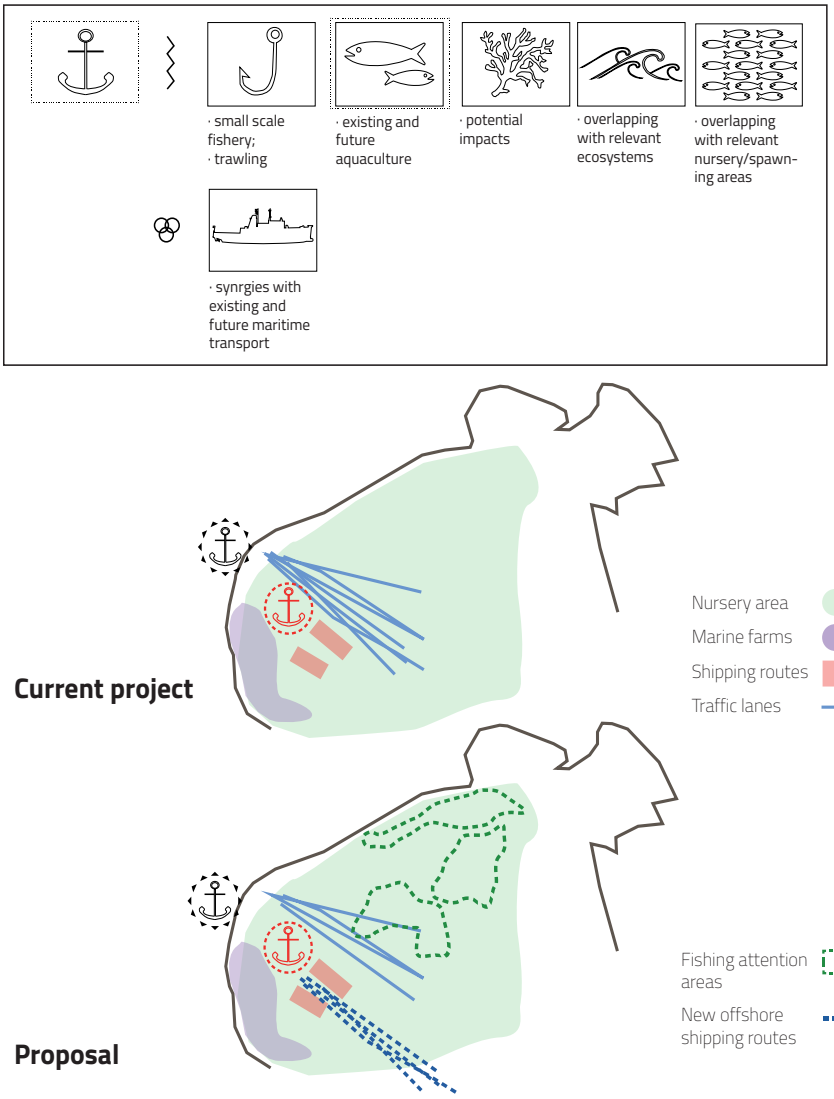


17. Venice Offshore Terminal

Planning objectives

- Need to preserve nursery and spawning areas in the medium-long run to guarantee economic sustainability of fishery;
- Need to control the impacts on sensitive environmental components during the different stages of realisation of the Venice offshore terminal;
- Need to reduce conflicts with the fishing sector, identifying compensatory measures to be implemented according to a time plan dependent on the specific stage of project realisation.

Proposed actions

- Definition of temporary precautionary measures during the phase of offshore construction;
- Identification of spatial compensatory measures to mitigate environmental impacts on fish nursery areas, on relevant ecosystems and conflicts with fish farming activities;

- Compilation of a draft containing compensatory measures to be developed during the different phases of the Venice Offshore Terminal construction (excavation, dredging, handling and laying of the material until the commissioning of terminal). The measure has to guarantee the long-term economic sustainability of fishery.

Stakeholders

- Italian Ministry of Transport and Infrastructures, Italian Ministry of Environment;
- Venice Municipality, Venice Port Authority, Coastal Guard;
- ARPAV, Fishing category associations.

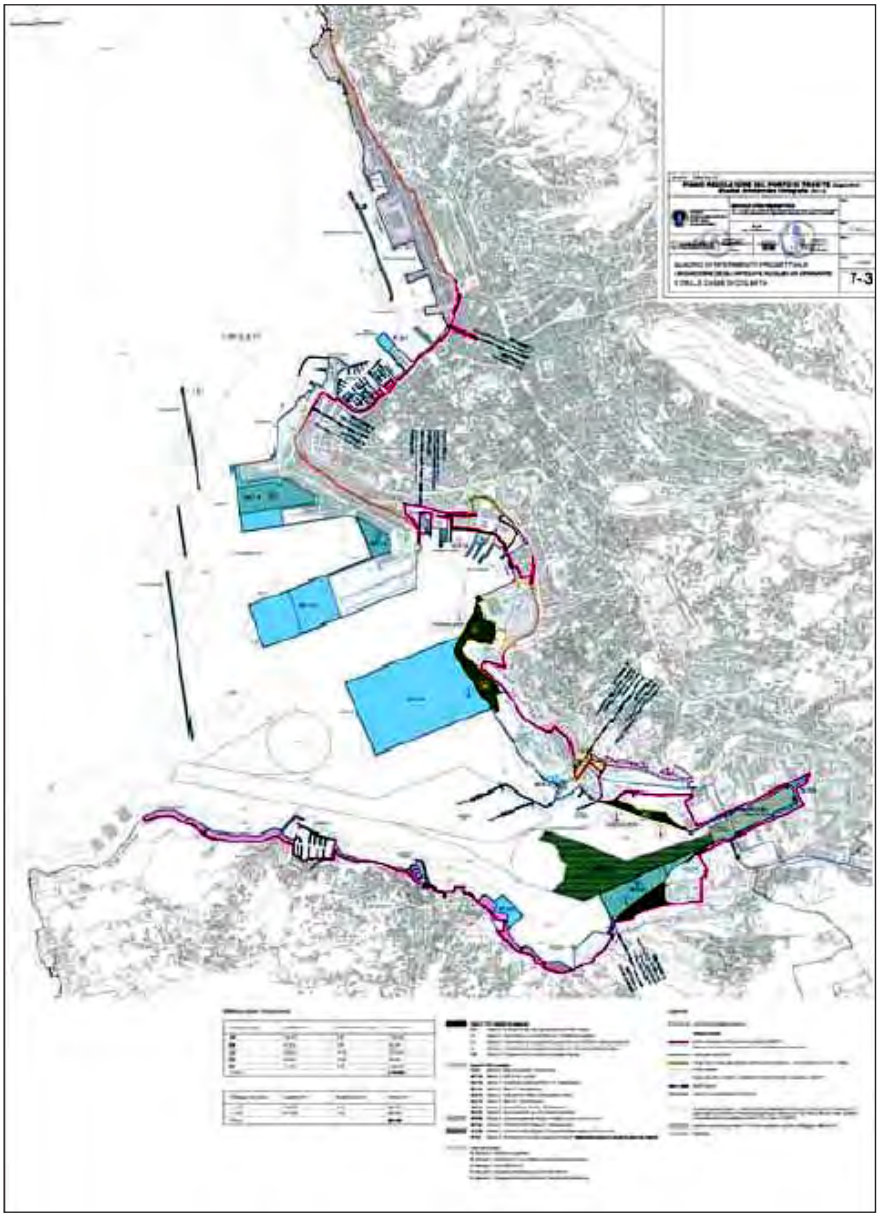
Pilot Action 3. Development of infrastructures in the Port of Trieste

The recently approved plan of development of the Port of Trieste includes a wide range of works involving maritime space, possibly interacting with other maritime activities and having possible impacts on the environmental status. These projects include (Figure 18):

- The enlargement of the pier dedicated to cruise ships in order to allow docking of the most recent cruise ships;
- The execution of a new touristic marina in the city centre;
- The enlargement and also unification of some piers in the industrial port (leading to more than doubling the current pier surface);
- The construction of a new pier and of a logistic platform;
- The construction of a new Ro-Ro terminal;
- The construction of coastal infrastructures to promote yachting activities;
- Dredging areas.

The area included in the plan of development occupies a Site of National Concern (SIN, Trieste) with a total area of 1,700 ha, of which 1,200 ha are in the sea. The site is characterised by hydrocarbons and heavy metals pollution due to past long-lasting refinery activities, which have contaminated the sediments inside the harbour.
The entrance corridor to the commercial port and to the oil terminal passes in front of the historical village of Muggia and in front of a coastal area dedicated to tourism and recreational activities. The southern coast, close to the Slovenian border, is used also for aquaculture with several mussel farms.
Main management objectives and suggested measures are as follows:

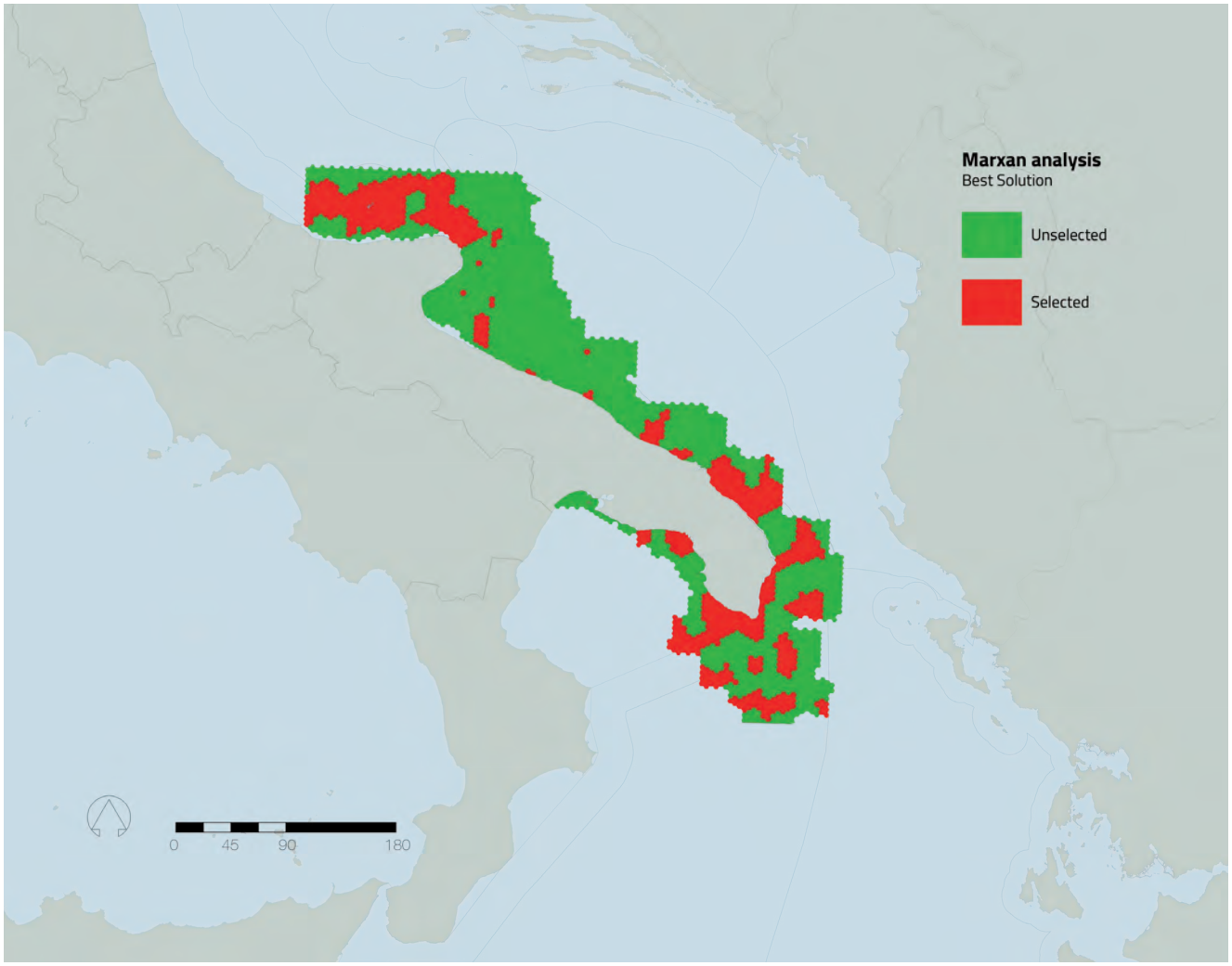
- Definition of measures to reduce acoustic pollution;
- Measurements to preserve water resources;
- Measurements to preserve the marine environment;
- Definition of suitable monitoring project to assess possible environmental impacts during the construction phase and to assess possible environmental impacts during the operation phase;
- Definition of mitigation and compensation measures:
    1. special precautions to reduce impacts of sediment resuspension and dispersion during dredging, and deployment of infrastructure to reduce possible dispersion of contaminants;
    2. definition of adequate timing of operations to reduce interference with the touristic season;



18. Projects of development of port infrastructures in the Port of Trieste (Italy). Source: PIANO REGOLATORE DEL PORTO DI TRIESTE. Giugno 2014, Relazione Generale.

3. adoption of "IMO Ballast Water Management Convention" (IMO, 2004) to limit possible NIS introduction;
4. confine activities to avoid interference with seabeds of phanerogams and other relevant seabed habitats;
5. definition of routes to approach the harbour and limitation of speed to limit possible impacts on marine mammals.

Maritime Spatial Planning (MSP) aims to achieve simultaneously social, economic, and ecological objectives by means of a more rational and scientifically based organisation of the use of ocean space.
By balancing multiple objectives and sectorial priorities, an integrated maritime spatial plan allocates space for different human uses, informed by knowledge of ecosystem processes and function, and consultation with stakeholders across different sectors and interests.
The above approach was applied in ADRIPLAN and outcomes referring to FA2 appear in the following sections.



19. Best solution from MARXAN analyses.

3. Focus Area 2

Pilot Action 1. Apulian territorial waters

In the Italian territorial waters of FA2, several human activities take place determining hot spots of conflicts. The most important areas deserving an MSP effort, also in terms of socio-economic importance (see also Mosetti and Lipizer, 2014; Barbanti et al., 2015), are represented by:

- An area dominated by the presence of the town of Bari, currently highly populated and urbanised. The interactions between naval activities (due to the shipping and cruise port), increasing bathing and nautical tourism, cables, small fisheries and trawling, close to widespread Sites of Community Interest (SCIs) (covering the extension of large *P. oceanica* meadows) are the main causes of the present high level of spatial conflicts.
- An area surrounding Brindisi: although there are still widespread natural areas, Brindisi coastal area is highly populated by urban settlements and facilities, industrial areas, a carbon power plant (Cerano), a big shipping port, and a seaside tourist flow steadily increasing over the last 10 years. The Marine Protected Area "Reserve

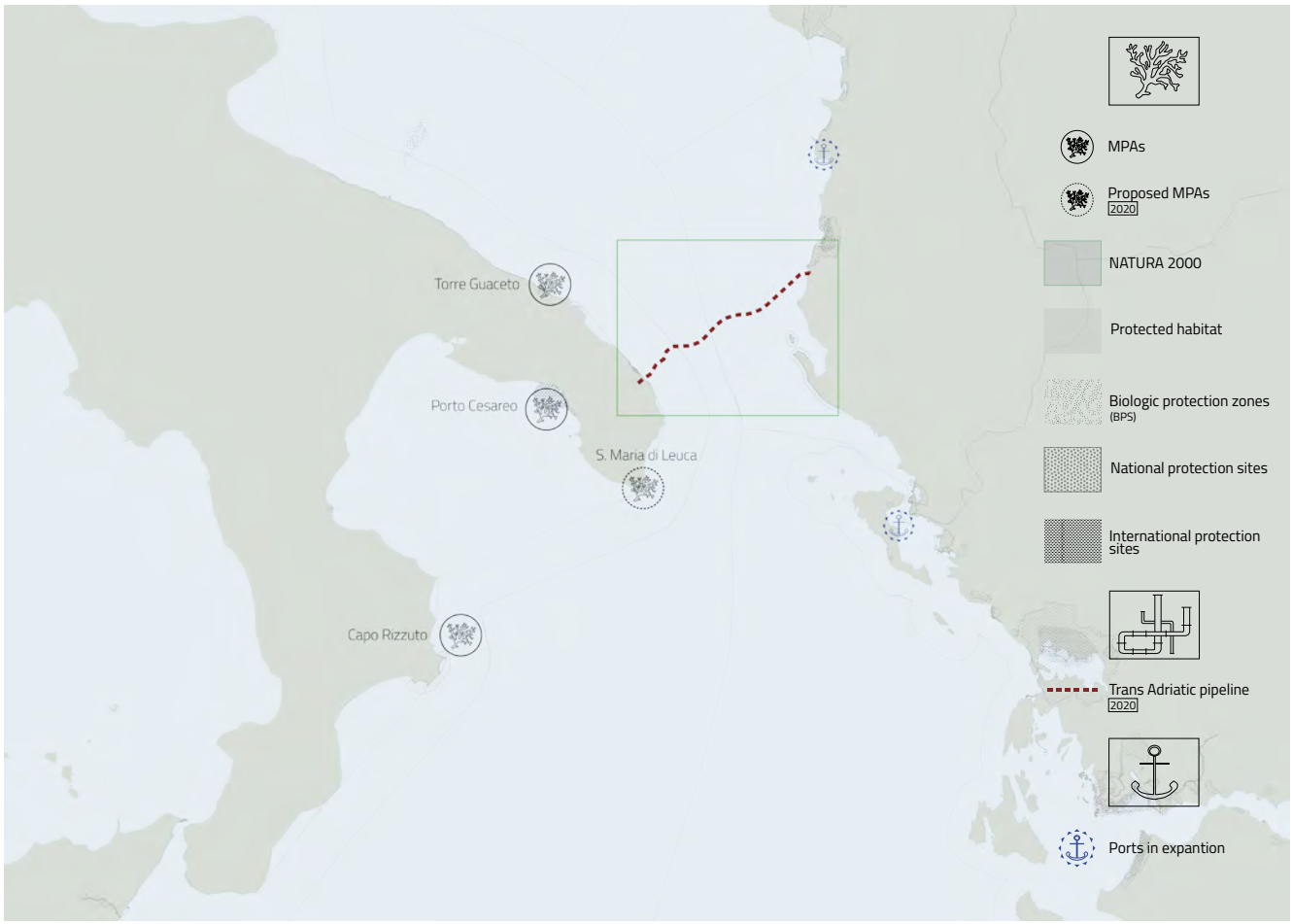
of Torre Guaceto" is also present in this area. The MPA represents a critical tool for the protection of marine biodiversity and the local management of marine resources, and fishery is strictly regulated through bottom up approach. Several SCIs are present in this area, deserving urgently a management plan together with a rezoning effort carried out at regional level. Hydrocarbon exploration and exploitation are also present offshore the area, stressing the need for an integrated MSP preserving the vocational characters of the different coastal areas.

- An area located in the coast of the Lecce town ("Marine leccesi"). Here, the coast consists mostly of soft bottoms with critical erosion necessitating coastal defence works. The main activities in this area are small-scale fishery and trawling interacting with a massive bathing tourism flow.

On the whole Apulia territorial waters and coastline, the GIS-based MARXAN tool (Ball & Possingham, 2000) was employed to offer best scenarios of spatial optimisation by using a priori identified conservation targets of most critical habitats combined with the analyses of current and emerging human activities in the Apulian coastal zone. Here, the new scenarios of protection provide a new foundation for Ecosystem-Based Management that integrates the human dimension.

The Best Solution representing the most suitable scenario in term of cost effectiveness and habitat protection target, between different solutions produced by the analyses, is shown in Figure 19.

20. The planned Trans Adriatic Pipeline (TAP) cable reaching the Apulian coast.

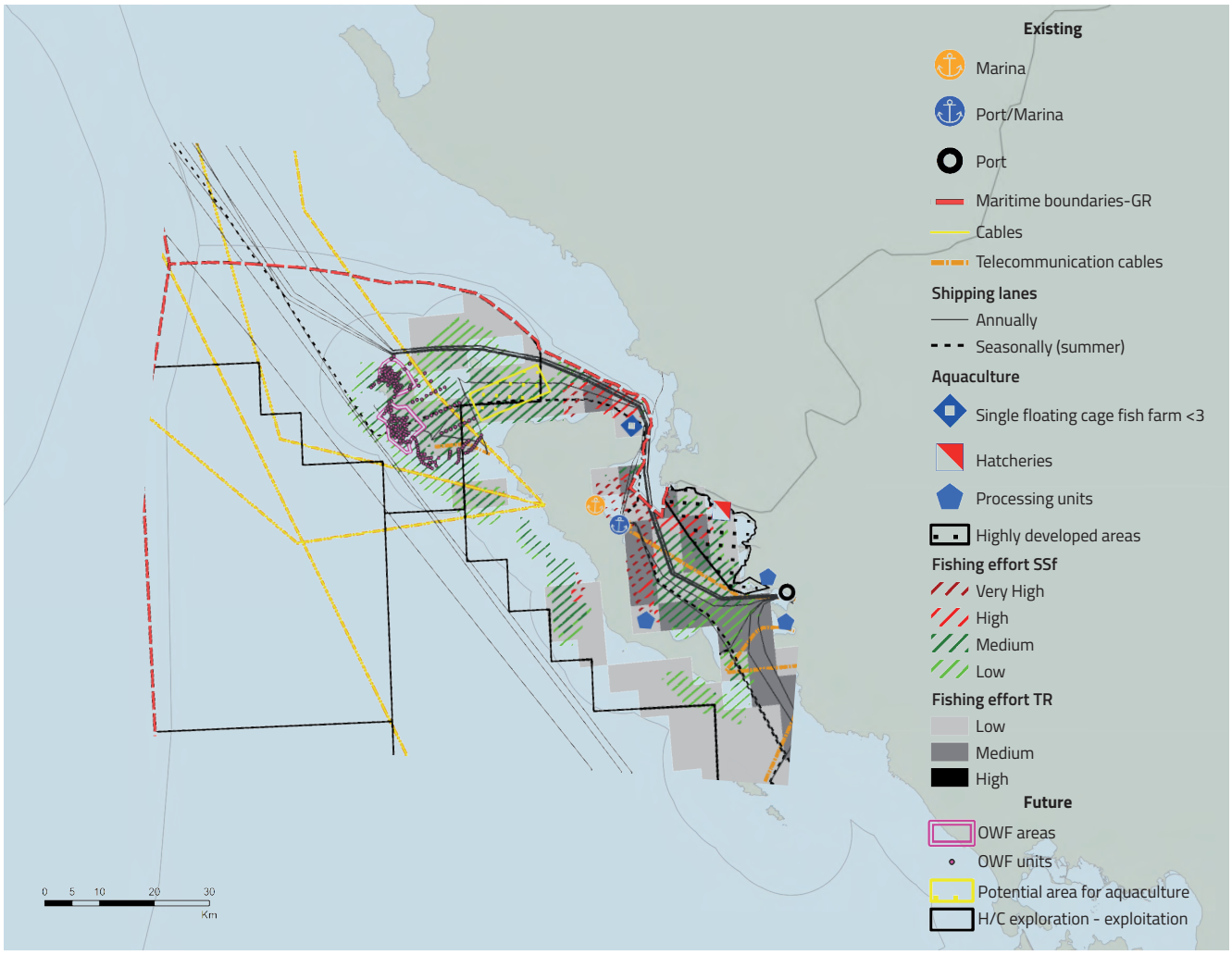


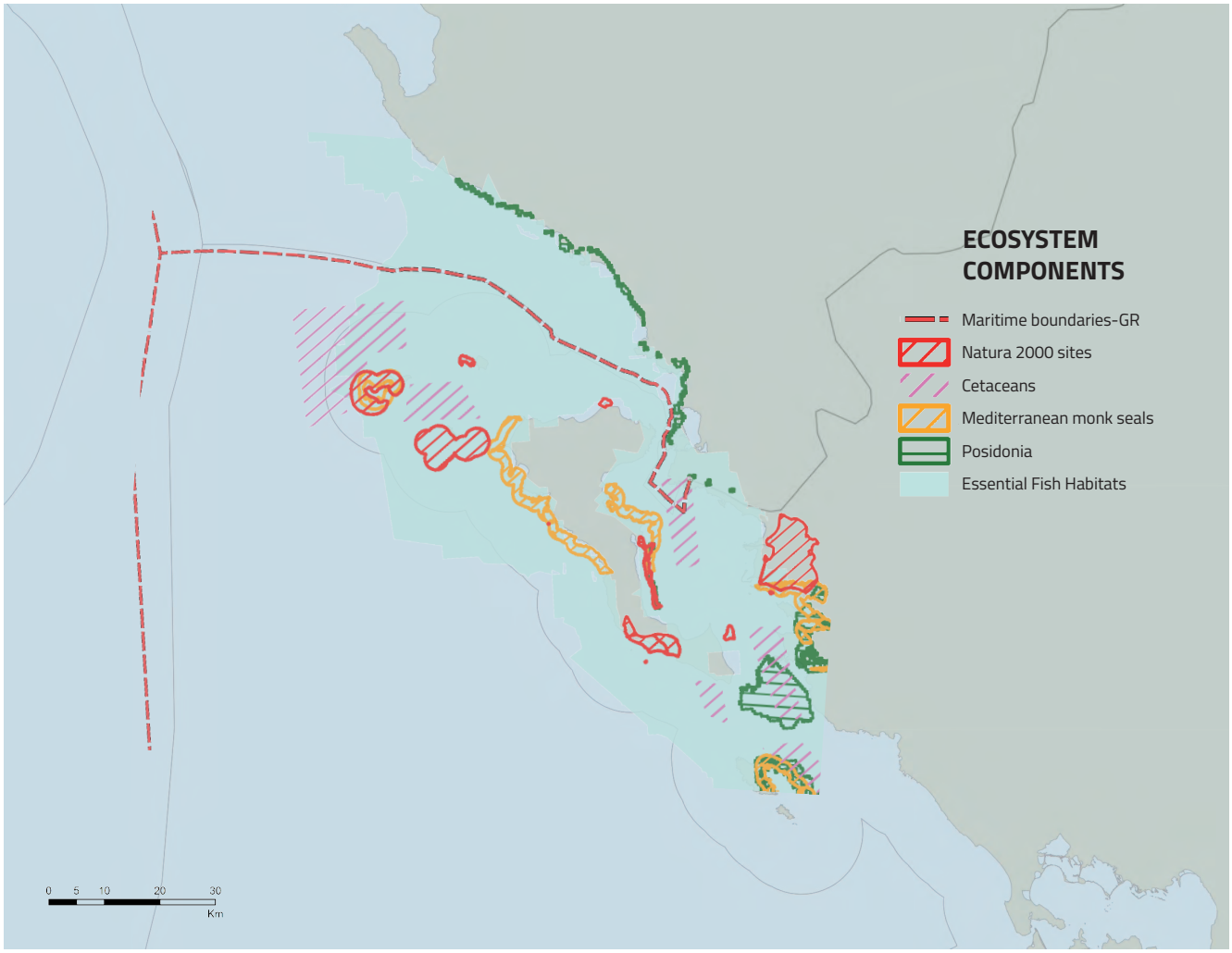
The southern trait of Apulian FA2 appears to be a very low conflict area both in the 2014 and 2020 analyses. This suggests major attention to a proper protection of this area, featured by high summer tourism and low pressure of traditional small-scale fisheries, through the institution of a well-enforced MPA.
The local management plans should be empowered so to decide when, where and how to further develop new human activities: this is also culturally relevant with an improvement of the tools and the effort of fishery through a bottom-up approach.

Pilot Action 2. Apulian off-shore waters

In the Apulian part of FA2, apart from the existing activities, conflicts with energy infrastructures can be boosted in the next years.
The new area of conflict emerging is due to the planned Trans Adriatic Pipeline cable reaching the Apulian coast (Figure 20) slightly north of the city of Otranto.
Moreover, hydrocarbon exploration authorisations are heavily increasing along the whole Apulian coast. Conflicts with energy infrastructures can be merely spatial (e.g. spatial limitations for trawling due to pipelines) or can have greater implications. In fact, recent pressure for surveys for oil and gas using acoustic technologies is considered an area of heavy conflict with

21. Main activities in the Greek part of FA2, both current and potential/future.



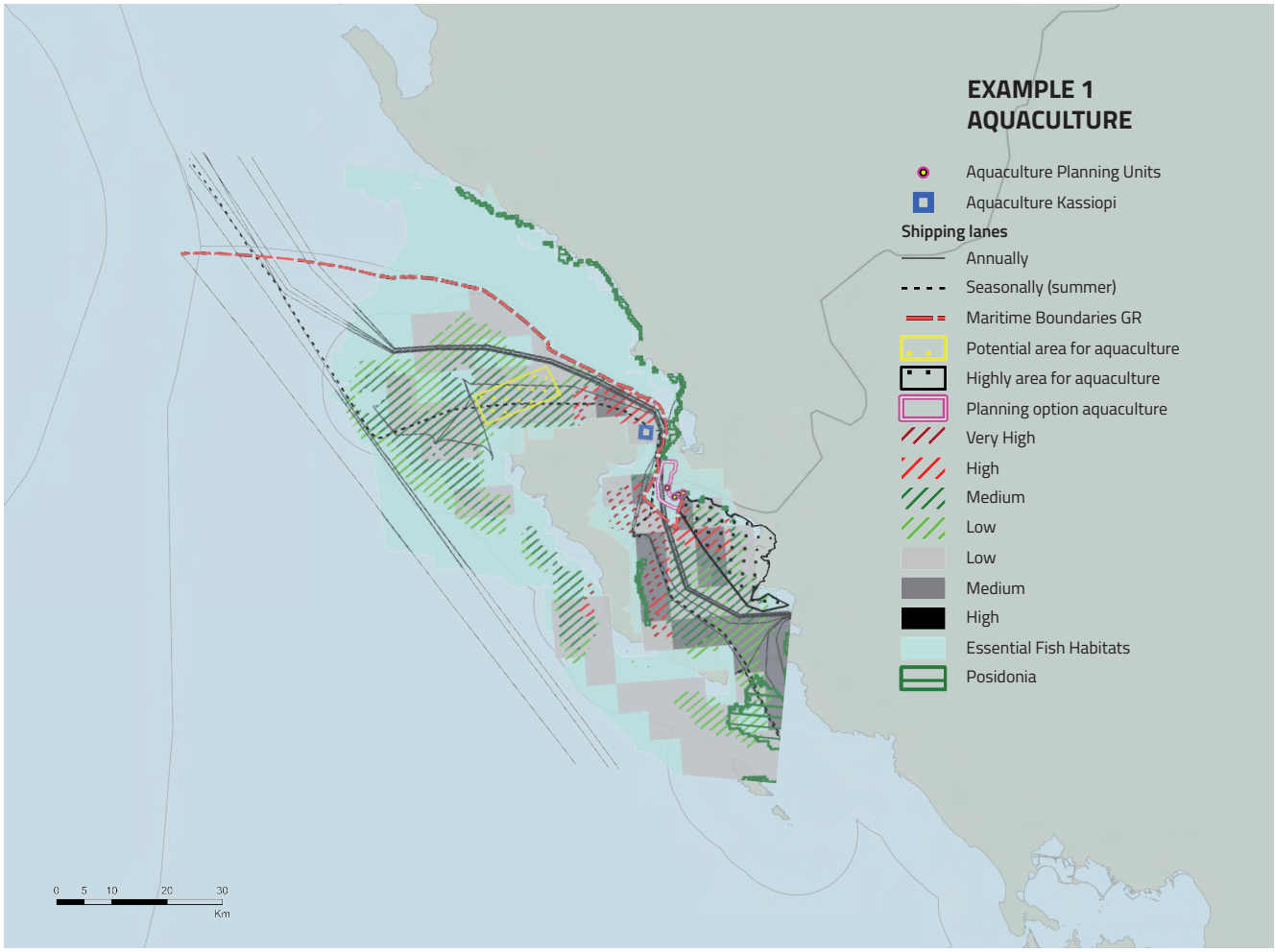


22. Key ecosystem components in the Greek part of FA2.

fisheries, since technologies such as air guns may have serious impacts on different ecosystem components, especially on fish stocks.
It is important to consider the "vocational" characteristics of this coastal area, including tourism and leisure, in order to conclude that it should not be considered for energy development. On the contrary, coastal areas already dedicated to industrial development might be considered for offshore wind farm implementation.

Pilot Action 3. Greek territorial waters

In the Greek territorial waters of FA2 different types of human activities currently take place, seven of which have been identified as major in terms of their socio-economic importance in the area (see also Mosetti and Lipizer, 2014; Campostrini et al., 2015).
These activities are bottom trawling, small scale fishing, aquaculture, ports, marinas, shipping lanes, cables, and they are mapped in Figure 21. As for 2020, apart from the abovementioned activities, two more (i.e. offshore wind farms, and hydrocarbon exploration and exploitation) are forecasted to take place in the locations designated in Figure 21.
With respect to ecosystem components, five are considered of high importance; namely essential fish habitats, Natura 2000 sites, sea grass meadows, Mediterranean monk seals, and cetaceans (Figure 22).



Pilot Action 4. Aquaculture: examples of cross-border planning issues in the Greek and Albanian territorial waters

Aquaculture is a flourishing sector in the AIR and its importance in the economic growth of the area is vividly highlighted under the EUSAIR Pillar I: Blue Growth. Greece has already a well-developed aquaculture activity, and the highest production in relation to the other AIR countries (source: *http://www.medmaritimeprojects.eu/section/med-iamer-redirect/outputs*). A number of units are placed in the Greek Ionian Sea, few of which are close to the transnational waters with Albania.

The latter country has a rather limited development of aquaculture, but substantial progress has been made in recent years, particularly in the southern part close to the Greek border.

Within ADRIPLAN and particularly through interactions between Greek and Albanian stakeholders, an area of potential cross-border collaboration for future development has been identified (Figure 23).

However, precise designation of the cross-border AZA between Greece and Albania is needed. Development of cross-border collaboration urges for bilateral policy agreements between the two countries.

Finally, the proposed area for cross-border aquaculture development falls within the Corfu strait, where international agreements for navigation/shipping are valid under UNCLOS and should be considered during the elaboration of possible plans.

23. Map indicating areas of existing (black dotted zone) and planned aquaculture sites (yellow dotted zone), and a proposal for cross-border development (purple lined zone).

If you want to build a ship, don't drum up the men to gather wood, divide the work and give orders. Instead, teach them to yearn for the vast and endless sea.

Antoine de Saint-Exupéry (1900 – 1944)

There is no road too long to the man who advances deliberately and without undue haste; there are no honors too distant to the man who prepares himself for them with patience.

Jean de La Bruyère (1645 – 1696)

What we recommend

Capitalising on the experiences gained on other projects, pilot studies and planning activities, and on the results gained and lessons learnt specifically through ADRIPLAN, we are now able to deliver a number of recommendations, customised on the Adriatic–Ionian Region characteristics and needs, to support the practical implementation of MSP in the area.
These recommendations are organised below in the four main and typical phases of the planning process:

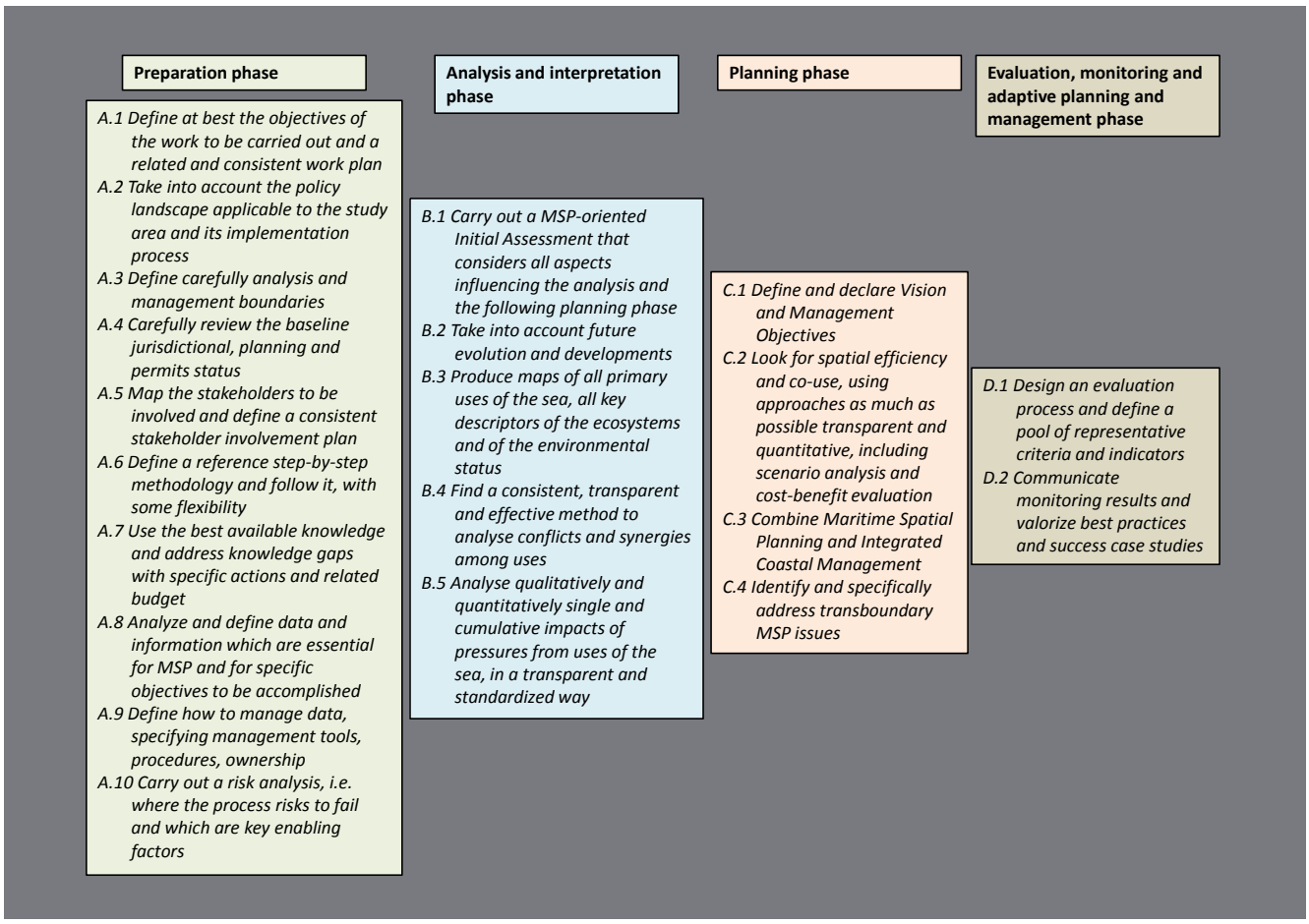
A. Preparation phase
B. Analysis and interpretation phase
C. Planning phase
D. Evaluation, monitoring and adaptive planning and management phase

The four phases, and their recommendations (Figure 24), are not strictly sequential but are in fact, in particular for phases A, B, C, connected in a iterative and adaptive process. The importance of the preparatory phase is in our opinion particularly high and will appear clearly from the recommendations that will follow.
Not all recommendations have the same relevance and applicability, nor the list intends to be exhaustive or to be followed in a step-by-step process. Nevertheless, end-users shall find along with the list of recommendations, answers and advice on most key aspects concerning MSP implementation in the AIR.
Recommendations are presented here in a concise way and a more extended explication can be found in the Report "Developing a Maritime Spatial Plan for the Adriatic Ionian Region" (Barbanti et al., 2015), which presents the main results of ADRIPLAN in a complete and extended form. The boxes report synthetically on ADRIPLAN results directly supporting the recommendation.

A. Preparation phase

A.1 Define at best the objectives of the work to be carried out and a related and consistent work plan

MSP involves many different aspects and sectors and can be carried out at different levels and scales. It is very important that projects dealing with MSP define their objectives very carefully from the beginning, being them the development of a complete MSP proposal or some specific and maybe propaedeutic actions, and develop their work programmes, time plans and involvements accordingly.
Available resources and mandates to carry out the work should be, in particular, clearly defined, especially when acting in a transboundary context.
Customers, executors and all stakeholders involved have to be aware that MSP is a long-lasting process, and that the final step of reaching acceptability of the plan on the proposed use of marine space and resources usually takes great effort and a long time. Therefore, consistency between premises, objectives and work plan is of great relevance.
Objectives should also be moulded on the characteristics of the study area and MSP requires them to be present. Some needs, and the added value that will eventually results from their satisfaction, should be in many aspects clear from the beginning, as in fact the analysis will define them more precisely and will indicate or provide solutions, while other needs arise during the analysis phase of the MSP process (Cundill et al., 2012; Folke et al., 2005).



24. List of ADRIPLAN recommendations

ADRIPLAN is a Pilot Project and, as such, experienced the difficulty of addressing solutions without having a clear and agreed mandate to do that. ADRIPLAN was then successful in performing a full state of the art analysis of the MSP needs and priorities, while the planning phase remained limited to some examples, despite the full support of many regional administrations. Our experience confirmed that technical approaches and analyses are very important enabling factors but are not per se sufficient, if they are not directly at the service of a clear strategic vision and a political and administrative mandate.
In ADRIPLAN it was clear from the beginning, and was confirmed during the analysis, that in the AIR there is still no convergence in the identification of one or few drivers for MSP, as it may be the case in other areas (e.g. the expansion of a key economic sector, or a focus on environmental protection). The AIR is characterised by a wide and distributed range of multi-uses, which have been grouped in the project in five "pivotal uses", that result in a number of local and mesoscale MSP needs.
Here, as elsewhere, there is, first of all, the need to make clear and evident to local (coastal) Communities that MSP is real life: MSP can bring indeed tangible results to local decision makers.

A.2 Take into account the policy landscape applicable to the study area and its implementation process

MSP should aim at enhancing cross-sectoral cooperation, also through a coherent and coordinated implementation of sectoral policies (Environment, Fisheries, Energy, Transport, Tourism, etc.), without substituting sec-

toral planning.
Therefore, the key policy instruments related to the characteristics of the area should be carefully considered (e.g. MSFD, WFD, Floods Directive, Birds & Habitats Directives, Common Fishery Policy, EU Strategy on adaptation to climate change (COM(2013) 216 final), Directive on renewable energy (2009/28/EC), Directive on safety of offshore oil and gas operations (2013/30/EU), ICZM Protocol for the Mediterranean (Barcelona Convention), etc.).
In particular, the MSFD envisages the elaboration of a Programme of Measures, to be established in 2015 and then again in 2021, to address human activities that have an impact on the environment, in order to achieve Good Environmental Status. This activity should be carefully considered when setting and implementing MSP process, as spatial measures from MSFD implementation are expected to have high relevance within such programme.

Operating in the Adriatic-Ionian Region, the MSP effort must take into account the specific indications from the EUSAIR Action Plan and how the process is being implemented as a whole and through sectoral measures within its four Pillars (see also chapter 2 and C.1). In fact, EUSAIR Action Plan also provides the overall vision addressing management objectives and planning scenarios (see also C.1).
On the other hand, it is expected and recommended that EUSAIR:

- *Promotes the institution of a cross-pillars ICM/MSP permanent working group;*
- *Promotes specific actions and projects on ICM/MSP within the EUSAIR Action Plan framework (in all the Pillars), having in mind a cross-fertilisation strategy among different funding schemes (Interreg, ESI Funds, LIFE, H2020, National Funds, etc.);*
- *Promotes through specific support activities the implementation of the MSP Directive in order to adopt Maritime Plans by 2021 or before that formal deadline.*

To facilitate the process towards MSP and while MSP plans are prepared and adopted, any public and private proponent of projects and plans concerning or affecting the marine environment should be requested to adopt an "MSP approach" when developing Environmental Impact Studies and Strategic Environmental Assessments, starting from providing coherent and usable spatial pieces of information.

A.3 Define carefully analysis and management boundaries

Explicit boundaries should be established to define the domain of analysis and planning. They include the areas of analysis as well as the possible areas of management at the different levels. In fact, according to UNESCO-IOC (Ehler and Douvere, 2009) definition, boundaries can be identified because of two different scopes: "boundaries for analysis", which are meant to include transboundary mechanisms and effects, and to intercept different instances that might influence MSP questions of the case study area; "boundaries of management", on which planning proposals and implementation are elaborated. The two types of boundaries can eventually coincide or the first can include smaller portions of areas defined as "boundaries for management".
The setting of boundaries should be driven mainly by:

- Objectives of the project and the MSP effort (i. e a generic or pilot study addressing specific issues of MSP in the area versus a full plan to be enforced);
- Legal jurisdictions of maritime waters and seafloors and governance;
- Issues related to transboundary and crossborder aspects;
- Maritime uses and economic domains;
- Key environmental components and dynamics.

A major challenge to MSP is represented by the development and implementation of a plan within a context – the maritime one – where both the economic and environmental dynamics have effects, which are hardly limited within the well-defined legal borders.
A substantial lack of well-defined management and regulatory boundaries is often accompanied by disagreements among involved authorities and stakeholders with respect to the planning decisions. The adoption of transboundary planning in a maritime context implies therefore at least four significant challenges and priorities to be implemented:

1) Integrating MSP in existing (land-based) planning schemes

The inclusion of maritime spaces within existing planning systems constitutes a fundamental challenge both at the governance and at the implementation level. It deals not only with the application of a new tool, i.e. MSP, but also with the adoption of a new perspective in approaching both maritime and land-based planning. The integration of MSP in the existing, land-based, planning schemes requires an extraordinary transboundary cooperation effort: planning schemes and planning management systems largely differ from country to country, especially in jurisdiction. Not only competent authorities for planning operate at different levels, but also the overall management of maritime activities is highly fragmented (within and among countries) in terms of competences fields, spatial jurisdiction and regulatory frameworks. Planners should therefore work to face the relevant bottlenecks related to governance and management fragmentation, and support - through the definition of planning measures – the definition of spatially and sectoral integrated actions.

2) Defining shared management and planning boundaries

Notably, the need to adopt a new, sea-oriented, perspective does not only emerge from the need to comply to specific normative provisions (i.e. to the elaboration of MSP plans within 2021), but it is also related to the necessity to solve both use-use and environment-use conflicts. This need has often emerged at a local/regional scale, and has been raised by stakeholders involved in the use/management of maritime and coastal spaces. The necessity to define, at different scales, planning and management boundaries that are shared by different authorities and involved stakeholders is crucial in order to develop a socially and politically accepted plan.

3) Define boundaries capable of embracing ecosystems dynamics

The previously described ecosystem-based approach to maritime spatial planning requires establishing planning measures that consider the specificity of local ecosystems and environmental components. To pursue this objective, a significant effort is needed to overcome the definition of boundaries established only considering political issues related to competence areas (e.g. national boundaries). The overcoming of a traditional approach to boundary definition should necessarily be based on transboundary cooperation.

4) Knowledge sharing

Finally, the definition of integrated MSP strategies and actions should be based on a complete set of data and information and, in more general terms, on a mix of expert, scientific, operative and local knowledge. Acquiring data and information from different sources (including relevant stakeholders) requires an overcoming of science-policy barriers and the fostering of cross-border cooperation with respect to data acquisition and management.

> *In ADRIPLAN, the definition of boundaries (Figure 1, pag. 13) was carried out following the Initial Assessment phase, where all main MSP-related aspects (legal, planning, uses, environmental) were reviewed. Boundaries took into account specific ADRIPLAN aim and scope, i.e. the definition of boundaries of the Adriatic-Ionian Region and of the two Focus Areas where the analysis and the planning proposal were more detailed.*
> *Boundaries were identified to be representative of areas with exemplar transboundary conditions in the AIR.*

A.4 Carefully review the baseline jurisdictional, planning and permits status

Activities at sea depend on Laws, Plans and Permits. Legal constraints come from:

- UN Convention on the Law of the Sea (1982);
- International and regional agreements;
- EU Community Laws;
- National and regional Laws.

Among the so-called "maritime zones" wherein one or more States may exercise their jurisdiction, the "high seas" include all waters not subject to national jurisdiction. In the high seas, all states enjoy freedoms, which include: (a) freedom of navigation; (b) freedom of overflight; (c) freedom to lay submarine cables and pipelines; (d) freedom to construct artificial islands and other installations; (e) freedom of fishing; (f) freedom of scientific research.
To be effective, maritime spatial plans should be legally binding (Principle 6 of the EC MSP Roadmap; EC, 2008). As recalled in the MSP Directive (2014/89/EU), "Planning of ocean space is the logical advancement and structuring of obligations and of the use of rights granted under UNCLOS and a practical tool in assisting Member States to comply with their obligations".
Directive 2014/89/EU states at art.2 and art.3 that "this Directive shall apply to marine waters of Member States, without prejudice to other Union legislation", whereas "'marine waters' means the waters, the seabed and subsoil as defined in point (1)(a) of Article 3 of Directive 2008/56/EC and coastal waters as defined in point 7 of Article 2 of Directive 2000/60/EC and their seabed and their subsoil".
Therefore, the division of the sea into maritime zones by the UNCLOS will constitute the basis for any MSP activity.
The absence of a general duty to undertake MSP outside EU marine waters and the voluntary nature of this activity, however, does not mean that there are no legal rules that may condition MSP. Rather, there are many legal rules that need to be taken into account when undertaking MSP, at the International and National level. International law of the sea, in fact, regulates the uses of the seas and oceans and provides basic principles concerning, among others, navigation, exploitation of living and non-living resources, protection of the marine environment, the conduct of marine scientific

research and the construction and operation of artificial islands and other man-made structures. Environmental duties are further refined and detailed in a growing number of treaties. All these rules are then incorporated into national domestic legal systems and the EU legal system.
In fact, MSP must address the marine space not falling within national jurisdiction as well, where this is relevant for addressing MSP within national jurisdiction areas; this opens the ground to a relevant and wide discussion on international legal and governance issues. The involvement of international bodies with competence over these areas is essential.
While there is no uniform regulation, EU Member States should interpret and apply existing legislation in accordance with the MSP Directive objectives and requirements.

Working at the AIR scale, ADRIPLAN stressed the need to promote a cross-border / pan-basin approach, not limited to jurisdictional waters, fitted with national / regional constraints and needs. In the short term however, plans will need to limit themselves to areas where coastal States can exercise jurisdiction under current law of the sea rules.
In the long run, legislation should be improved to eliminate the still existing "high seas" areas. In fact, some coastal States have not extended fully their jurisdiction establishing their Exclusive Economic Zones (EEZ) (Albania, Greece, Montenegro and Italy). As a consequence, parts of the Adriatic-Ionian waters still fall under the regime of the high seas, and coastal States do not have any right (or duty) beyond those generally applicable to all states.
In some cases, coastal States have not agreed upon maritime boundaries delimiting their respective maritime entitlements. As a consequence, there are significant areas in which two or more States may advance claims. This is particularly so for Focus area 1, given the present dispute between Croatia and Slovenia on the boundary between the two States. If the dispute is settled, then MSP in the region will need to take the resulting boundary into account.
In some cases, States in the region are bound by different substantial standards relating to activities relevant for MSP. This is primarily due to the fact that not all coastal States are Members of the EU and are therefore not bound by the detailed EU regulations, directives and decisions. While a State cannot be obliged to apply legal rules that do not bind it, there is the necessity to coordinate measures on both sides of the border so as to ensure that measures taken by one State are not undermined by actions undertaken or allowed by the other.
Adriatic-Ionian States are members to a number of global and regional international organisations – such as GFCM, ICCAT, the Barcelona Convention Secretariat– which could provide an appropriate forum, as well as the appropriate institutions and procedures, for the harmonisation of maritime spatial planning, as also prescribed by the MSP Directive (Articles 11 and 12).

A.5 Define a consistent stakeholder involvement plan and map the stakeholders to be involved

Stakeholder involvement is a necessary and critical part of every MSP activity, as widely recognised by the literature and through guidelines and case studies (e.g. Ehler and Douvere, 2009; Schultz-Zehden and Gee, 2013; CZMAI, 2015).
We stress the importance of stakeholder involvement in all phases of the MSP process. However, it can be a time and resource-consuming effort for all parts involved, and it requires a clear commitment and a proactive attitude from public and private stakeholders.
Such effort should be well organised according to a consistent involvement plan, which defines, in line with the specific objectives to be achieved, who should be involved, how the process should develop, which tools should be used and

which resources (not to be underestimated) should be devoted to the activity.
Mapping and categorisation of the stakeholders to be involved is the first and very important step of such activity, driving also significantly the following steps. Although the list of stakeholders should be left open and all stakeholders deserve the same attention, it should be clear that stakeholders can be relevant in different ways according to the different phases of planning process; some stakeholders can play a more important role than the others (we can call them "key stakeholders") in the planning process, because of their role, administrative competence, representativeness, ownership of data, etc. Their proactive involvement will be particularly important for the best results of the project.
In a transboundary context, cultural and communication obstacles are not to be underestimated, starting from languages of communication.

Such recommendation was well considered and implemented in ADRIPLAN, carrying out an involvement process that could be summarised in two main steps: awareness and highlighting of main MSP needs; discussion and advice on planning solutions.
The discussion was mainly developed at Focus Area level, through a number of workshops, local meetings, questionnaires and interviews. From the local / regional scales the input from stakeholders has been aggregated first at Focus Area level and then at AIR level, including the transboundary dimension, using the five pivotal uses as tools to organise and guide the analysis. Such distributed method allowed us to convince more stakeholders to invest their time and money in a single, possibly distant, place and a single moment to participate in the discussion.
From this experience, key aspects that need to be taken into account during next steps of the MSP process are the following:

1. *Cultural: we still need to explain why MSP is needed, how it will add value and why it is worth investing time on.*
2. *Interest / convenience: to gain attention from stakeholders, key stakeholders and from strong economical sectors, in particular, the MSP process needs a recognised mandate and accreditation.*
3. *Methodology: effective involvement is more productive if the discussion is developed around pre-identified / developed draft scenarios and planning measures.*

A.6 Define a reference step-by-step methodology and follow it, with some flexibility

Despite a number of approaches to integrated MSP has been developed, a common methodological framework has not yet been established. Furthermore, only few plans have been implemented, most of all referring to different geographical conditions and socio-economic contexts, so that there is a substantial lack of transferable best-practices to be followed in the development of the different phases which composed the adaptive MSP planning cycle.
A step-by-step methodology is needed (Ehler and Douvere, 2009) as a reference to develop the plan and to obtain harmonised and consistent results among different, possibly adjacent, plans. Nevertheless, a quite high degree of flexibility is required in its application, taking into account the characteristics of the study area (i.e. the specificity of local economic and ecological dynamics) and the need to use a target-oriented approach (Schultz-Zehden and Gee, 2013), which can influence the importance of the different steps and the spatial scales.
What is actually important is that the full planning cycle is covered, although

with different intensities and effort, and that basic elements are present (i.e. data gathering and evaluation, integrated assessment, stakeholder involvement, analysis of the compatibility among uses, analysis of impacts on ecosystems, etc.).

The ADRIPLAN methodology (Gissi and Musco, 2015) (Figure 2, pag. 14) is based on a consistent step-by-step approach, and proved to be effective in developing the Pilot Study and accomplishing the main project results.
We suggest following the same kind of methodology for further developments on MSP in the AIR, customising and tailoring it on specific contexts and objectives (i.e. use of specific tools to address and evaluate sectorial needs or local aspects).

A.7 Use the best available knowledge and address knowledge gaps with specific actions

MSP needs a continuous science-policy dialogue and promotes scientific networking and clustering. Only the use of best available knowledge can bring to a transparent, robust and adaptive ecosystem-based management.
Bridging science-policy interface is a challenge, which entails the issue of operationalisation between analytical thinking and strategic thinking.
Collaboration between scientists involved in the analysis with decision makers and planning team is a main issue. Such collaboration and exchange of knowledge should occur at a level of interdependency (Costandriopoulos et al., 2010; Cvitanovic et al., 2015), recognising that all participants in knowledge exchange, be they producers, users or intermediaries, have their own experiential knowledge that can contribute to a successful process.
Today planners, who traditionally dealt with the transformation of cities, territories, environments and related issues, must face new marine challenges, and therefore play a fundamental role. Though for years the planning system has 'turned its back to the sea' it is pivotal in organising and developing coastal areas beyond the ICM approach. The sea is affected by economic, social and environmental changes and, in order to cope with the continuing social and economic evolution, it needs to be included in planning and land management strategies.
Knowledge is needed in MSP as:

- Conceptual and methodological approaches;
- Knowledge of system functioning at different spatial scales and with time;
- Data and tools to support decisions.

Several research agendas (e.g. JPI-Oceans, 2015; BLUEMED, 2015, SEAS-ERA, 2013) are addressing the issue of the contribution from R&I to MSP in the Mediterranean area and elsewhere.
The evaluation of cumulative impacts in the complex Mediterranean ecosystem requires a peculiar effort. Some information gaps on both pressures (e.g. underwater noise, alien species, emerging chemical, marine litter) and ecological responses (e.g. non linear response to pressures and resilience, adaptation to climate changes) should be filled in, considering also the ongoing MSFD implementation process.
The planning tools, linked to the socio-economic analysis, including a full evaluation of ecosystem services, should be further developed and the integration between "planners" and "marine scientists" further promoted, via concrete projects.

ADRIPLAN recommends working on the following main knowledge gaps to support MSP implementation in the AIR:

- *Environmental impacts from maritime traffic (e.g. underwater noise, release of pollutants in the water environment from port infrastructure and ships, alien and harmful species from ballast water) and mitigation measures;*
- *A more robust and site-specific evaluation of cumulative impacts on ecosystems from natural and anthropogenic pressures;*
- *Multidisciplinary science to elaborate a climate change adaptation plan of coastal areas at basin / sub-basin scale, taking into account, with a strategic view, all aspects influencing protection and risk and its interference with coastal and marine uses;*
- *Ecological coherence of protected areas at basin / sub-basin scale, to be achieved through the proper establishment of networks of MPAs and a better management of potential conflicting uses;*
- *Co-evolution of natural systems and anthropogenic activities under climate change, to address planning solutions in the medium-long term;*
- *Impacts of oil & gas search activities on cetaceans, sea turtles and other sensitive species.*

A.8 Analyze and define data and information which are really relevant for MSP and for specific objectives to be accomplished

Data are usually not the main limiting factor but are for sure a key enabling factor for a quantitative, conscious (incl. knowledge gaps), transparent MSP process and for MSP implementation and monitoring in time.
This is well recognised also in the MSP Directive ("*Member States shall organise the use of the best available data, and decide how to organise the sharing of information, necessary for maritime spatial plans*") and in the MSP Support Implementation Strategy (DG Mare, 2015) ("*Marine data must be made more easily usable for planners and a focus should be developed on spatial needs and spatial impacts*").
Aspects of data relevance for MSP include: types of data needed; data mining; data accessibility; availability of tools to manage, integrate, visualise, process data; responsible use of data.
However, there is a great danger of getting entangled in data collection and data constraints, far beyond the actual need of those data. Therefore, emphasis should be placed on the kind of information, which is essential for the kind of planning that is being undertaken.
Data and information to be collected should be defined as much as possible from the beginning in terms of:

- Data / information typologies;
- Actual data / information availability and accessibility;
- Metadata;
- Spatial resolution;
- Ancillary not spatially based data needed or recommended;
- Expected use of the data;
- Ranking of priority in data collection.

An iterative process should be applied instead than a linear one: data collection will be further improved and refined in recursive steps, according to the actual needs of the analysis/planning/monitoring process.

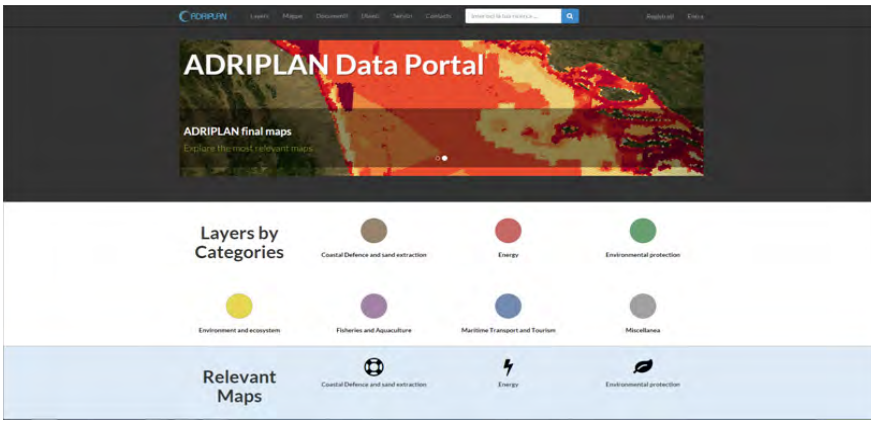
ADRIPLAN tried to follow this pathway, preparing at the beginning of the project some questionnaires to identify data availability and identifying a number of "priority maps" to be produced on uses and environmental components, in connection with the definition of the methodology for MSP in the AIR.
As a matter of fact, a great amount of time has been invested in collecting data that have not been used directly within the project, but on the other hand will remain available for further developments and MSP implementation steps through the ADRIPLAN Portal. On the contrary, the project suffered from difficulties in collecting necessary data such as the environmental components and the socio-economic data, as well as data, which are not collected yet, such as the distribution of dolphins in the Adriatic.
A complete and predefined step-by-step methodology will significantly help in addressing the best approach for data mining and data collection.

A.9 Define how to manage data, specifying management tools, procedures, ownership

Depending on project objectives (see par.A.1), data management and data management tools can be more or less important and will require different solutions. The existence of tools already available can significantly facilitate the work. This includes not only basic tools to manage spatial data but also tools to carry out specific MSP-oriented analysis (see for example: Stelzenmuller et al., 2012; Center for Oceans Solutions, 2011; *https://publicwiki.deltares.nl/display/MESMA/Home; https://ebmtoolsdatabase.org/*).

Within ADRIPLAN, the need of collecting and making available MSP data, providing the maximum level of sharing and dissemination of data and products within and from ADRIPLAN has lead to the realisation of the ADRIPLAN Data Portal (data.adriplan.eu; Figure 25). The Portal was conceived not only to support the activities throughout the duration of the project, but also for possible future use within the Adriatic-Ionian Region.
In fact, we suggest to continue using and developing the ADRIPLAN Data Portal, in order to create a EUSAIR permanent ICM-MSP oriented Spatial Data Infrastructure, based on Open Data policies and enhanced co-operation at sea basin level. ADRIPLAN Data Portal can contribute to this goal with its features and peculiarities:

- *Integration among database, Web-GIS and customised processing tools;*
- *Site-specific and dynamic (high resolution, multiple sources, that is actually available);*
- *Collaborative use (i.e. upload of data and metadata, interactive data processing and map production, potential collaborative development).*



25. Home page of the ADRIPLAN Data Portal

A.10 Carry out a risk analysis, i.e. where the process risks to fail and which are key enabling factors

A careful risk management approach needs to be adopted in order to anticipate, manage and solve difficulties during the development of the project. Potential and quite common risks, usually amplified in transboundary contexts, include:

- Data gaps and difficulties in acquiring data needed to develop the assessment and the analysis;
- Poor participation of Stakeholders;
- Difficulties in building a reasonable consensus on management objectives, proposed planning approaches and recommendations, limiting their implementation potential.

The analysis of the difficulties and bottlenecks in the implementation of the MSP plan is a matter that will be treated while discussing and addressing the issue of implementation and monitoring (par. D).

B. Analysis and interpretation phase

B.1 Carry out a MSP-oriented Initial Assessment that considers all aspects influencing the analysis and the following planning phase

Several activities from the preparatory phase address and converge in the preparation of the Initial Assessment that sets the scene, reviewing all aspects that should be considered in developing the MSP plan:

- Policy and legal framework;
- Planning systems;
- Governance;
- Maritime uses and their connection with socio-economy and environment;
- Environmental status.

Main outcomes of this activity, which should not have the ambition to be exhaustive and anticipate the results of further steps of the methodology, should be:

- Define data availability, start data recollection and understand how to have access to the most relevant data (see par. A.8);
- Identify main knowledge gaps and understand how to deal with them (see par. A.7);
- Review, refine and finally establish boundaries (see par. A.3);
- Address the analysis on maritime uses and their relationship with environmental components (see par. B.4 and B.5);
- Address more precisely MSP needs, priorities and management objective in the area (see par. A.1);
- Inform the stakeholder involvement process (see par.A.5).

In order to achieve the goal of a long-term sustainable development, an integrated maritime spatial plan should include a comparison of ecologically relevant information with existing environmental pressures and the impact of the human activities in order to assess the sum of impacts on the marine ecosystem, preferably quantitatively. The EU Member States have been required to prepare such assessments through the implementation of the

EU Marine Strategy Framework Directive (MSFD) (art. 8.b, annex III) " – an analysis of the predominant pressures and impacts, including human activity, on the characteristics and environmental status of those waters...". This will facilitate to establish the necessary connection between MSP and MSFD Directives, which is the reference for implementing the Ecosystem-Based Management approach in the marine waters of Member States. The status of the marine environment and the analysis of the anthropogenic pressures should then be carried out as much as possible according to the criteria indicated by MSFD. Same criteria should be used in principle in the definition of planning scenarios and measures. Ideally, this should also guarantee the best matching between the MSP plan and the Programme of Measures of MSFD, due in its first version in 2015.

Key results from the ADRIPLAN Initial Assessment are presented briefly in this report under chapter 3 and in details in the ADRIPLAN Report AIP-1.2-1.1 – Initial Assessment (Mosetti and Lipizer, 2014).

B.2 Take into account future evolution and developments

The construction of a realistic scenario on a 5 to 10 years perspective is needed in order to set the scene for the definition of planning strategies and actions coherently with the likely future development of the planning area. Such scenario is explorative for possible future conditions, should explore possible emerging drivers of change, in relation to raising conflicts and synergies between maritime uses, as well as in relation to emerging pressures and impacts to the environment.
Future conditions in the area depend on:

- Ongoing actions, that have usually a widely differentiated status of advancement (e.g. port developments, new pipelines or cables, new wind farms, new protected areas, etc.);
- Probable/expected changes, due to political and socio-economic cycles and developments (e.g. new countries joining the EU, adoption of new legal/regulatory global economical cycles and trends affecting the maritime economy, etc.);
- The co-occurrence of natural (direct and indirect climate change effects in the area are expected to be relevant) and anthropogenic changes;
- The implementation of structural (e.g. new infrastructures, use on new technologies, etc.) and non-structural measures (e.g. implementation of environmental policies and other sectoral policies, best management practices, monitoring activities, adaptive management practices, etc.) within general and/or sectoral plans.

The important role of climate change, well known and recently reconfirmed by Halpern et al. (2015), which showed how climate change stressors drove most of the increase in cumulative impacts in world's oceans in the period 2008-2013, recommends to establish a strong linkage between MSP implementation and EU / national climate adaptation strategies and measures.
The MSP plan and all related actions and studies should take these scenarios into account, from the basic consideration of their high intrinsic uncertainty. Such uncertainty needs to be addressed through a structured adaptive management process. Or course, the MSP plan can also intervene to build and influence these future scenarios (e.g. CZMAI, 2015), supporting the process toward a clearer vision for the area and its practical implementation.

ADRIPLAN analysed this issue in detail (see for example Figure 21), trying to produce maps of uses at year 2020 for the so-called pivotal uses. During this phase, an important role was played by the Institutional Partners of ADRIPLAN and by all the stakeholders contacted. A significant number of actions cannot be presently translated in or represented on maps, since they are still too undetermined or produce an effect, which is not directly spatially based. However, those actions can be very relevant and have been taken into account as such in the interpretation phase and have been used in particular to produce the maps of foreseen conflicts among uses and foreseen cumulative impacts. As a result, we do not pretend to be precise at local scale, apart from some limited areas, but consider to have grasped all major potential trends and developments at AIR and Focus Area scale:

- *Increase in maritime traffic, mostly in Focus Area 1;*
- *Increase in coastal and maritime tourism in the whole AIR;*
- *Development of the oil & gas industry;*
- *Measures to adapt to climate change in coastal areas, varying depending on coastal morphology and use (this theme can be further investigated in relation to land-sea interactions).*

B.3 Produce maps of all primary uses of the sea and all key descriptors of the ecosystems and of the environmental status

The maps of the uses of the sea and of the main environmental components are the bricks of MSP. Those maps summarise a number of key elements, while other aspects and information are behind the maps, and must be considered in detail during the analysis and the planning process, de-

As already mentioned in par. A.9, in ADRIPLAN we developed a Data Portal to support the MSP exercise, which aims at remaining and growing as a useful tool for MSP implementation in the AIR. The Data Portal has indeed the purpose to grow as a tool to produce maps for scenario planning (on the example of SeaSketch tools, see http://seasketch.org*). On the basis of Data Portal information and tools, ADRIPLAN intends to provide maps that effectively "communicate the plan and the research" to stakeholders (on the example of Plan Bothnia, see* http://planbothnia.org*). In order to achieve this goal, the collaboration between Data Portal experts and planning and visual communication experts, is necessary. Data related to the eastern Adriatic are less homogeneous and more difficult to collect than the Italian ones; this is particularly true for data from Albania and Montenegro, due to the fact that ADRIPLAN doesn't have specific partners from these areas. Albania and Montenegro have been anyway involved in the project as observers and their representatives participated in some workshops organised by the project.*
The Ionian region south of the Focus Area 2 is another area where data were more difficult to be gathered. This is due to the fact that Calabria and Sicily regions were not partners in the project and also that this area has been less intensively studied compared to the Adriatic Sea. Despite these difficulties, ADRIPLAN had all priority maps described at the whole Adriatic-Ionian Region scale, allowing a more detailed analysis at the two Focus Areas.
MSP in the AIR is driven by many uses, needs and perspectives. Developing and implementing MSP requires a proper balancing in space, intensity and ways of deployment, taking into account their environmental pressure and their socio-economic relevance. The individuation of "pivotal uses" helped us to address the analysis and planning at basin / sub-basin scale and define planning actions at local scale. Maps of some pivotal uses and of their connection with the environmental conditions have been already presented and discussed in chapter 3 and can be accessed through the Portal.

pending also on the objective of the study (see again par. A.1).
The correct interpretation of maps is also very important, with the assistance of complete metadata and taking carefully into account missing data and information.
Harmonisation of formats according to EU and other international standards and interoperability among databases play a crucial role, especially when operating at transboundary scale (see for example Figure 26), not only to build the first picture of the area under study, but, even more important, to have the possibility to maintain, improve and update it.

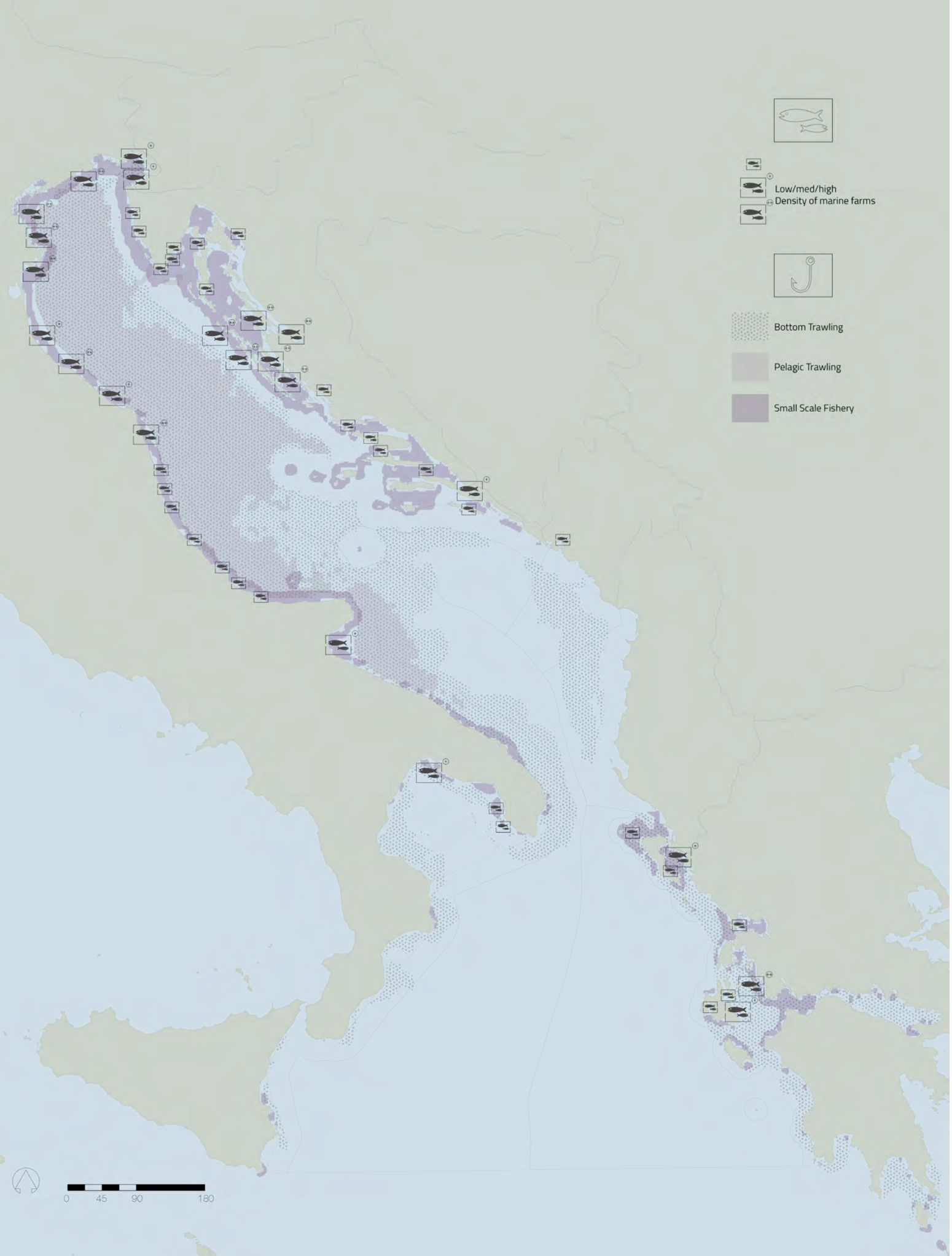
B.4 Find a consistent, transparent and effective method to analyse conflicts and synergies among uses

The analysis of overlapping maritime activities aims at identifying areas characterised by a high intensity of uses.
The analysis should be able to identify areas where the overlapping occurs, to characterise different typologies of overlapping, as competition for space in time, and to produce a quali-quantitative ranking of conflicts and synergies.
Such analysis should produce both aggregated (at basin/sub-scale) and medium-high resolution (1–10 km scale) indications.
The use of standardised and "objective" semi-quantitative methods, more or less refined, requires to be unavoidably complemented by stakeholders' indications and expert judgment, to produce the final maps, with aggregated and interpreted information.

ADRIPLAN used for this analysis the methodology developed in the EU-FP7 Project COEXIST, and particularly the spatially explicit version of the method (GRID – Gramolini et al., 2013).
Such quantitative analysis has been then further processed and integrated in the maps of "Synergies and Conflicts" for the five Pivotal Uses, adding stakeholder indications and expert judgment evaluations. Expert judgment allows to also take into account where missing data are influencing the results of the analysis.
The methodology needs to be further refined, including more data and more explicitly taking into account missing data, better understanding the sensitivity to attributes and grid cell resolution, and taking into account the intensity of the uses (i.e. intensity of maritime traffic or of fishing activity), which can be very relevant for addressing planning proposals.
The tool to calculate conflict scores is being made directly available through the ADRIPLAN Portal and is dynamically connected to the data layers of the Portal, allowing the user to develop his own customised simulations (on selected areas, selected uses, different spatial resolutions).

B.5 Analyse qualitatively and quantitatively single and cumulative impacts of pressures from uses of the sea, in a transparent and standardized way

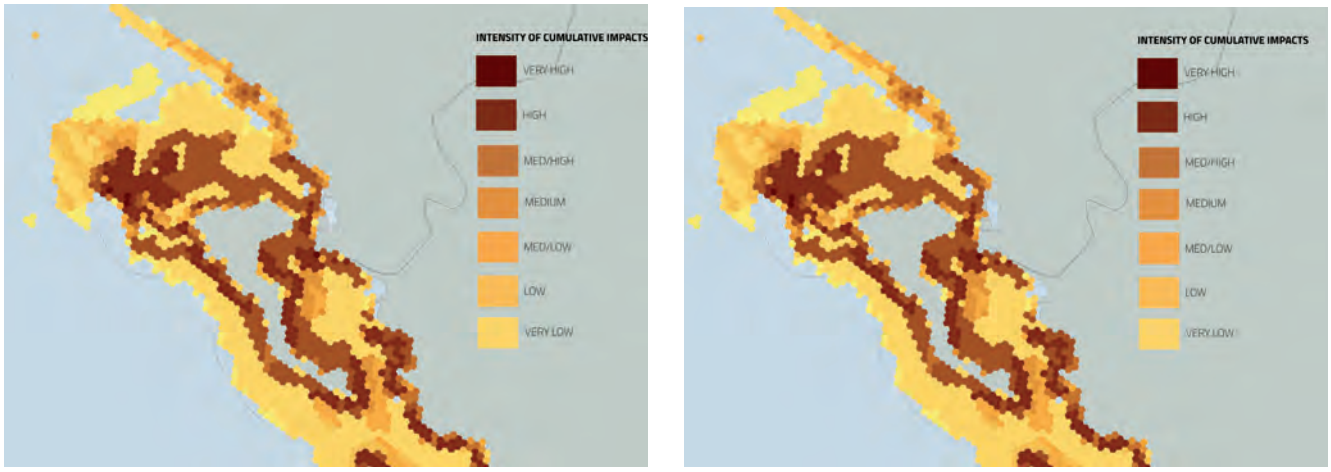
One of the key steps of the so-called Ecosystem-Based Management approach is the evaluation of impacts from anthropogenic pressures, one to one and in a cumulative and ecosystems-oriented way.
The Initial Assessment (see par. B.1) should allow a site-specific compilation of potential pressures and impacts from marine uses (ref. to table 2 – Annex III of MSFD) and their relations with environmental status descriptors (see Gissi, E., Musco, F., 2015. ADRIPLAN Report: AIP-3.1-1.0 – Report on methodology for MSP).



26. Map of fisheries and aquaculture use of the AIR, integrating data obtained from different sources and through different methodologies, coming from different countries.

Following this step, a more quantitative evaluation of cumulative impacts using the method proposed by Halpern et al. (2007) and adopted with modifications by several authors (e.g. Micheli et al., 2013; Korpinen et al., 2012; Andersen et al., 2013) should be carried out.
The method presents a number of significant advantages, but also contains several limitations, that are well summarised in Halpern & Fujita (2013): e.g. relative importance of stressor layers, linear response of ecosystems to stressors and resilience, accuracy of sensitivity weights; additive model, historical impacts and current temporal dynamics, 3D, relationship between uses (drivers) and pressures (stressors), connecting to ecosystem services.
Also data gaps on uses and on ecosystems distribution can significantly affect the results at local scale.
For these reasons, once main impacts and impacted areas have been identified, a more precise analysis should be carried out to address planning measures, using specific tools that depend on the subject and the cause-effect relationship to be assessed (models, measures and experiments, expert judgment, etc.).
Carrying out this step of the methodology, it is important to properly take into account also pressures that originate on land, up to the watershed scale, where necessary.
The correct evaluation of land-sea interaction, i.e. how land-based and marine-based activities interact each other and influence the marine environment, is explicitly required from the MSP Directive.

In ADRIPLAN we applied the Halpern-based method, producing cumulative impact maps, as described in chapter 3, for the present and foreseen scenario at 2020 (see for example Figure 27). The results obtained are preliminary and need to be further developed and refined (e.g. more robust estimation of sensitivity of environmental components to pressures due to marine uses; area affected by the use and its pressure; effects of missing data; linear and additive model for pressure-effect relationship), mainly in some areas and on some uses, to address at best planning activities. In particular, pressures originated by terrestrially-based drivers need to be explicitly included into the analysis.
Similarly to the tool for evaluating conflicts and synergies, the tool for calculating cumulative impacts is being made available on the ADRIPLAN Portal for diffused and customised use.



27. Map of the Greek part of FA2, showing the results of cumulative impact assessments in 2014 (left) and 2020 (right).

C. Planning phase

C.1 Define and declare Vision and Management Objectives

MSP is just a tool to give reality to a (common) vision of our sea.
The objectives of MSP shall address all of the three major dimensions of sustainability: environmental/ecological, economic, and social/cultural and in general do not differ from the objectives of Ecosystem Based Management.
Before defining goals and objectives for planning the marine space, we need to build and declare a Vision for our planning area. This has to do not only with environmental objectives, but also and mostly with the dynamics of the socio-economic environment, and is clearly projected towards the future. Building a Vision can also require to build and explore different scenarios for your planning area, to make clearer potential alternatives and their consequences (see, for example: Maes et al., 2005; CZMAI, 2015).
The need to formulate clear objectives from the early stages of planning is critical, as the remaining process, from data collection, to decision support, to stakeholder involvement, depends on clarity of purpose (Ehler and Douvere, 2009; Collie et al., 2013; NOAA, 2011; Katsanevakis et al., 2011; Gleason et al., 2010; Stelzenmüller et al., 2013).
The review from 17 coastal and marine spatial plans presented in NOAA, 2011 and Collie et al., 2013 showed that the majority of plans considered started with largely conceptual objectives (e.g., conserve diversity, sustain fisheries). During the planning process, in several cases these objectives were made more operational and spatially explicit, often with the help of an independent panel of experts. This analysis reveals how the development of increasingly operational objectives, spatially based, with indicators and reference levels, is a critical part of the planning process and fundamental to identify outcomes and trade-offs, although very often only partially accomplished.
To be effective and useful for evaluating the management performance of spatially managed areas, operational objectives need to be SMART (ICES, 2005; Katsanevakis et al., 2011): Specific; Measurable; Achievable; Realistic; Time bound.
It is quite clear the very important role of stakeholders in defining vision and management objectives and building consensus around them, especially if operating in a transboundary context.

Luckily, defining a common Vision to address MSP in the Adriatic-Ionian Region is today a relatively easy task, at least as far as the meso and large-scale is concerned. In fact, this Vision is reflected in the process and the documents that are progressively giving structure and life to the Adriatic-Ionian Region and its Strategy (EUSAIR), starting from the Action Plan adopted in 2014 (EC, 2014,a; EC, 2014b).
The Vision at the base of the ADRIPLAN MSP analysis and proposal is derived directly from the EUSAIR Plan and the directly related documents. Ecosystem Based Management (EBM) is a crosscutting issue for all high-level and operational objectives, according to WFD, MSFD and MSP Directive. A number of sectoral and local studies and the results of activities specifically developed in ADRIPLAN (i.e. the Initial Assessment, the Questionnaires and Stakeholder Workshops and related involvement activities) have all been considered to elaborate within the Project spatially based proposals at different scales.

C.2 Look for spatial efficiency and co-use, using approaches as much as possible transparent and quantitative, including a comparison among alternatives and a cost-benefit evaluation

MSP proposals should look for the maximum co-use of marine areas, defining areas of no-use or single sector use only when strictly needed. The process to define and regulate such co-use should be transparent and robust, i.e. based as much as possible on:

- Strong stakeholder engagement;
- Reliable spatial data:
- Multidisciplinary scientific involvement;
- Quantitative analysis, including accounting of ecosystem services and cost-benefit analysis comparing alternatives.

To support this effort and the related decision-making a number of tools are available from the literature and from the market (e.g. Centers for Oceans Solutions, 2011). Tools for "Alternative scenario development and analysis" (e.g. MIMES, InVEST, MARXAN) are at this regard particularly useful and should be encouraged.

The preliminary regional strategy for the Adriatic Ionian Region and the examples of pilot actions on Focus Area 1 and Focus Area 2 presented in chapter 4 of this report are based on the spatial efficiency and co-use principle.
ADRIPLAN has also developed a Maritime Socioeconomic Index (MSI), which reflects the significance of each use to the Blue Economy analysing them in terms of their socio-economic value, intensity and flows. The conceptual assessment model can be adapted according to the availability of data and possible spatial and temporal constraints.
Local and sectoral examples of co-use from ADRIPLAN are: positive feedbacks of MPAs, and protected areas in general, on surrounding fishing grounds and fishing activities; co-use of areas for small-scale fisheries and recreational fishery / eco-tourism / coastal tourism; potential synergies between offshore wind farms and MPAs; harmonised space allocation for cruise traffic routes and coastal tourism (cultural, beaches and resorts, etc.).

C.3 Combine Maritime Spatial Planning and Integrated Coastal Management

The MSP Directive states at "art.7 – Land-Sea Interactions", that in order to take into account land-sea interactions, should this not form part of the maritime spatial planning process as such, Member States may use other formal or informal processes, such as integrated coastal management. Member States shall aim through maritime spatial planning to promote coherence of the resulting maritime spatial plan or plans with other relevant processes.
The implementation of ICZM Protocol under the Barcelona Convention (art.18) also stresses to develop joint / harmonised ICZM/MSP strategies and plans, following the ECAP approach.
It is quite evident that on the one hand, no MSP could be implemented without taking into account the possible ICZM plans that fall under the marine area under regulation and, on the other hand, no ICZM plan can be effective if its impact on the marine uses of the area is not pre-evaluated (see, for example,

Activity	Type	
	Maritime	Coastal
A. Direct socio-economic impact		
Fishing	+	+
Aquaculture	+	
Water Transport	+	
Port services		+
Recreation	+	+
Housing		+
Sand and Gravel Extraction	+	+
Hydrocarbons Search and Extraction	+	
Dredging and Disposal	+	
Renewable Energy Production	+	
Cables and Pipelines	+	
Agriculture		+
Industry		+
Desalination		+
B. Indirect socio-economic impact		
Marine Protected Areas	+	+
Military Zones	+	+
Site of Conservation Interest	+	+

28. Human activities with socio-economic impact (Colgan, 2003; Ehler and Douvere, 2009; Cocossis et al., 2015).

CZMAI, 2015, for an integrated analysis of coastal and marine uses, conflicts, risks, impacts, and a related development of joint planning scenarios). A project should then aim at a good scientific understanding not only of the ecological features of the study areas but also the identification of socio-economic, cultural linkages and connectivity between ecosystems and human activities in the coastal and marine area. More precisely, Figure 28 presents the most frequent uses developed within the implementation area of MSP and ICZM. As can be seen from this table, there are several uses developed in both marine waters and coasts such as fisheries and recreation. Additionally, uses like maritime transport and port services are tightly connected and consequently examining each use separately cannot lead to effective results.

The challenge in coupling/harmonising ICZM and MSP mainly depends on the different rules, competences and motivations determining spatial planning on land, not always easily integrable and reconcilable with what is happening at sea (for example, reduction of pollution loads, urbanisation of the coast, new infrastructures and industrial areas, etc.).

In terms of implementation, so far MSP and ICZM have been different, with ICZM obtaining a more informal and flexible character and MSP, aiming at the development of spatial plans with specific actions, being more legally binding. However, some countries have developed more legally binding approached for ICZM as opposed to MSP mostly due to the lack of clear Exclusive Economic Zones. Therefore, it is evident that the differences of the definitions of ICZM and MSP have led to different interpretations of their implementation and incorporation in national policies and legislation systems. This heterogeneity of ICZM implementation across Europe, even among Member States, creates barriers in using ICZM as tool for enhancing land-sea integration of planning systems (Smith et al, 2011).

ICZM and MSP as complementary tools could serve country specific needs (MSP) as well as more local specificities (ICZM). However, this can only be achieved through successful governance structures that enable the full engagement of relevant coastal and maritime stakeholders (COREPOINT

project, 2008).
A further key aspect is the capacity building required for planning professionals to develop legal, cultural and geographical knowledge of each other's' backgrounds and different interests and targets. Even for cases where there is a clear guidance for integration between coastal management and land use planning, research has revealed an inadequate integration of planning efforts mostly due to different perspectives and technical knowledge as well as significant time and resource constraints (Smith et al, 2011).
Common minimum requirements for maritime spatial plans and integrated coastal management strategies are:

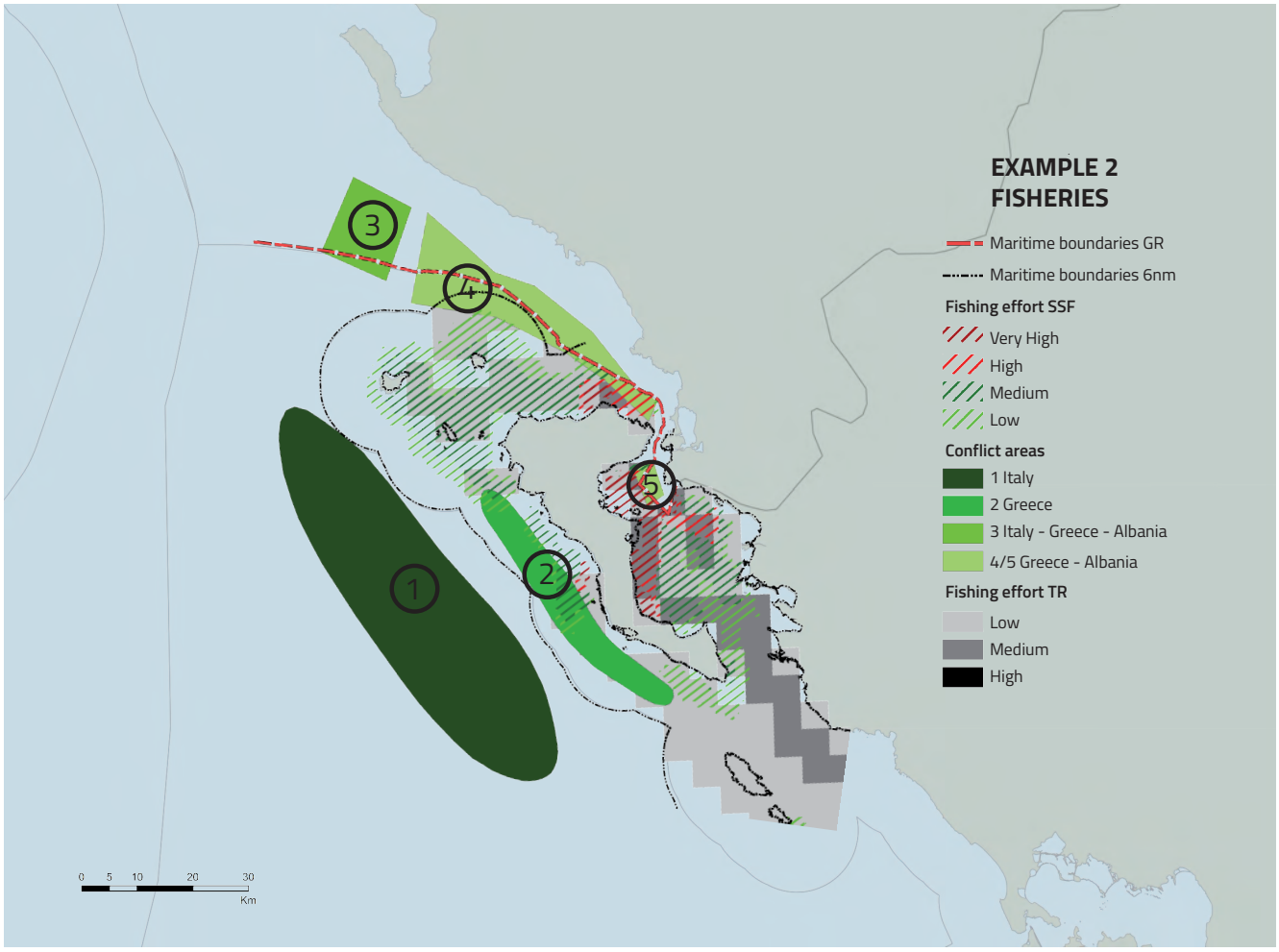
1. Maritime spatial plans and integrated coastal management strategies shall establish operational steps to achieve the objectives as set out in Article 5 of the Directive 2014/89/EU, taking into account all relevant activities and measures applicable to them.
2. In doing so, maritime spatial plans and integrated coastal management strategies shall, at least:
   (a) be mutually coordinated, provided they are not integrated;
   (b) ensure effective trans-boundary cooperation between Member States, and between national authorities and stakeholders of the relevant sector policies;
   (c) identify the trans-boundary effects of maritime spatial plans and integrated coastal management strategies on the marine waters and coastal zones under the sovereignty or jurisdiction of third countries in the same marine region or sub-region and related coastal zones and deal with them in cooperation with the competent authorities of these countries in accordance with Articles 12 and 13;
3. Maritime spatial plans and integrated coastal management strategies shall be reviewed in a coordinated way at least every 6 years.

The connection between ICZM and MSP appears to be particularly important in a semi-enclosed basin such as the Adriatic-Ionian Sea, where there is a direct and strong connection between on-shore and marine-based activities and where on-shore activities greatly influence marine environment and ecosystems.
Some examples of potential conflicts can be found, according to ADRIPLAN results, between traditional uses (such as shipping, oil exploration and fishing) and other activities (such as tourism/recreational uses, aquaculture and, in particular, offshore renewable energy) as well as coastal and marine environment protection (including marine protected areas, in addition to the already existing marine and coastal Natura 2000 sites).
ADRIPLAN has been in line with the Barcelona Convention, its Protocol on Integrated Coastal Zone Management and its objectives including the sustainable management and use of coastal zones, ecosystem conservation, reduction of the effects of natural hazards and in particular climate change and coordination and coherence among all authorities exercising their powers in the coastal and maritime zone. Moreover, ADRIPLAN has supported Article 17 of the Protocol for the promotion of a common regional framework which will integrate the application in the coastal zones of individual thematic concepts and approaches such as the ecosystem approach, spatial planning of land and marine areas, economic development, biodiversity, climate change etc.

C.4 Identify and specifically address transboundary MSP issues

MSP can be, and usually is, a mixture of transboundary and local issues. From the assessment and analysis phase one should have understood how much and where problems to be tackled have a transboundary nature or component.

Besides an overall evaluation and specification of the transboundary MSP context and of the sectors having in their nature mostly a transboundary dimension (maritime traffic, coordination between fishing fleets (see example in Figure 29), oil and gas search & exploitation, aquaculture between Greece and Albania, energy cables connecting western and eastern border of the basin), ADRIPLAN identified and qualified within the AIR seven areas where transboundary aspects are particularly relevant (see chapter 4).
Building on existing mechanisms for cooperation at transboundary level should be perceived in the AIR. In fact, transboundary actions in the AIR can be facilitated by the EUSAIR process and by the existing International Commissions, Organisations and Fora (e.g. The Trilateral Commission for the protection of the Adriatic, the Adriatic-Ionian Euroregion (AIE), the Adriatic Ionian Initiative (AII), MEDPAN, GFCM, UNEP/MAP).
Whatever the responsibility distribution between national Ministries will be for the implementation of MSP Directive, local Administrations, Regions in particular, should be fully and actively involved in the MSP process, for land planning (ICM) connections, data collection and stakeholders mobilisation.



29. Example of need for coordinated fisheries. The map indicates areas where the Greek fishing fleet operates within the Greek territorial waters (grey-gradient for trawlers and lined areas for small-scale fisheries). Five areas (in green), indicated by Greek stakeholders of the fishery sector as areas where vessels of the three neighboring countries compete for shared resources, are outlined.

During the planning phase, scenarios and proposals should be elaborated, taking into account the specific problems faced, the socio-economic framework and national interests to be reconciled in common interests, the legislative and governance framework, the stakeholders view. While such scenarios are agreed, they could be then developed and accomplished through a single initiative or a combination of harmonised initiatives, at international, national and regional level. Within a recognised and well-defined transboundary scenario, also local/regional plans and actions can become more effective and concrete.
While solving problems among uses at sea and safeguarding marine ecosystems, MSP can be a vehicle to promote transnational cooperation.

D. Evaluation, monitoring and adaptive planning and management phase

D.1 Design an evaluation process and define a pool of representative criteria and indicators

MSP is a continuing adaptive process that should include performance monitoring and evaluation as essential elements of the overall management

ADRIPLAN defined a proposal of criteria and indicators to be used for monitoring MSP implementation. The criteria are: effectiveness (in terms of process and objectives); efficiency (adequacy of the human, financial, technical, institutional resources); inclusiveness (involvement of relevant stakeholders); transparency (accountability and dissemination of each phase all the stakeholders involved), while the proposed indicators will refer to three types (Gissi, E., Musco, F., 2015. ADRIPLAN Report: AIP-3.1-1.0 – Report on methodology for MSP):

- *State indicators: connected to the state of system, they assess general state conditions and trends;*
- *Process indicators: they assess how well each phase of the process is run, evaluating its capacity to achieve the operational objectives set for each phase;*
- *Performance indicators: they measure how well a project/action/measure is accomplishing their intended result, by comparing to the results obtained in the previous situation (Ehler, 2014).*

These types of indicators cover also social, economic, environmental and governance aspects, incorporating, thus, an integrated and sustainable approach during the evaluation process, ranging from quantitative to qualitative indicators. The proposed indicators are organised according to six main sets (ADRIPLAN Report AIP-1.4.1-1.0 – Monitoring & Evaluation Process: Review of Assessment Practice and Needs (Papatheochari & Coccossis, 2014). These are:

- ***Integration** referring to the thematic (social, economic, environmental) and geographic (spatial coverage, land and sea interface) integration of the MSP implementation;*
- ***Setting of objectives** by re-confirming that implementation objectives are well specified and updated;*
- ***Governance** referring to transboundary issues, governance structures for enhancing coordinated actions among the countries of the macro-region, engaging relevant stakeholders, ensuring dissemination and awareness raising;*
- ***Setting of actions** relating to the achievement of the proposed implementation actions and the mechanisms put in place to ensure their implementation, as well as their estimated short-term and long-term impacts.*
- ***Adaptation** referring to the foreseen monitoring and evaluation processes set during the implementation procedure, including the review of the proposed time frame, alternative scenarios, actions and evaluation team.*
- ***Data** relating to the overall data management and availability, including quality, timeliness and accessibility.*

process (Ehler, 2014). The evaluation should start actually from the evaluation of the plan-making process and doing so should bring benefits to the improvement of the plan and to other planning initiatives.
The evaluation of plan implementation should be based on standard schemes but should be also customised on specific characteristics of the study area and of key planning measures. It should aim at monitoring main performance indicators and expected barriers and bottlenecks. Criteria and indicators should cover environmental, socio-economic and institutional aspects. Transboundary aspects deserve specific monitoring activities and indicators.
The monitoring implementation plan should be strongly linked and fully coherent with the monitoring plan required by the Strategic Environmental Assessment to be carried out on the proposed plans. The choice on who should manage the planning evaluation process may be a critical one, in order to guarantee an effective monitoring and, even more important, a direct link towards adaptive management. Adequate financial resources should be devoted to carry out such monitoring activities, which can result in significant added value in addressing the use of resources and the choices on best governance schemes.

D.2 Communicate monitoring results and valorize best practices and success case studies

Transparency on the implementation of MSP, including all the preparatory phases, is mandatory for an efficient process and for building trust among administrations and stakeholders. This is in line also with the rationale of "art. 9 - Public participation" of the MSP Directive. Stakeholder involvement should also be put in place throughout the whole monitoring and evaluation process in order to ensure accountability, credibility and transparency of the performance evaluation results. Stakeholders could act as an essential support providing conflict solution alternatives when setting an evaluation procedure, selecting and guiding the evaluating team, selecting the system of the evaluation indicators; review the evaluation results and more importantly disseminating the evaluation process and results. In particular, all those that participated in developing the planning process and that have competences on its implementation should be updated on what's going on and if and where there are needs for adaptation and improvements. Within this communication process, a specific and not secondary attention should be given to presenting ongoing best practices and success case studies. Still, there is the need to show concrete added value that can be obtained through proper implementation of transboundary MSP.

A number of important ongoing best practices and experiences on MSP/ICM can be identified in the AIR area, to be linked and capitalized within the future MSP process. Those practices regard mainly:

- *ICZM and sectoral planning, mainly at regional scale, with their related SEAs;*
- *Activities related to EU policy implementation (WFD, MSFD, H&B Directives, Floods Directive, etc.);*
- *Local or medium-scale projects and plan, with their related Environmental Impact Assessments and Strategic Environmental Assessments;*
- *Pilot projects within national and transnational cooperation projects (e.g. SHAPE);*
- *Structured and permanent/semi-permanent forum and networks, with particular reference to the Technical Groups addressing Pillars actions under EUSAIR.*

Underway activities to implement MSFD (GES and Target improvement, Monitoring programmes, Programme of Measures) at national level, with coordination within the Mediterranean region and parallel activities carried out under the Barcelona Convention, are strongly and bidirectionally connected with MSP.

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