the Strategy Document.

Actually, both documents are developing at the same time: the maritime SCOTs, still in their infancy, and the DSF through its ongoing process including its consultative Permanent Commission, at the core of the Maritime Council (about 80 members from civil society including elected officials), and regular public consultations about the principles and main orientations of the strategic plan. It is very probable that the latter will be ready well before the preparation and adoption of all the French Mediterranean maritime SCOTs on which most of the LSI stakeholders' sense of ownership will crystallize. Therefore, stakeholders' participation and sense of ownership throughout DSF implementation will be very much dependent on the existence and operability of the maritime SCOTs.

2.5. Socio-economic aspects

A regional study, used as a reference by Sud regional authorities and administration²⁰, identified six main strategic domains and market as follows:

- *Renewable marine energies*, including floating wind farming, and thalasso-thermal activities;
- *Bioresources*, including aquaculture and algal biomass transformation;
- *Clean vessels*, embedded into the well-developed 'ship construction and maintenance' sector to which may be added the emerging 'ship deconstruction' potential activity;
- *Submarine intervention systems*, a technological showpiece of Sud Region with new applications like environmental monitoring, deep sea observation, and maritime control;
- *Sustainable ports*, a complex notion with a large range of opportunities like the big industry and the circular economy, innovative services related to maritime transport (LNG stocking and refueling, electricity providers, fuel cells, etc.), smart port, city interface, flux, wastes and energy networks management;
- *Coastal sustainable development and marine environment services*, related to new technologies and practices to prevent, reduce or offset any serious harmful effects on the environment that also relate to the emerging coastal ecological engineering sector.

¹⁹ Communauté de communes Golfe de Saint-Tropez (2018). Révision du Schéma de Cohérence Territoriale (SCOT) – Chapitre individualisé valant Schéma de Mise en Valuer de la Mer du SCoT du Golfe de Saint-Tropez, « Volet littoral et maritime du SCoT ». Orientations et vocations. Dossier transmis au Préfet – Version du 4 juin 2018. Audat.Var

²⁰ Ancre Verte. 2016. Ancrage territorial des écosystèmes maritimes de la filière verte en Région PACA. Rapport final de mission. M Prime Energy – Indicta – Pôle Mer Méditerranée. PACA, Décembre 2016.

All these existing or potential activities are directly connected to the major axis of the Sud Region socio-economic development like energy transition, aeronautics, hydrocarbon chemistry, urban development, defense, or tourism. More than 360 economic and institutional entities have been identified as active or potentially concerned in the development of one of the maritime sectors mentioned above. These entities are grouped in clusters, one of them being located within the Var county (Toulon / La Seyne / St-Manfrier / Olioules) with identification of their spatial needs on land (e.g. ports) as well as at sea (e.g. wind energy). From this study, a 'GREEN ANCHOR' (ANCRE VERTE) roadmap is now under preparation and will include the definition of a common vision between the actors concerned, a set of key indicators to help in making strategic investment decisions, and a coherent action plan articulated with the other regional initiatives including the Mediterranean Seafront Master Plan (DSF).

Therefore, the Var county represent a wide array of opportunities combining biodiversity conservation and maritime activities development, which is the role of MSP. Though the PAC-Var project did not dwell into it, we know there have been some attempts to quantify the benefits of ICZM as, for example, it was shown in a range of EU countries in terms of habitat protection, local infrastructure and business, and tourism, with a benefit/cost ratio of the order of 10/1²¹. Since offshore renewables development (wind)²² is considered as one of the strongest industry and market potential in the region, it is worth looking at a study commissioned by the Scottish Government on the socio-economic evidence base for key activities, including offshore renewable energy, involving an appraisal of the likely costs to other sectors arising from development of this industry²³.

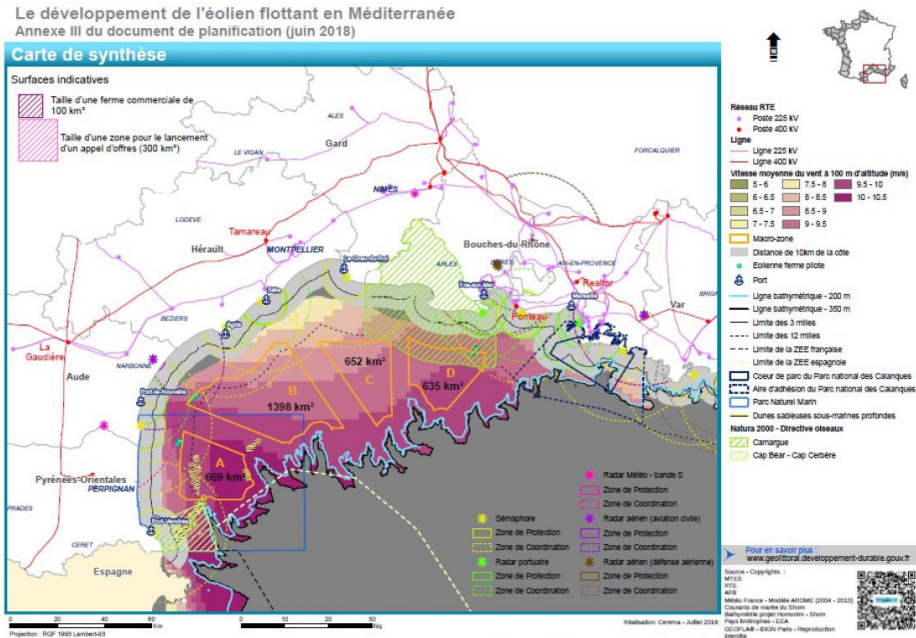


Illustration 6: Carte de synthèse
 Figure 10. Offshore wind farm development scheme in French Mediterranean (Cerema, 2018)

The main sectors likely to be affected were commercial (and recreational in the case of the Var county) fisheries (reduction of landings due to loss of fishing grounds), shipping (additional fuel costs due to

²¹ http://ec.europa.eu/environment/iczm/pdf/socec_en.pdf

²² Actually, the latest plan (*Le développement de l'éolien flottant en Méditerranée, Juin 2018*) shows that this development is likely to first take place in the Western offshore areas (17km offshore) from the Gulf of Fos (Marseille) to Spain border, in four zones totalising 3354 km². http://www.dirm.mediterranee.developpement-durable.gouv.fr/IMG/pdf/eolien-document_de_planification_2018_version_finale-310718.pdf

²³ <http://www.gov.scot/Resource/0042/00428358.pdf>

longer routes to avoid infrastructure) and tourism (reduction in tourist expenditure due to harm to coastal scenery). Three different scenarios were considered, relating to low, central and high levels of offshore renewables development covering a period of 22 years. The potential economic impacts on other sectors were then quantified showing that shipping was the sector most significantly affected.

As regards social impacts, it was concluded that there could be local effects on employment, access to services, health, culture and heritage and the environment, with the largest impacts likely to be associated with commercial (and recreational in the case of the Var county) fisheries, and on marinas if boat users choose to visit other areas of the coast or move their boats to other marinas. It was considered that any such impacts may be balanced by benefits elsewhere, though with the danger of distributional effects if an area that is already deprived is further disadvantaged.

Clearly, all these considerations will have to be considered in the case of the highly contrasted situation along the coast of the Var county.

3. THE WAY FORWARD

3.1. Instruments and approaches for the management of the Var coastal and maritime areas

3.1.1. Overlapping and trends

One of the key studies of the CAMP Var was an assessment (through documentation and interviews) of the local policies for the management of the Var coastal and maritime areas in reference to the ICZM (Mediterranean Protocol) framework.²⁴

Policies covering part of the Var coastal area

In this study, 7 different management instruments have been assessed:

- The 'Toulon Bay Contract', focusing on the waters 'good environmental state' of the entire Toulon bay and its watershed;
- The 'Golden islands Contract', with the same purpose as the Toulon bay one, covering the Hyères basin (with the coastal islands as its seaward boundary) and its watershed;
- The 'Port Cros National Park' and its local partners' charter;
- The management plan (DOCOB) of Natura 2000 site of 'Cape Sicié-Six Fours';
- The management plan (DOCOB) of Natura 2000 site of 'Hyères-Islands of Hyères';
- The Giens Peninsula 'Grand site' initiative, with the purpose of restoring, preserving and developing a protected wetland-like territory;
- The SCOT coastal and maritime section of the Gulf of Saint Tropez as introduced before.

But, this is only a relatively small and localized sample of the existing planning and management tools at the land-sea interface or in the Var coastal and maritime areas. As said before, there are for example 11 Natura 2000 sites, partly or entirely marine with a local fisheries restricted area within one of them (Cape Roux, Saint Raphaël), though not all of them have an operational management plan.

²⁴ Centre d'activités régionales / Programme d'actions prioritaires (CAR-PAP). Les politiques de gestion de la mer et du littoral et le protocole de gestion intégrée des zones côtières de la Méditerranée : quels points de rencontre ? – Rapport d'étude, Projet PAC-VAR, Split, CAR-PAP (Ed.), septembre 2017, 116p.

Policies covering the entire Var coastal area

Additionally to these local management plans for protection or restoration of the coastal waters 'good environmental state', there are several strategic documents covering the overall Var territory or at a much larger scale than the Var Department administrative boundaries. Most of them cover the land-sea interface:

- The Var Natural Maritime Public Domain Management Strategy, which is directly under the State's responsibility;
- The Var Department Coastal and Maritime Scheme (SDML), under the local government (Department) responsibility;

Policies covering a larger area including the Var coastal area

- The Regional Coastal and Maritime Strategy (SRML), under the Sud Region's responsibility;
- The *Conservatoire du Littoral* Land Acquisition Regional Strategy for the Sud Region;
- The Marine Action Plan (PAMM), which is the MSFD programme of measures for the French Western Mediterranean ecoregion, which represents the environment pillar of the future Mediterranean Seafront Master Plan (DSF);
- The Executive Scheme for Water Use and Management (SDAGE), a major structuring and concerted plan under the *Rhône-Méditerranée-Corse* Water Agency, dealing with the land-sea interface and coastal waters as well (1mile offshore) from Spain to Italy borders. The SDAGE is compatible and articulated with the Marine Action plan;
- The Flooding Risk Management Plan (PGRI), articulated with the SDAGE and its local plans.

Some of the main ICZM Protocol themes (10) were then selected along three categories: the policies at stake, the issues at stake, and the implementation tools.

Policies at stake

Matching socio-economic and environmental issues – Inter-sectoral and institutional coherence and coordination – Regional and international cooperation.

Issues at stake

Taking care of coastal ecosystem specificities (lens: land-use) – Sustainable use of coastal zone resources (lens: water quality) – Natural and cultural heritage preservation and restoration – Natural hazards management.

Implementation tools

Stakeholders' and civil society participation – Knowledge dissemination, follow-up and communication – Action planning and evaluation.

Analyzing the above strategies and schemes (at the Var territory scale and beyond), it appears that, besides their respective purpose (issues at stake), they provide the necessary framework and enabling conditions about the ICZM Protocol principles and objectives implementation at a more local level. Nevertheless, two conditions towards efficiency remain: a **coherent articulation** of these varied and multiscale strategies and schemes and, when needed, the development of **regional and international cooperation**. We will come back to the latter with considerations on MPA networking.

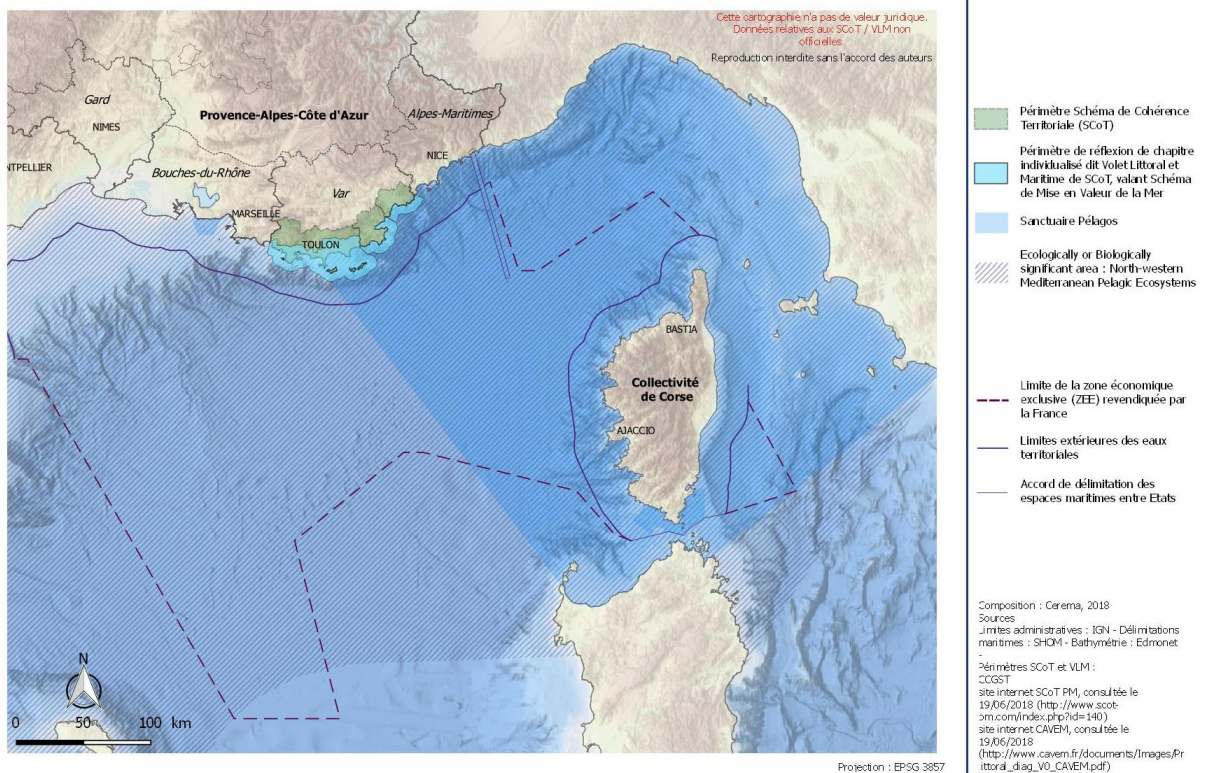


Figure 11. Limits of the wider study area Var Case study (Cerema, SIMWESTMED, 2018)

Regarding the sampling of more local management instruments (first list), most of them appear to be well in line with the ICZM Protocol principles and objectives though the same remark as for the previous strategies apply there: the lack of synergies between the different initiatives, sometimes applying to the same place. Social networks do exist but they are not enough taken into consideration during the preparation and implementation of such instruments and initiatives.

The sustainable use of coastal zone resources through the lens of water quality is particularly covered. This goes with a long history and strong policy (Water Agency) in regard to water management from the top of the watershed to the land-sea interface all along the coast of France. In this country, freshwater use and management policy has provided the frame and the necessary incentives (including funding) in support of the development of ICZM-related practices on land and at sea²⁵.

More than 50 years after the creation of the Water Agencies and water management system (including the participative Basin Committees), the policy towards integrated water resources management (IWRM) has paid off, taking into consideration its different orders of outcomes, from the enabling conditions (planning, funding), changes of behavior through concrete actions, to tangible results from the environmental, socio-economic, and human well-being point of view.²⁶ The practice of ICZM in France largely benefit from this unique experience, local officials and stakeholders are very familiar with. Water use and management supported by water quality monitoring of rivers and coastal waters, is therefore the first topic feeding ICZM practices.

²⁵ Global Water Partnership (GWP), International Network of Basin Organizations (INBO). 2009. A handbook for Integrated Water Resources Management in basins. <https://www.inbo-news.org/IMG/pdf/GWP-INBOHandbookForIWRMinBasins.pdf>

For most of the Var places, tourism is a key activity that should be extended throughout the year in relation with the capacity of charge and limits of acceptable change of each socio-ecosystem or management unit. As shown in the vocation map of the SCOT-Gulf of Saint Tropez, tourism activities do take place at the land-sea interface with double landward and seaward extensions (e.g. the Pampelonne beach case). In its coastal and maritime plan, tourism diverse activities are covered as maritime vocations as well as land-sea interface ones. It is therefore of the utmost importance to set up awareness campaigns so that visitors understand that their own activities are taking place in a totally interconnected system, with landward or seaward impacts on that system.

Hence, embedded into the French Western Mediterranean Strategic Document (DSF) in preparation, the SCOT coastal and maritime specific section and plan appear to be the main local tool, at the land-sea interface, for dealing in a participative way with well-matching repartition of current and future maritime activities, at least within the 3miles strip from the shore, i.e. where there is the highest demand for space and resources.

In the Var County, within the 3 SCoTs coastal and maritime areas, a number of ICZM-like initiatives is flourishing while embedding large-scale strategies are developing at the same time. The two did not meet yet with the raising issue of how far they will enhance each other following the famous ICZM double-track approach (top down / bottom up). Again, the long practice of integrated water resources management (IWRM) is giving a good example though, through ICZM, the water resource becomes a complex multi-resource, multi-dimensional public space without boundaries. New forms of governance, including the use of ICZM and MSP, are needed that should be built up on a number of considerations as proposed in the frame of the CAMP-Var study.

3.1.2. [Knowledge and tools integration](#)

There are many inventories in place of initial assessment (*Conservatoire du littoral*, *Natura 2000 sites*, etc.) sometimes with the help of ‘observatories’ like in the case of the Port Cros National Park in order to assess the state and evolution of marine biodiversity around the Hyères islands (Porquerolles, port Cros, Le Levant). Water quality monitoring programmes and others (citizen sciences development) feed as well important databases.

Nevertheless, all these efforts are not enough coordinated and not enough integrated in regard to the most needed ecosystem approach at the land-sea interface. Observatories and associated models and geo-mapping tools (GIS) are well developed whilst socio-economic approaches remain weak in terms of stakeholders’ perception, participation, cost-benefit analysis, and strategic environmental impact. Legal and institutional analysis are also lacking while the legal and institutional settings are getting more complicated every day through overlapping and lack of coordination. More particularly, the CAMP-Var identified the need of raising partnerships at the land-sea interface, which is particularly needed in the case of the SCOTs (between the Var’s 3 SCOTs and the other adjacent ones) since there are no boundaries at sea. The SCOT coastal and maritime plans should then be coordinated at the scale of the marine ecoregions as delimited in the frame of the MSFD initial assessment.

The CAMP-Var working group on ‘coastal erosion and marine submersion’ has put forward the importance of the history of the coastline evolution and its knowledge to better communicate on its dynamic. An information platform on coastal natural risks has been built up (<http://www.moving-coast-med.fr>) and could feed a larger scale multi-source regional observatory like the *Observatoire Hommes-Milieus Littoral Méditerranéen (OHM)*, a scientific and interdisciplinary tool devoted to urban

development and land artificialisation as well as tourism and recreational activities on the coast. Actually, the current plans are still in silos (erosion on one side, flooding on the other) while natural risks at the land-sea interface should be considered in an integrated manner as it has been proposed by the Blue Plan (BP/RAC)²⁷. The so-called Coastal Risk Index (CRI) is composed of three variables: coastal forcing (climate hazards and human pressure), coastal vulnerability (resilience, coastal physical nature), and coastal exposure (land cover, population density). This integrated tool lead to the mapping of the coastal zones at risk in the Var with the aim of providing decision-makers with a simple but scientifically robust decision-making tool for the purposes of prevention while building a culture of adaptation. This mapping of areas at risk could serve as a model to be extended to other coastal zones within the SIMWESTMED transboundary area.

Nevertheless, most of the MPAs and OECMs managers still declare that they draw their decision upon their own experience and common sense rather than science-based information, which is either not easily available, time-consuming to seek through scientific publications that are sometimes contradictory in their interpretation.

There are many studies and data piling up in scientific institutions but they don't reach out to coastal and maritime stakeholders including local decision-makers. Besides the dissemination of 'useful knowledge', more participatory research (co-production between scientists and local stakeholders), still in its infancy, should be developed in the future.

3.1.3. [Coherence and coordination](#)

The different planning tools and associated studies (diagnostic, specific studies) along the Var coastal area show a good coverage of issues like 'water quality', 'research and education', or 'resources sustainable development', that are now integrated or to be integrated in current and future SCOT coastal and maritime sections.

As an example, the Gulf of Saint-Tropez maritime SCOT fixes 10 great priorities which are:

1. Conservation of coastal and submarine landscapes;
2. Conservation of marine biodiversity;
3. Contribution to the good environmental state (water quality, wastes, invasive species, sediment);
4. Knowledge, information and communication;
5. Sustainable tourism;
6. Ports, shipyards, and maritime industry;
7. Fisheries and aquaculture;
8. Renewable marine energy;
9. Coastal and maritime risks;
10. Local maritime transport.

These priorities are spatially expressed through the notions of 'vocation' and 'uses' as defined in the Gulf of Saint-Tropez maritime SCOT²⁸: in total, there are 16 maritime vocations and 11 others identified at the land-sea interface distributed in 8 coastal and maritime spatial sub-units.

²⁷ Satta, A., Venturini, S., Puddu, M., Firth, J., Lafitte, A. (2015). Strengthening the knowledge base on regional climate variability and change: application of a multi-scale coastal risk index at regional and local scale in the Mediterranean. Blue Plan Report.

²⁸ Vocation: a given orientation to each of the identified coastal and maritime management unit. It may result from the very nature of the unit at stake and/or from a public (central/local governments) decision.

Although still under preparation, the *Provence Méditerranée* maritime SCOT indicates as well a number of integrative objectives relating to the maritime and coastal risks, the good environmental state (waters, habitats, and sediments), sustainable coastal and maritime activities distributed in 4 coastal and maritime sub-units, management of pleasure boats at sea and on land, good quality of life (urban areas, ports, access to the sea, and beaches).²⁹

But, in both cases, the governance and coordination aspects remain untouched, vertically (land-sea interface), and horizontally (between management sub-units and between adjacent maritime SCoTs).

3.1.4. [Coastal and maritime governance](#)

The CAMP-Var previously mentioned study showed that in all the analyzed planning documents (conservation and development), stakeholders' and public participation was one of the major weaknesses. There is still a long way to go before filling up this core ICZM principle as it is in the Med ICZM Protocol: '*Ensure an appropriate governance allowing local communities and the public to participate in a timely and efficient manner to an accountable decision process*', and further: '*such participation requires consultative bodies, surveys and public hearings, extending to the establishment of partnerships*'.

Actually, all the Var coastal and maritime areas initiatives do consult the stakeholders and the public (French Western Mediterranean Maritime Council, steering committees, bay committee, water local commission, focus groups, etc.) but the structuring of an ecosystem-based and coherent land-sea interface (LSI) governance remain to be seen. This should be considered along several aspects:

- **Multiscale aspect:** Within the European and national context, the best political and strategic level is the Sud Region, in the case of the Var Department. Since 2012, the Region has a coastal and maritime strategy adopted by the Regional Maritime Consultative Council (CCRM) though still lacking a clear institutional arrangement to deal with the strategy development. Interestingly, the New Aquitaine Region created a Group of Public Interest (GIP), in partnership between the State and all the different coastal actors, to share studies, experiences and good practices, but which is rather limited to the landward side of the coastal area. What is at stake in this multiscale consideration, is the coordination of local policies and initiatives in the frame of the coastal regional strategy implementation.
- **Land-sea linkages:** the Var Land-Sea Forum, set up in the frame of the CAMP-Var, highlighted all the connections but also the gaps that may exist between sea- and land-stakeholders. They usually evolve in parallel and poorly know each other because of a lack of common language. However, they do meet time to time, more particularly in regard to protected area initiatives and their governance arrangement like the land-sea Natura 2000 or Bay Contract steering committees, or the preparation of the SCOT land-sea chapter. But these meetings have a fixed agenda to cover in usually a rather short time, which does not allow real exchanges between participants. What is needed are permanent meeting places at municipal and inter-municipal (SCOT area) levels where stakeholders can meet and freely discuss the issues at stake.

Uses: all activities actually carried out in the area. They are coherent with spatial vocations and must be compatible in order to avoid use conflicts.

²⁹ SCOT Provence Méditerranée. Chapitre individualisé de Mise en Valeur de la Mer dit « volet littoral et maritime » du SCoT Provence Méditerranée. Etat d'avancement – Juin 2016.

- Institutional arrangement: in March 2017, the Sud Region launched the Maritime Assembly for Regional Growth and the Environment (AMCRE), replacing the Maritime Regional Consultative Council (CCRM). It is a multi-stakeholders, regional policy body dealing with the activities at the land-sea interface with, for the time being, four commissions on 'fisheries and aquaculture', 'marine energy', 'public awareness', and 'coastal ecological engineering'. As a supportive tool for exchange of experiences and information sharing, the creation of a 'Sea and Coast Regional Observatory' is under discussion and could be launched in 2019.

At the level of the Var Department, the CAMP-Var set up a multistakeholders' Land-Sea Forum though remaining active and functional only for the duration of the project.

But, going back to the ICZM Protocol, creating new institutions is not enough; they have to be well-articulated with the existing ones in order to enable their sustainability. It is what is called 'institutional arrangement', building up on what is already there at different scales and between the land and the sea, allowing an ICZM/MSP sustainable approach.

As we saw, the SCOTs planning tools are and will be key in taking into account and integrating biodiversity conservation (MPAs+OECMs) and socio-economic activities at the land-sea interface. And, in regard to the strongly interconnected coastal and maritime system, it will be necessary to work at the horizontal inter-SCOTs articulation as they do in between the land and the sea.

This has to be reflected institutionally to make it happen. In the figure below, whatever will be the political future of Departments (Law on the 'new territorial organization of the Republic', 2015), it is clear that the key level for decision-making could be at the inter-SCOT level through Land-Sea Forums like the one proposed for the Var Department.

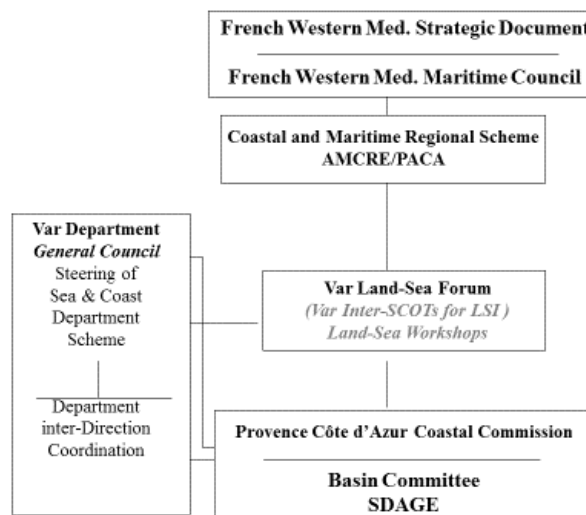


Figure 12. Possible institutional arrangement at the LSI and multiscale levels

As the CAMP-Var Land-Sea Forum did in the past, a sustainable Var Land-Sea Forum would have the role, through regular concertation and debates, of conciliating uses and users in the frame of the Var Department Scheme encouraging and strengthening coordination of the three coastal and maritime SCOTs first, and then considering their articulation with a possible similar unit dealing with the adjacent SCOTs (Bouches-du-Rhône, Alpes Maritimes) so that, at the end, there is a full operational network of coordinated units to deal with LSI at the scale of the Sud Region and the French Western Mediterranean eco-region.

Such institutional linkage is crucial to allow stakeholders' awareness, participation hence sense of process ownership, to develop and, incrementally, to reach the next larger scale so that, finally, transboundary considerations may be really shared between articulated networks of local stakeholders and decision-makers, on both sides of the international boundary like it is the case between France and Italy. The SIMWESTMED project has put in evidence that if existing transboundary agreements like RAMOGE or the Pelagos Sanctuary may be of great help to engage and maintain a dialogue on a transboundary MSP, they are still in need of public support (and its networking) to operate as fully representative platforms.

A series of meeting have been organized by PAP/RAC, with the support of the *Conservatoire du Littoral*, throughout the project to steer the dialogue between project partners and stakeholders from the different project countries, and beyond. Trying to be as supportive as possible, and not disruptive of ongoing official processes in the countries, the efforts invested were focused on creating the conditions for informal and technical dialogue (Hyeres meeting October 5th 2017). Nevertheless, PAP/RAC has encountered major difficulties to run such activities as there was scarce interest, and often reluctance, from the parties to invest time and resources to push in that direction, adding to official obligations and processes. Thus, we believe more efforts and resources should be invested, to steer dialogue at the transboundary level, between EU countries, and in the Mediterranean, between actors at different scales, from strategic planning to operational levels.

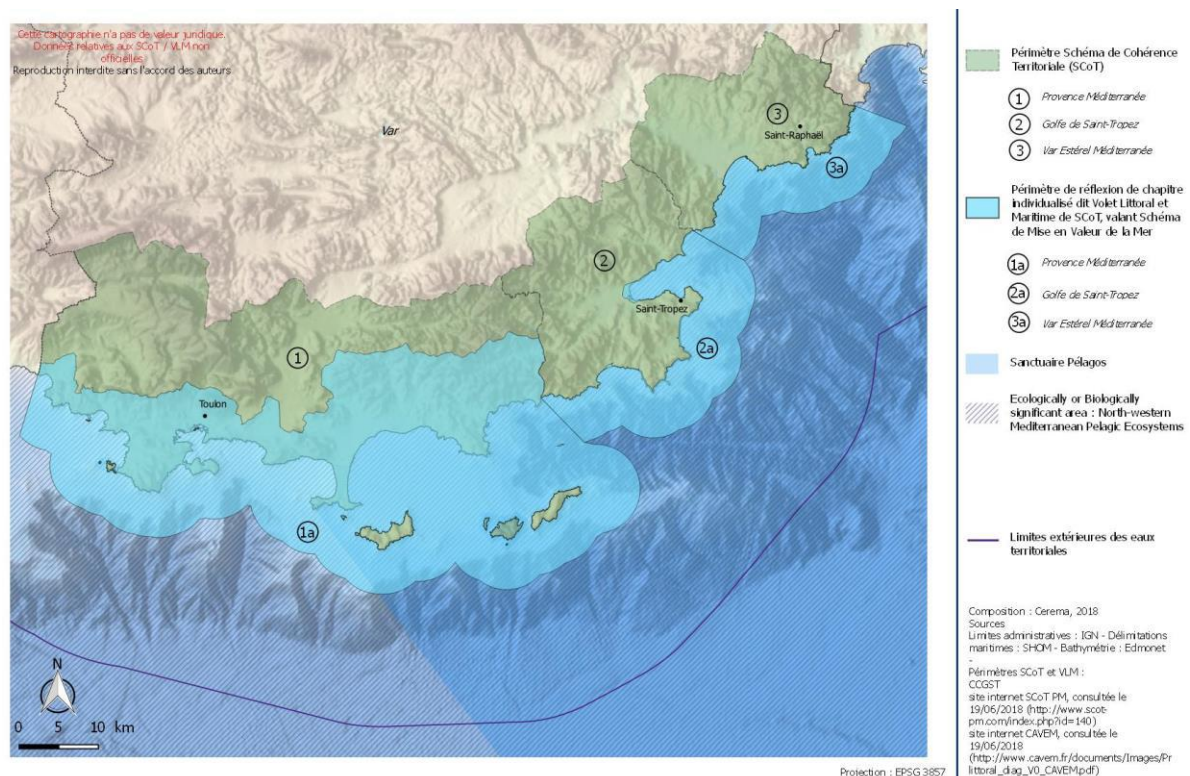


Figure 13. Landward and seaward (indicative) boundaries of the three SCOTs at the land-sea interface of the Var coastal areas (source: CEREMA 2018)

The Var Land-Sea Forum could politically depend on existing institutions like the Social and Economic Council³⁰ or the Var Territories Council (for land and sea).

³⁰ „qui, outre le Conseil Général, a l'avantage de représenter les trois chambres que sont la CCI, la Chambre des Métiers, et la Chambre de l'Agriculture“

Public institutions, sectoral and civil society organisations, whatever they are and their scale, are made of individuals, the mobilization and participation of which require a number of considerations that have to be sustained through time and space. In that regard, there are several lessons that may be retained from the CAMP-Var Sea-Land Forum experience:

- *At the outset, key stakeholders should agree on an appropriate process and structure to secure broad political support for the initiative at stake.*
An approach that is not only limited to technical analysis but concentrate on building political support through partnership between government, civil society and private sector. The Pampelonne beach and mooring planning process is a good example.
- *The process should be designed in an inclusive, voluntary and culturally sensitive manner.* Particular attention needs to be given to designing culturally sensitive and appropriate methodologies to engage diverse participants effectively in the participatory process. Locally networked and informed regional managers may play a key role in this regard as it was demonstrated in the case of the Toulon Bay Contract.
- *The process should be conceptualised as a partnership-building endeavour.*
A broadly owned policy outcome is based on a shared commitment to its implementation. Such partnership-like relationships provide the basis upon which stakeholders can learn about and appreciate the interests of others. Such is the case of the Charter of the Port Cros National park agreed and signed between the Park, the local governments (municipalities) and the fishers concerned.
- *The process should be designed and managed to deepen and extend public deliberation. Promoting public participation presumes that participants are well informed about the issues at hand and are able to engage in group discussions that get to grips with the substantive nuances of the issues. Small group discussion should be promoted systematically as it has been done in the CAMP-Var Land-Sea Forum.*
- *The process should be managed in an innovative, reflective and deliberative manner that is responsive to changing circumstances and stakeholder interests.*
From an operative point of view: (a) keeping the momentum requires *independent facilitators*; (b) building stakeholders' interest; (c) being *responsive* to their needs and interests; (d) using the most *appropriate media* and means; (e) securing sufficient *financial resources* as well as a *reasonable timeframe* to engage stakeholders in formulating the coastal policy.

Table 4. Promoting meaningful public participation (Adapted from Glavovic, 2000)³¹

Political legitimacy	At the outset, key stakeholders should agree on an appropriate process and structure to secure broad political support for the initiative
Process-driven approach	The process should be designed and managed in an inclusive, voluntary and culturally sensitive manner
Empowering process	The process should be aimed at empowering historically disadvantaged individuals, groups and communities
Building partnerships	The process should be conceptualised as a partnership-like relationship building endeavour
Deepening public deliberation	The process should be designed and managed to deepen and extend

³¹ Bruce Glavovic. 2000. *Building partnerships for sustainable coastal development. The South African coastal policy formulation experience: the process, perceptions and lessons learned.* Common Ground Consulting/Department of Environmental Affairs and Tourism

	public deliberation
Innovation, reflection and feedback	The process should be managed in an innovative, reflective and deliberative manner that is responsive to changing circumstances and stakeholder interests

3.1.5. [Transnational governance](#)

The Var coastal area is part of the transnational SIMWESTMED area with two main transnational agreements which are the Pelagos sanctuary and the RAMOGE framework though the latter does not include the regions of Tuscany and Sardinia where the CAMP-Italy has been developed.

These agreements should facilitate inter-governmental exchanges and coordination like in the case of the MSFD and its respective marine action plans (programme of measures). While the French authorities are now considering the first draft of the ‘Western Mediterranean Seafront Master Plan’ (DSF *Ouest Méditerranée*), they lastly made known their willingness to inform their Italian counterparts and consider the kind of coordination that could be established between the two countries. It must be reminded that under the French law, this document (DSF) is considered as an ICZM/MSP master plan for the entire French Mediterranean EEZ where the MSFD marine action plan represent its marine environmental pillar.

Although the overall studied SIMWESTMED marine area is mainly made of national EEZs (Italy, Monaco, France), from the governance point of view, it may be considered as a ‘common pool resource’ like biodiversity is, with three main modes of management which are private management of private property (e.g. infrastructures, ships) which transforms resources into a commodity, public management by a national (EEZ) or local (nearshore) governmental authority, and community management by end-users through common-pool resources institutions (CPRIs like fishers’ Prudhomie) and networks. Common-pool resources may be therefore alternatively framed as common, public or private goods, but also framed as commodities, services, or human and territorial rights³². This complexity is supposed to be dealt with through national and international norms (Barcelona Convention) associated with more technical approaches like ecosystem-based management and integrated coastal zone management (ICZM Protocol) though transnational grassroots networks (e.g. medPAN) are still in their infancy when dealing with the sea. In the case of water or forest management, authors³³ have highlighted the important role of these regional (Mediterranean basin or sub-basins) networks to regulate or provide alternatives to globalization, seeking primarily to influence States and International Organisations. In this process, international NGOs may be key players as it is more and more the case in the Mediterranean basin.

Actually, there are many local initiatives that could potentially become elements of transnational grassroots networks to help considering the MSP social and distributive impacts in the region. What follows are some examples of funding frameworks that are promoting local initiatives and possible networks including the Var county coastal area:

- The Interreg Italy-France Maritime Programme (Marittimo: <http://interreg-maritime.eu/programme>) is addressing the natural and cultural heritage as a common good between all the regions concerned between France and Italy. Two of the objectives are closely

³² Dupuits E. & Pflieger G. 2017. How do transnational grassroots networks reframe the global norms of water and forests governance? *Développement durable et territoires*. Vol. 8, n°1, Avril 2017

³³ Keck M., Sikkink K., 1999. Transnational advocacy networks in international and regional politics. *International Social Science Journal*, Vol 51, n°159, p. 89-101

linked to the MSP approach in the area, touching upon risks prevention (climate change) and management (hydrology, erosion, fire), security at sea (including the Ramoge agreement), and territories connection in relation with port activities;

- Each year, the Var county organized the 'Var-Europe days' (<https://www.var.fr/direction-var-europe>) with more than 50 local projects (some of them related to the maritime sectors) started in 2016 and 2017. This initiative is, among others, articulated with the Marittimo programme, which could lead to Italy-France regions' local initiatives networking;
- Since its inception, MedPAN has been supported by varied donors including the MAVA Foundation which could be interested in supporting the establishment of sub-regional (transnational) MPA networks, in particular within the boundaries of the unique large-scale transnational MPA which is the Pelagos Sanctuary. The MPA networking issue is the subject of the next chapter.

Since there are two international agreements (Ramoge and Pelagos) covering part of the entire SIMWESTMED marine region, and they already organized common events in the past (e.g. marine litter and plastics), an MSP multi-stakeholders dedicated working group should be set up to share experiences and make process proposals to decision-makers from both countries. Meeting places are needed to first know each other.

3.2. The local networking of MPAs and OECMs

3.2.1. [Introduction: MPAs and MMAs](#)

ICZM is a multi-scale ('nested') approach to managing defined coastal and marine areas, protected or not, understood as complex and dynamic interconnected systems that encompass many interactions between people and ecosystems, and must be managed as an integrated whole. It is an iterative process of formulating, implementing and refining a comprehensive and holistic vision of how humans should interact in an ecologically sustainable manner with the environment where their activities take place.

Very much in the spirit of the Aichi Target 11³⁴, it includes any area-based management initiative fostering integrated management in a defined area, including community-based management, co-management, integrated coastal management and its maritime spatial planning extension, and the management of Marine Protected Areas (MPAs). As regards the latter, it implies that an MPA is first of all a Marine Managed Area (MMA) and, contrary to some authors' worry, there should not be any "opening of a Pandora's Box of claims that almost any management intervention should be 'counted'"³⁵, from the moment the principles and processes of an integrated and ecosystem-based management approach are thoroughly applied as we could see from the CAMP-Var study as previously described.

By working together in a strategic way, ICZM/MSP and biodiversity conservation practitioners can mutually support efforts to promote conservation of coastal resources and their habitats and the well-being of the people who depend upon them (Table 1). Mutual efforts should be directed not only within

³⁴ By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes

³⁵ Spalding M.D., I. Meliane, N.J. Bennett, P. Dearden, P.G. Patil, R.D. Brumbaugh. 2016. Building towards the marine conservation end-game: consolidating the role of MPAs in a future ocean. *Aquatic Conserv: Mar. Freshw. Ecosyst.* 26 (Suppl.2) ; 185-199

and around MPAs, but also beyond MPAs for greater impact along a nested governance approach, at local, national, regional and international scales³⁶.

Table 5. Integrating the strength of ICZM/MSP and biodiversity conservation (Adapted from Best, 2003)

Theme	ICZM	Biodiversity conservation
Focus	Emphasis on development: promote the people??, preserve the place	Emphasis on conservation: preserve the place, engage the people
Goals	Improve the governance process, economy, health, social well-being, and environmental quality to maintain ecosystem productivity	Conserve biological diversity and ecosystem function
Public role	Neutral brokers	Environmental advocates
Site selection and project design	Development and issue-based approach (i.e., decentralization, strengthen local communities and authorities	Global biodiversity assessments and threats-based approach
Site-based approaches and strengths	Emphasis on governance process helps establish legal, decision-making and enabling environments across local, sub-national and national scales; establishing strong national ICM policies, framework and institutions that support local efforts and reduce external threats to MPAs	Emphasis on establishing and strengthening management schemes in MPAs; land acquisition, concessions and debt-for-nature swaps; target critical marine biodiversity and ecosystems (habitats) in need of immediate protection; gather international funds and resources
International approaches and strengths	Promote international awareness of the need for integrated approaches to coastal management and capacity building; mainstream ICZM into development plans	Change global trade policies and transform businesses; reduce threats from global economic drivers, such as unsustainable fishing and tourism; strengthen international conventions
Scaling-up approaches and trends	Coastal watershed and basin-scale management; establish strong national ICZM policies, frameworks and institutions; use local government units to replicate efforts; establish authorities to integrate across land and marine resources	Establish functionally-connected networks of MPAs; Eco-regional and seascape approaches to biodiversity threats

3.2.2. [MPAs in France \(metropolitan and overseas\)](#)

Like in many countries, there is a variety of different kind of MPAs in France depending on the objectives for the area to be managed (Table 2). It goes from no-take areas, where the primary motivating force is a restrictive access strategy to protect a whole area (*Parc National*), a resource or an habitat (e.g., *Natura 2000*, *Protection de Biotope*), to multi-use MPAs where the most important objective may be the preservation of traditional use, sustainable use of a particular resource, or a combination of these (*Conservatoire du Littoral*). Large multiple use MPAs (*Parc Natural Marin*) are more recent (2006) and are usually designed to achieve a broad range of objectives for the purposes of integrated ecosystem-based management (as developed above), where the limits of protection in a geographical sense are

³⁶ Best, B. 2003. « Conservation and integrated coastal management : looking beyond marine protected areas », pp. 325-342. In: *Crafting coastal governance in a changing world*. Ed. S.B. Olsen, Coastal Management Report 2241. Coastal Resources Management Program, US Agency for International Development, University of Rhode Island Coastal Resources Center, Rhode Island, USA.

based on regional ecosystem boundaries (e.g., the Gulf of Lion in the Mediterranean) or a compromise using the EEZ boundaries (e.g., New Caledonia).

Table 6. Type of MPAs and comparative design/implementation processes (AAMP 2012)³⁷

Process stages	National natural reserves	National park	Natural marine park	Natura 2000 Site	Conservatoire du Littoral (CdL)	decrees for the protection of biotopes
Opportunities	Ministerial level	Prime Minister level	Study decree	Ministerial list of areas of interest	CdL strategy on Maritime Public Domain	
Diagnostic (Baseline)	<i>Till now, whatever the kind of MPA, this stage is altogether covered with the following one on boundaries and objectives definition</i>					
Boundaries and objectives definition	Creation decree	Creation decree adopting the park charter	Creation decree	Ministerial designation	Maritime Public Domain effective management	Ministry of fisheries decree
Mid-term management plan			Management plan adoption	Adoption of Objectives document	Adoption of management plan	
Short-term implementation	Adoption of management plan with annual action plan					

International MPAs designation have to be added to the above categories though they usually are composed of already legally existing national MPAs as described in Table 2: biosphere reserves, world heritage sites, Ramsar sites, and the MPAs depending on regional seas conventions (SPAMI in the Mediterranean).

Though it has been for a long time neglected (and it is particularly true on land where protected areas are usually much older than at sea or along the coast), like for the ICZM approach, MPA practitioners must recognize that the systems they are studying and managing are socio-ecological systems including people, communities and, mostly in the overseas territories but not only, unique traditional cultures. These cultural parameters are especially important to consider areas having significant populations of indigenous peoples with traditional connections (cosmology)³⁸ to the marine environment like it is the case in French Polynesia where the MPA acronym becomes easily MMA (marine managed area) or

³⁷ AAMP (Agence des Aires Marines Protegees). 2012. Guide methodologique pour la creation et la gestion concertee d'une aire marine protegee. Document d'accompagnement de la strategie nationale pour la creation et la gestion des aires marines protegees. Ministere de l'Ecologie, du Developpement Durable, des Transports et du Logement.

³⁸ Henocque Yves, Bernard Kalaora. 2012. Rapport d'expertise Polynesie francaise. Theme d'interet transversal IFRECOR, Mecanismes de gouvernance et planification strategique. LittOcean, Novembre 2012

LMMA (locally managed marine area)³⁹. This acronym change is not just a detail but is highly significant of the 'adaptive management cycle' where, pragmatically along the results regular assessment, the adopted plan is reviewed to eventually make changes in case the committee in charge decides it is necessary. For example, in the case of the Polynesian traditional 'rahui'⁴⁰ practice, such changes can even concern the MPA geographic area hence moving with the socio-ecosystem dynamic.

3.2.3. [LSI and MPA at local scale](#)

Before considering the local scale, it has to be reminded that the SIMWSTMED area not only correspond to the Pelagos Sanctuary but, at an even large scale, to two superimposed Ecologically or Biologically Significant Marine Areas (EBSAs) of the North-western Mediterranean Pelagic and benthic ecosystems. In the case of the French Mediterranean Seafront Master Plan, these internationally recognized areas have been taken into consideration.

When coming to the local scale of ICZM/MSP, as we previously saw, LSI management geographical units are already there, in relation with water use management (SDAGE) and coastal waters quality (contributing to the MSFD 'Good environmental state') at the Rhône Mediterranean basin scale, and in relation to LSI planning within each of the coastal and maritime SCoTs of the Var region.

Seaward, among the already existing legally delimited zones, the most important are certainly the Marine Protected Areas and Other Effective area-based Conservation Measures (OECMs), i.e. the ecologically sensitive areas needing protection and particular management consideration (including large-scale areas like the Pelagos Sanctuary and other EBSAs), as well as the necessary buffer zones ensuring ecological connectivity and that such protection can be effective not only for specific areas for the entire ecosystem from a multiscale point of view.

As a matter of fact, the EcAp approach in the Mediterranean require to consider these MPAs and OECMs as a network and doing this, is to contribute effectively to the different SCoT maritime areas management articulation. As in any ICZM approach, it should be a simultaneous double-track approach, top-down (Mediterranean EcAp policy down to local MPA/OECMs) and bottom-up (MPA/OECMs networks contributing to the building of the Med EcAp approach). EcAp and ICZM are a multiscale endeavor.

Steps and important factors for the development of a network of MPA/OECMs

Guidance on how to develop a network of MPAs has been proposed by international bodies (Secretariat of the CBD, the IUCN, etc.) as well as European (e.g. CoCoNet project) and national studies and networks (e.g. MPA manager network, French Biodiversity Agency and self-structured non-official networks). Guidelines on the establishment of networks of MPAs can also benefit from the knowledge gained through establishing an individual PA, MPA and from learning offered by the practical implication of concepts such as the ecosystem approach and system planning. In a nutshell, the process can be divided into 6 steps:

- Identification of an ecological unit for management;
- Evaluation of the current natural, political and socio-economic situation of the area;
- Determination of goals and objectives of the network, including both those relating to protection of the environment and the continued welfare of the people affected;
- Designation of new MPAs based on criteria relating to location, size and shape and socioeconomic criteria described further;

³⁹ AAMP (Agence des aires marines protegees). 2009. Conference regionale Pacifique des aires marines. Synthese des echanges, Moorea, PF

⁴⁰ Rahui : community access or use restriction of an area or a resource on land or at sea

- Implementation of the network; and
- Monitoring.

As said before, like for any managed area, the successful establishment and functioning of a network of MPAs depends on the support for the process through a meaningful participation of all relevant stakeholders (in each country or area, and from a transboundary perspective), a supportive legal and political framework, the use of the best available knowledge, an effective system of compliance and enforcement, sustainable financing, and the formation of social MPA networks (e.g. the MPA manager network).

Criteria for a network of MPA/OECMs

Though designated by various terminologies, the applicable criteria are most commonly designated as representativeness, resilience, and connectivity. Most of them are ecological, though some socio-economic ones are also considered⁴¹:

- Individual components of the MPA/OECM network must be an appropriate size, shape and spatial distribution;
- The network as a whole must be considered permanent, even if units within it change;
- The network should be fully ecologically representative in the sense that one or more MPAs must be established for each of a full range of biological diversity (from genes to ecosystem) and the associated oceanographic environment in the given area;
- The network should include multiple samples of habitat types, separated spatially to minimize the risks of a large scale event destroying the only protected site of a certain habitat;
- The network should maximize and enhance connectivity between individual MPA/OECMs, groups of them within an area, and other networks in the same or different regions;
- From a socio-economic perspective, the MPA network must ensure a balance between cost and benefits of protection, appropriate equity in their distribution and include the minimum number of PAs needed to achieve the system objectives.

MPA network in the French Western Mediterranean

⁴¹ CoCoNet (2017). Towards coast to coast networks of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential. SCIRES-IT – Supplement vol.6. www.coconet-fp7.eu

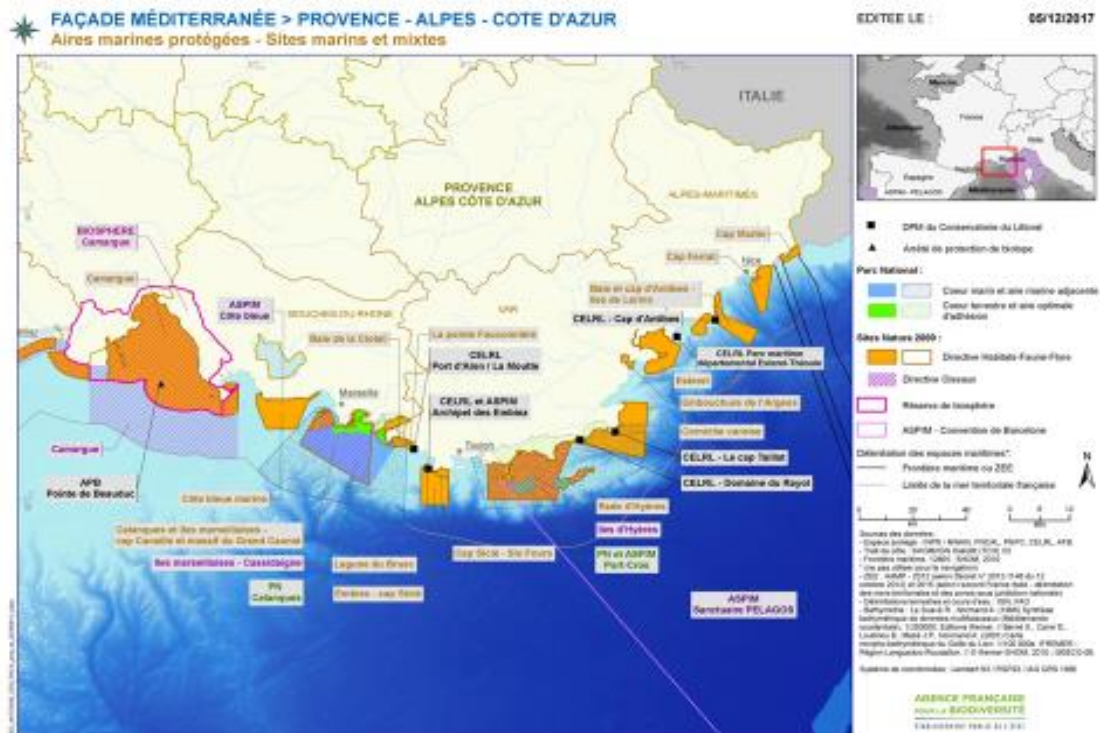


Figure 14. MPAs in the French Mediterranean (Afb, 2017)

As one can see on the above map, there is an important coverage of different types of MPAs along the French Western Mediterranean mainly coastal areas, to which should be added the transboundary Pelagos Sanctuary between France, Monaco and Italy. Under the Biodiversity Agency, there are two networks related to managers: the national MPA manager network, and the MPA Forum which is an informal network of managers as well. These networks are therefore managers' networks exchanging information, sometimes developing common projects (e.g. Ecoresponsibility Charter for Maritime Transport) and good practices, but they are not MPA/OECM networks following the above criteria.

The assumption is that the setting up of MPA/OECM networks of that scale and of smaller scale (like for the Var coastal and maritime area) should follow a 'double-track' approach, from the top, which could be geographically and institutionally assimilated to the Mediterranean basin, sub-basin (Western Mediterranean) and national (French Western Mediterranean) level, and from the bottom, which could be assimilated to the inter-municipal (SCoT), Department, and/or Region administrative levels.

3.2.4. [The Var case](#)

Between administrative and ecological management units

In the last 8 years, the Var coastal and maritime areas benefited from a good coverage as regards their ecological, socio-economical, and institutional knowledge, first from the comprehensive diagnostic made for the preparation of the Var Coastal and Maritime Scheme and second (2009-2011), from the CAMP-Var project, which followed the former (2014-2017).

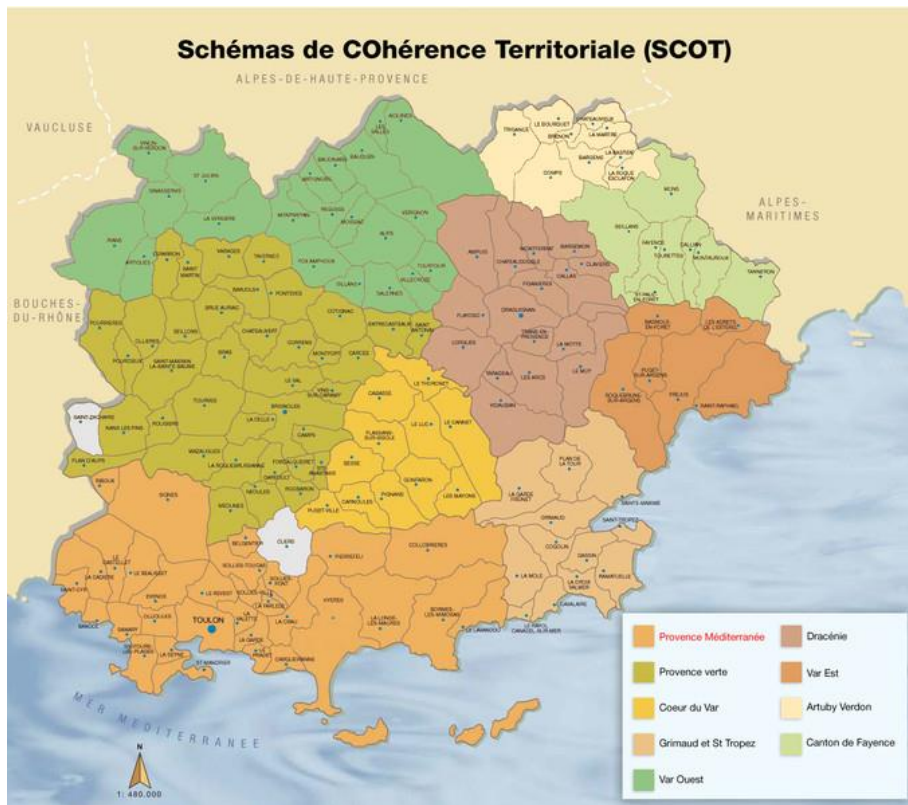


Figure 15.. Map of SCoTs in the Var County

There are three coastal SCoTs, the *Provence Méditerranée* one (Var western part) being the biggest. The 2011 environmental study sub-divided these three administrative units in 6 coastal units following several criteria (coastline geomorphology, coastal water masses as defined in SDAGE, SCoT administrative boundaries).

The marine ecology of these 6 coastal units have then been thoroughly studied from the shore to the depth of 50 meters, which led to the conclusion that, covering the whole area, there were 11 sites with outstanding and high quality biocenosis that deserved to be protected, and 9 sites of important marine heritage but under heavy pressure, that deserved to be restored.⁴²

The question then becomes how far the existing MPAs and OECMs are they covering these different sites, do their policy and management fit with the presence and conservation of these outstanding but fragile habitats and their associated flora and fauna? What gap should be filled up to make them sufficiently representative and connected provided they themselves have a management plan which is fully implemented?

Political and socio-economic situation of the area

Among the OECM kind of initiatives figure two important 'Bay Contract' since they are at the core of the socio-economic engine of the Var region with the bay of Toulon and its port, and the archipelago of the major touristic islands including Port Cros and Porquerolles. The first area is covered by the Bay of

⁴² Conseil Général. 2011. Schéma départemental de la mer et du littoral. Volet Environnemental. Etat des lieux. Annexe 1 Etude complémentaire de l'écologie marine. Rapport.

Toulon Contract, and the second by the Golden islands Contract, both of them focused on water quality as a component of the MSFD good environmental state.

Since there are linkages in regard to their governance in adjacent areas with the same final objectives and using the same planning instrument, a partnership consisting of information exchange and mutualisation of meetings and documents is now under discussion.

If this is possible between planning instruments of the same nature implemented in adjacent areas, it is much more difficult to achieve between very different instruments like a Natura 2000 Objective Document and the marine side of a Natural Preserved Area (*Réserve Naturelle*). A framing overall policy is needed and the best strategic level is the Sud Region.

The role of the epistemic community

An epistemic community is usually defined as a network of professionals (scientists and others) with recognized expertise and competence in a particular issue-area. These professionals can have different backgrounds and come from different disciplines but share a set of normative and principal beliefs in developing their activities. They usually have a conspicuous role in the creation of national or international regimes in complex issue-areas in which there are uncertainties (such as the protection of the environment) at the condition they can pool consensual knowledge and influence decision-makers. To a large extent, this has been the case in various regional seas such as control of marine pollution in the Mediterranean through international conferences and regular scientific and technical meetings under the Barcelona Convention system.

Lastly, as regards the MPAs, it is the MedPAN network which played that role, but the more local the issue is getting and the more difficult it is to find a scientific consensus and then efficient support to the cause of MPA and OECM networking. Within the Var region, each of the 20 MPA/OECMs or so have a steering committee, sometimes supported by a scientific and technical committee, but there is no regular dialogue between them. The epistemic communities are very locally scattered and rather disconnected at the upper scale.

The strategic regional framework

Given the great heterogeneity (even local like in the Var) in the nature of MPAs and OECMs (legal, institutional, type of management), establishing a local MPA/OECM network requires a double-track approach: from the bottom, from the identification of local MPA/OECM leaders as in the case of the Adriatic Protected Areas Network (ADRIAPAN), and from the top which, in this case, would be the Sud Region, in the frame of its coastal and maritime regional strategy. At a different scale and the other way around, the same institutional support that was given by the Region to create MedPAN for the entire Mediterranean basin, should now be given to the MPA/OECM networking in the whole Sud coastal region.

At the local (Var) level, two leaders could be easily identified: the biggest and probably the oldest MPA which is the Port Cros National Park, and the well-structured OECM-type, locally strongly supported, which is the Toulon Bay Contract related to the Var busiest and most urbanized port area. The latter is already thinking of a governance structure that could allow an efficient coordination with the other Bay Contract which is the 'Golden Islands' one.

At the Sud Region level, its new Maritime Assembly (AMCRE), besides the already existing four commissions, should have another one on 'Biodiversity protection' to support an MPA/OECM

networking initiative in the Sud coastal areas. As explained before, such an initiative would be for the benefit of ICZM good practices, and therefore would be a very concrete Sud Region's response to the implementation of the Mediterranean ICZM Protocol as well as the EU MSP Directive.

Citizen science to the rescue: MPA Watch

Nowadays in France, there are more than 60 citizen science initiatives in coastal and marine areas, most of them focusing on the follow up of group of species and a few on habitats⁴³. There are of 'naturalist' nature. When coming to activities observation, there are only a few observatories like the 'Bountiles' one in Port Cros and Porquerolles, about the frequentation of visitors on land and at sea on and around both islands⁴⁴.

Based on this experience, the Sud Region and the coastal and marine citizen science network, VigieMer⁴⁵ would launch an MPA/OECM Watch volunteer⁴⁶ programme to monitor all human uses including recreational activities such as running, boating, diving, as well as activities such as fishing or collecting that would disturb or displace any marine organism or habitat along the coast. Actually, it would be a network of local initiatives but using the same protocols and receiving the same kind of training to recognize different kind of activities, using binoculars to view activities offshore, use compasses or GPS units to accurately begin and end their surveys, as well as to identify MPA boundaries, and finally to record their observations on datasheets. As in a typical citizen science initiative, all data would undergo rigorous quality assurance and quality control protocols by coordinating initiatives and organizations before being accepted and shared with users such as MPA/OECM managers and researchers.

Besides the ecosystem approach considerations, this would be another way to generate public awareness and managers' sense of networking through the sharing of a common series of data based on the same protocol.

4. CONCLUSION

In spite of existing international agreements (Pelagos, RAMOGE, Bonifacio Straight) covering the SIMWESTMED large marine ecosystem, transboundary issues are still difficult and politically delicate to manage. The challenge is to develop an incremental approach through the strengthening and networking of local fora, projects/initiatives, institutions, and platforms with permanent exchanges and adjustments between both sides (here, France and Italy, and their corresponding regions) from the transboundary area.

To go into that direction means that rather than an 'ecoregion', the SIMWESTMED area should be considered as a 'seascape', the definition of which relies as much on strategic criteria as it does on biogeographic and ecological criteria⁴⁷. But before getting the countries and regions down to work and

⁴³ Mannaerts G. 2017. Recensement des programmes de sciences participatives dans le cadre du réseau Vigie Mer. Rapport, 37 pages.

⁴⁴ Le Berre S., Brigand L., Le Corre N., Peuziat I. 2013. L'apport du Parc National de Port Cros à la réflexion sur les usages récréatifs et leurs suivis dans les aires protégées : les observatoires Bountiles Port-Cros et Porquerolles. *Scientific report of Port-Cros national park*, 2013, 27, pp.325-353

⁴⁵ <http://www.planetemer.org/infos/actus/vigie-mer>

⁴⁶ See as an example the California's MPA Watch experience: <http://www.mpawatch.org/site/about>

⁴⁷ Bensted-Smith, R. and H. Kirkman. 2009. Comparison of approaches to management of large-scale marine areas. Technical report prepared for Conservation International. Washington D.C.

together improve their maritime activities planning and management, the first step seems to make them recognized that the seascape they share is underpinned by clear ecological and social connectivity. The issue at stake should therefore be first of all to improve management in specific thematic (more particularly in coordinating their respective MSFD action plans) and geographic (MPAs network) areas. As it is developed above, starting in a relatively 'neutral' domain, i.e. environment assessment and conservation, may lead to a progressive extension to other relevant stakeholders and sectors.

As it is promoted by SPA/RAC, the need to integrate marine protected areas (MPAs) and other effective conservation measures (OECMs) into the wider seascape has never been more urgent because of the synergies and negative feedback loops between fragmentation and climate change.

From the ecological point of view, fragmentation impairs the ability of species to adapt to the rapidly shifting habitat patterns and environmental processes that result from climate change, further weakening that resilience, and increasing the likelihood of trophic web shifting.

From the social point of view, fragmentation of initiatives and organisations impairs the ability of local stakeholders and decision-makers to exchange between them and to upscale their vision so that it better reflects the scales at which ecosystems are evolving and the extent of human activities cumulated impacts on these ecosystems.

Like ICZM, MSP should be a multi-scale learning and incremental approach that, in the case of the SIMWESTMED area, could be supported by the establishment of a regional scale programme that would be considered as a WESTMED sub-macroregion.