

Pegaso Project
People for Ecosystem based
Governance
in Assessing Sustainable development
of
Ocean and coast

Funded by the European Union
under FP7 – ENV.2009.2.2.1.4
Integrated Coastal Zone Management

Regional Envisioning Workshop

Mediterranean Basin

Venue, Date Arles, 13. – 15. November 2012

Date 20.11.2012

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Purpose of the document:

This report reflects the outcome of the workshop by the author. The report is distributed to the task force and all workshop participants.

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Introduction

The purpose of the PEGASO Regional Workshop was to develop a detailed vision of the future for the coastal zones of the Mediterranean within the framework of the ICZM Protocol. The intention was that the outputs from the meeting will be taken forward to a meeting in Istanbul in December 2012 that will further refine the vision for the Black Sea.

The starting-point for the discussions was the two key of the guiding principles of the ICZM Protocol, namely:

- balanced use of the coastal zone; and,
- the preservation of the wealth of natural capital in coastal zone

The workshop discussions were designed to identify what the implications of these policy objectives are in the medium to long term, and explore what geographical differences we might need to take into account when planning for the future. To assist in this process we considered how the scenarios developed for the Mediterranean by Plan Bleu might be used to explore the consequences of different policy responses and how the issues identified by the workshop participants might develop under different assumptions about the future. The programme and background briefing materials can be found in Appendix 1.

The focal questions identified during the workshop, and the workshop process

The workshop began by asking people to identify the key issues or 'focal questions' that concerned them in relation to the coastal zone. It was recognized that within the small group of people at the workshop not all issues could be considered. However, by identifying a set of themes of concern to the group the purpose was to use the questions to explore both what kinds of outcome might be anticipated under a range of different, plausible assumptions about the future.

A selection of the focal questions identified by the group is summarized in Table 1. They cover both governance issues and a range of thematic topics. An overview of the wider ranging discussion of focal questions is provided by the mind-map in Figure 1.

Although the focal questions cover only a sub-set of the issues confronting the Mediterranean basin, they were a useful device for exploring what the scenarios developed by Plan Bleu could tell us about possible future trajectories. The workshop then went on to provide a response on the scenarios and explore the threats and opportunities that existed in relation to the thematic areas of interest to the participants.

The scenario discussions took place in two parts: First, in the form of a plenary discussion that drew on the experience of the workshop participants after they had used the scenarios to explore how they related to their focal questions and the relevant drivers and pressures that influenced outcomes; and, second, as a follow up plenary discussion stimulated by Plan Blue and the earlier comments made on the scenarios. The materials generated are summarized in Figure 2 & 3, respectively.

Thematic area	Focal Question	Geographical differences
Coastal activities	How do we manage and regulate the transportation of hazardous wastes in the region?	Need to understand the different vulnerabilities across the basins
Development and urbanisation	How do we cope with the increasing artificialisation of the coastal zone?	Differences potentially with EU and non-EU countries
Fisheries	How can the better management of fish stock be achieved?	There are differences between commercial and artisanal practices, and cross border issues need to be considered
Governance	How do we achieve effective public involvement in decision making?	Recognising that this depends on geographical context and levels of development etc.
Governance	How do we overcome the problems of weak public administration?	
Governance	How do we achieve social equity in terms of access to key resources?	
Governance	How do we promote development that is consistent with different cultural heritages?	Depends of attitudes to change and globalisation trends
Natural Hazards	How do we manage emergent issues such as climate change?	
Natural Hazards	How do we manage the impacts of natural change (including climate) and implement adaptation and mitigation planning?	Responses will vary from place to place depending on coastal activities such as tourism, urban policy etc.
Natural hazards	How can we limit coastal erosion and flooding using appropriate policies and technologies?	
Water	How can we manage water quality and quantity demand in view of the additional risks of climate change?	
Wetlands	How do we ensure that coastal wetland are properly dealt with in ICZM strategies	Differences potentially with EU and non-EU countries
Wetlands	What tools can we use to stop the decline in wetlands, and who should be involved in developing such strategies?	

Figure 1: Mind-map summarizing the discussions on the focal questions identified in the workshop

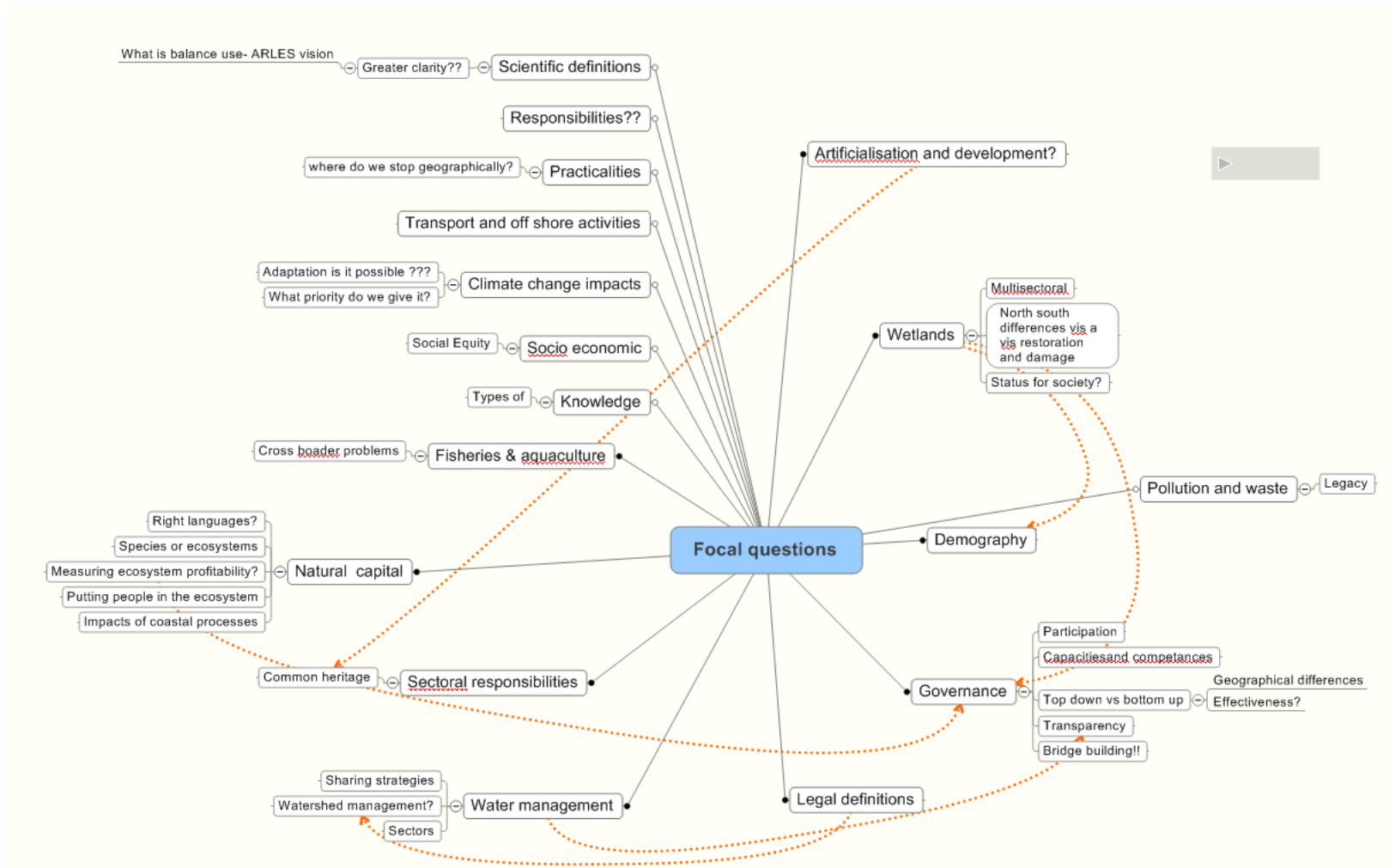


Figure 2: Initial responses from participants on using the scenarios to explore the focal questions and relevant drivers and pressures.

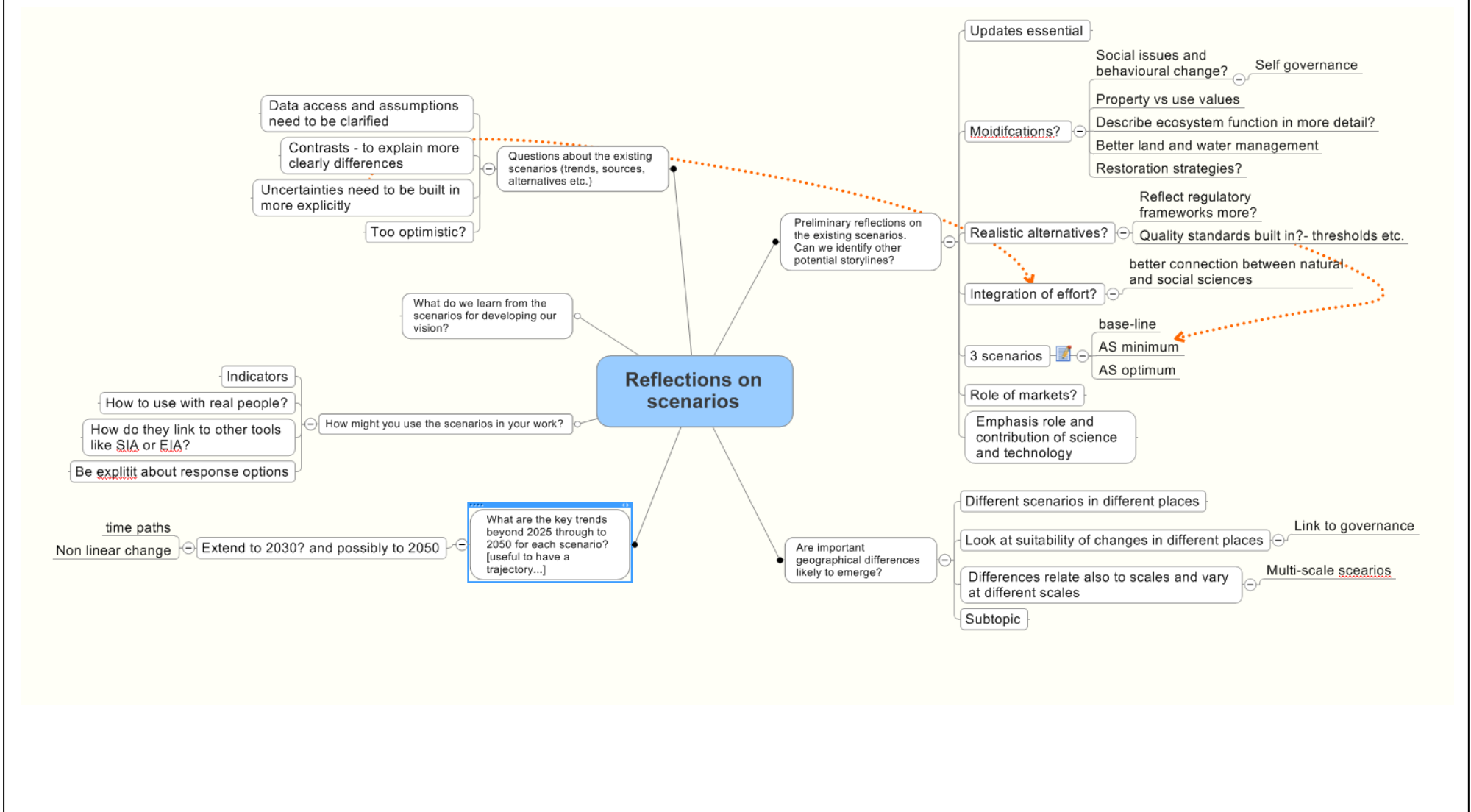
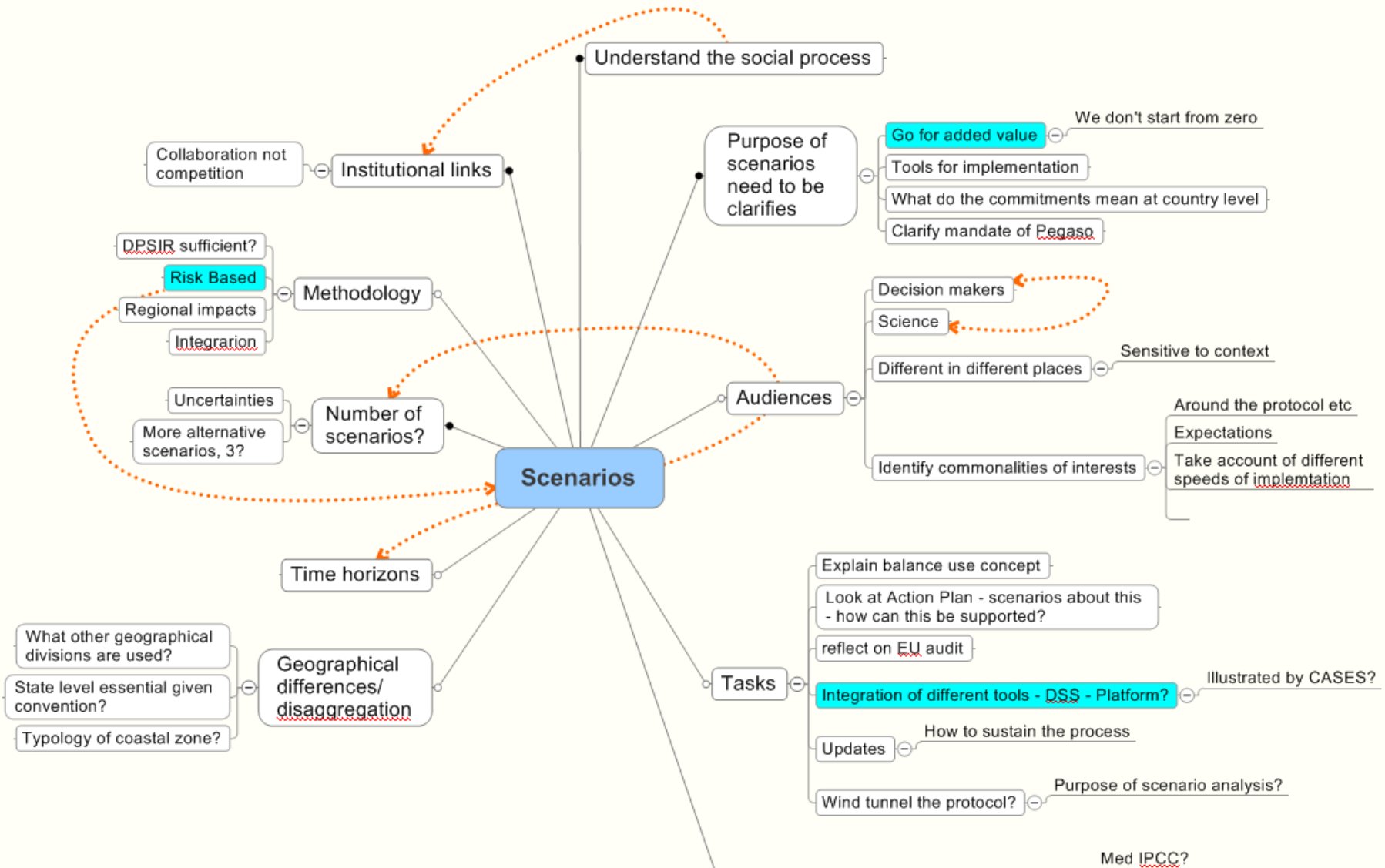


Figure 3: Summary of discussion stimulated by Plan Bleu's response to discussion of scenarios



Clarifying issues, and Identifying Threats and Opportunities

As a result of the discussion of focal questions and plausible futures, the workshop identified five thematic areas in which they would attempt to clarify the nature of the issues posed in the Mediterranean, the threats that arose from them and the opportunities that existed to overcome them. The intention of these discussions was to identify in more detail some detailed objectives that could form part of the wide vision represented in the ICZM concept. The intention was also that they discussion could identify areas where the PEGASO Regional Assessment might contribute a more detailed analysis as part of its work to characterize the current situation and future possible trends.

The thematic areas considered were: Governance, Biodiversity, Water and Waste, Fisheries and Aquaculture, Natural Processes and Hazards. The key points identified by the workshop participants were as follows:

Governance

Identification of the problem: gaps in legislation, insufficient/weak institutions (organizations, mechanisms), lack of administrative culture on participation and transparency, old mentalities, complexity, large number of issues, interests and authorities involved

Threats / difficulties: economic crisis (works against integration), difficulty to promote integrated vision, conflict of economic interest on the ground, low consideration of environmental issues, differences among countries and lack of coordination at international level, socio-economic differences among countries, weak administrative structures, low priority given to coastal management in governmental agendas

Opportunities: commitment of countries to develop action plan under the protocol, UNEP-MAP support system, involvement of EU (directive on MSP under preparation, financial support mechanism), ecosystem approach as a methodology (EBM), guidelines to develop national strategies available, high level of regional expertise in marine and coastal issues, long history of regional collaboration at governmental, scientific and NGO levels, horizons for assessment and revision are fixed in the action plan

Next steps / need for: exchange of experience (legislation, institutions), to share the results of the stocktake, awareness raising and training, strengthening of regional cooperation, more reporting on the level of implementation, contribute/cooperate to design solutions on problems that are the target of the protocol

Biodiversity

In relation to balanced use, the preservation of natural wealth and ICZM in general, current problems are characterised by:

- *Lack of data, some sectors known better, and more data exists in EU countries*
- *Amphibians, molluscs, freshwater fish, reptiles most threatened /icois species birds improving*
- *Some Ecosystem services can continue despite loss of biodiversity*

The discussions identified the main threats to be:

- *Overexploitation of water resources; change of land use; intensification of agriculture; threat pictures – increasing especially in sea (incl. for food)*
- *Anthropogenic pressures and overexploitation expected to continue*

Opportunities are / next steps

- *Implement ICZM protocol – ecosystem based management (but how? Help governance, prioritize actions)*
- *North European accession countries – approximation to EU – to access*
- *Marine spatial planning – reduce activities in some areas (how prepare national strategies – need of integration)*
- *EU provide examples to south and east*

Next steps might include using a case study such as Egypt where there is a more simple system with three bodies that hold all main data. The work could involve:

- *Exploring PEGASO governance issues*
- *Initiate informal meetings set up by NGOs for South and East Med*
- *Explore next steps such as formalizing when NFP engage in the process*
- *Initiating committees that start informal sharing knowledge,*
- *Identifying how can PEGASO lay the way to enter in national systems to develop the informal approach*

Water and Waste

Article 5 and 3 of the ICZM Protocol were considered especially relevant, namely to ensure that the sustainable use of natural resources especially regarding water use.; and, to preserve the environmental integrity of the coastal zone. In relation to balanced use, the preservation of natural wealth and ICZM in general, current problems are characterised by:

- *Different legal frameworks (EU frameworks)*
- *Lack or incomplete waste water treatment in quantity and quality*
- *Many sources are not identified or characterized yet.*
- *Different authorisation of chemical products (paints, pesticides...) in different counties*
- *Waste water plants are designed to operate under ordinary conditions (not during extreme conditions)*

The discussions identified the main threats to be:

- *Seepage into water table*
- *Pollutants (physical, chemical, biological, micro) going into land and sea from boat and terrestrial waste waters.*
- *Priority pollutants pose a threat to the environment and humans/animals.*
- *Eutrophication.*
- *Economic and social activities could be reduced*

Opportunities identified were to:

- *Reuse and recycling waste water.*
- *Reinvest in the natural capital.*
- *Look into pros and cons of payment for ecosystem services*

Next steps should be:

- *Waste water plants should be designed to meet the technology, environment and financial situation of each context.*
- *Inventory of all waste water sources, discharges, supply/demand etc.*
- *See what is already covered in WFD and see what needs to be added*
- *More dialogue between the actors from the different counties at local level (needs, sources, etc.*
- *Install a monitoring system for sea source pollution*
- *Transfer the experience of the regulation of EU directives around the Med basin (guidelines, lessons learned)*

Fisheries and Aquaculture

Article 9 of the ICZM Protocol on sustainable use of resources was considered especially relevant. In relation to balanced use, the preservation of natural wealth and ICZM in general, current problems for fisheries are characterised by:

- *Interactions with other activities and between themselves (artisanal vs. industrial / coastal vs. large)*
- *Overfishing*

and for aquaculture by:

- *Interactions with other activities*
- *Effects of aquaculture on the ecosystems (and vice-versa)*

The discussions identified the main threats to be:

- *Incompatibility leading to displacement and the unfeasibility of MPAs*
- *Disappearing of fish stock*
- *Collapse with fishing industry*

and for aquaculture:

- *Incompatibility leading to displacement and the unfeasibility of MPAs*
- *Bad practices (negative effects)*

For both sector the Opportunities identified were:

- *Regulation framework (ICZM Protocol, EU Directives: WFD, MSFD..., laws of countries...)*
- *Awareness raising (programmes of sensibility)*
- *Regional Organisations (GFCM, CRPM, CIESM, IUCN...)*
- *Involving fisheries & aquaculture organizations*
- *Funding programmes, funding raising*
- *Democratic process –freedom)*
- *Collaborative approach with other sectors*
- *New technologies*

Next steps might include:

- *MSP, and other tools to support spatial planning (GIS, modelling, scenarios, ...)*
- *Strategic risk management*
- *Establishment of links among opportunities*
- *Training (SD, ICZM Protocol)*
- *Identification of gaps where implementation of the ICZM Protocol is needed*
- *Funding improvements by raising awareness of actual problems*
- *Improving communication. - Coordination of scientific work and regulation world*

Natural Hazards

The discussion focussed on coastal floods, storm surges, tsunamis, erosion, hot spot for climate change. In relation to balanced use, the preservation of natural wealth and ICZM in general, current problems are characterised by:

- *Modification of sediment dynamics and coastal geomorphology*
- *Demographic concentration*
- *Artificialization/coastal development/urban development/tourism*
- *Coastal fragmentation*

Leading to:

- *Loss of beaches, degradation wetlands, dune...*
- *Changes in water characteristics*
- *Loss of marine habitats*

The discussions identified the main threats to be:

- *Climate change, increase of frequency of extreme event*
- *Regulation of rivers/construction of dams*
- *Sand mining*
- *Building of ports*
- *Fragmentation of the shoreline*

- *Increase in population density on the coast*

Leading to:

- *Retreat of people*
- *Loss in properties*
- *Loss in Natural/cultural heritage*
- *Economic losses*

Opportunities are:

- *Acceptance of ICZM protocol*
- *Implement ICZM practices*
- *Implementation of United Nations Framework Convention on Climate Change (UNFCCC)*
- *Creation and implementation of local legislation*
- *Re-naturalisation of coastal zones*

Next steps identified were:

- *Exchange of best practices*
- *Transfer of technology*
- *Awareness/ capacity building*
- *Better scientific knowledge (sediments processes/modelling, risk assessment)*
- *Mobilizing financial resources*
- *Regulations at national level*

Conclusions and Implications

As a result of the final discussions and feedback received the following broad conclusions can be drawn from the meeting:

1. The workshop discussions suggested that within the PEGASO consortium we need to make a distinction between future ‘scenarios’ and ‘visions’:
 - a. In terms of a vision for the future, it was suggested that the starting point for both sea basins are the ‘ICZM principles’; these describe a set of policy and management aspirations, as well as some general environmental outcomes involving notions of ‘balanced use’ and ‘preservation of natural capital’.
 - b. It was also suggested that scenarios are fundamentally tools by which the feasibility of achieving such a vision could be tested under different assumptions about the major drivers and pressures.
2. If these propositions are accepted, then there are several implications for the way the work is taken forward beyond the Arles meeting:
 - a. The ‘PEGASO vision for the coastal zone’ needs to be consistent with, and supportive of, the more general policy goals expressed in such documents as the Protocol on ICZM in the Mediterranean, and the Black Sea Action Plan. However, it should strive to add detail and help articulate issues in more specific ways. For example, one contribution might be to explore the meaning of concepts such as ‘balanced use’, and suggest what kinds of indicator might be used to measure such outcomes. Similar conceptual and management contributions could be made in terms of describing the healthy function of natural capital.
 - *Implication: If it is agreed that such a ‘PEGASO Vision’ is appropriate, then the consortium needs to put in place an appropriate mechanism or process for achieving it. The goal of PEGASO should be to provide added value to the steps and processes that are already being taken. PEGASO should more explicitly work with appropriate institutional partners and seek to integrate and time its outputs to coincide with the major initiatives.*
 - b. Any scenarios used to test the vision need to be ‘engineered’ or adapted to make reference not only to coastal zone issues but the principles underlying ICZM so that the conditions necessary for implementing them can be identified and tested. Thus the scenarios should be framed, for example, around the indicators being developed and populated by PEGASO, and should where possible use base-line data such as that provided by the different types of environmental account being developed in the project. In particular, the work should build on the assessment of current conditions expressed in the PEGASO Regional Assessment.
 - *Implication: If it is agreed that scenarios are tools to test the wider visions for the coastal zone in both basins and the more specific ‘PEGASO Vision’ then we need to review of the adequacy of existing scenario studies, and develop a set of recommendations for how the Governance Platform might work with appropriate partners to create a framework that is ‘fit for purpose’.*
 - *Implication: Using scenario studies that combine forecasting (based on trend analysis) and backcasting approaches (based on specifying alternative desired outcomes) may blur the distinction between visioning, and testing the feasibility*

of the vision under different assumptions, and so should be used with caution within the PEGASO Project in order to preserve clarity of purpose.

- *Implication: A helpful outcome of any scenario exercise should be to identify the major threats and opportunities that exist in terms of implementing the current suite of policy responses, and the major risks and uncertainties that decision makers might need to consider when developing future strategies.*
3. There is tension that needs to be resolved between the needs of both visioning and scenario exercises at regional and local scales:
- a. To be useful, and move beyond the high level generalities captured in the ICZM Principles, PEGASO could make a contribution by supporting the CASEs to undertake more detailed and context specific visioning exercises with their end-users and stakeholders. This would provide the Governance Platform with a portfolio of ‘local’ studies that illustrate how local visioning exercises could be undertaken, and how the principles can be applied into different contexts.
 - *Implication: As a contribution to the PEGASO ‘tool box’ an output from the scenario work should be guidance on how scenarios can be used at local scales to test.*
 - b. In developing or modifying regional scenarios to explore the conditions under which the goals of ICZM can be achieved, it would be helpful if a spatially explicit approach was used, so that the major geographical differences could be identified. The differences should not only capture heterogeneity in biophysical and socio-economic conditions, but also temporal differences in the stage of implementation, and speed of policy response across different countries. However, there was no agreement about what kinds of spatial disaggregation should be used or on appropriate timeline:
 - *Implication: Further work is required, probably as part of the Regional Assessment (possibly in conjunction with the PAP/RAC Stock Take), to identify appropriate geographical frameworks. Given that implementation of ICZM has to be done at the state level, this would be a minimum reporting requirement of any approach.*
 - *Implication: Further work is needed in relation to defining an appropriate timeframe for any scenario work. The primary considerations are the time-frame over which the policy responses are expected to act, and the fact that the outcomes will potentially be realised at different times in different places. One suggestion was that 2030 should be used as an end-point; another was that 2050 or 2060 would be more appropriate. No firm conclusions were, however, drawn at the workshop, nor was there any consensus that consideration of intermediate time steps should be made. It was noted that intermediate time steps would be helpful in exploring the impact of non-linearities.*
4. It was recognised that there would be different audiences for the outcomes of any visioning scenario work, and so a range of appropriately constructed documents and other outputs would be needed.

- *Implication: It would be useful if the specification for the PEGASO Governance Platform indicated the major user groups so that some thought could be given to the nature of the documentation and tools that would populate it.*
5. There was no clear agreement about the ‘overall message’ that should be passed on from the Arles Workshop, either in terms of its context, structure or purpose. A number of detailed issues were discussed, covering such topics as governance, biodiversity, water and waste, coastal processes and fisheries and aquaculture. The workshop attempted to clarify the problems in each of these sectors, the threats posed and the opportunities that presented themselves. However, the workshop as a whole found it difficult to see how to translate the specifics in each area into a more general statement that could be carried forward to the Istanbul Meeting.
- *Implication: The organisers of the Istanbul meeting needs to review what can be carried forward to the next meeting from Arles, and redefine a strategy and/or process for using this in the context of future work within the PEGASO consortium*

Appendix 1:
Workshop Programme and Briefing Materials

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Date / version 5.11.2012 (v2.0)

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1. Aims and Objectives of the Regional Workshop

The purpose of the PEGASO Regional Workshop is to develop a more detailed vision of the future for the coastal zones of the Mediterranean within the framework of the ICZM Protocol. The outputs from the meeting will be taken forward to a meeting in Istanbul in December 2012 that will further develop the vision for the Black Sea.

The starting-point for the workshop discussions are two key of the guiding principles of the ICZM Protocol¹, namely:

- balanced use of the coastal zone; and,
- the preservation of the wealth of natural capital in coastal zone.

The workshop will identify what the implications of these policy objectives are in the medium to long term, and explore what geographical differences we might need to take into account when planning for the future.

The meeting brings together experts and decision makers working on coastal zone issues at different scales. Their expertise will be used to analyse the impact of the main drivers of change affecting the two policy objectives across the two sea basins. The meeting will also enable PEGASO CASE Partners to shape the PEGASO Regional Assessment and explore the implications of regional trends and pressures for their own areas.

The outcome of the meeting will be a draft ‘vision statement’ that can be taken forward to the Black Sea workshop and the subsequent discussions within the PEGSO Project.

The meeting will be highly interactive. In addition to developing a vision that can be taken forward for discussion, the meeting has been designed to help people attending the workshop to think about the kinds of deliberative processes needed to support ICZM. Thus the workshop will:

- Allow people to undertake some introductory ‘visioning exercises’ for the coastal zone that might be useful when using participatory methods to develop ICZM strategies.
- Demonstrate how scenarios can be used to examine future visions as a way of developing more resilient planning approaches. In the workshop we do not have time to create a new set of ICZM scenarios, but we can make progress by looking at the existing scenario work done by Plan Bleu.
- Provide people with some experience of using the kinds of information that is now becoming available to support planning, such as indicators and environmental accounts. The meeting will also provide some insights into analytical tools such as Cumulative Impact Assessment.

¹ The proposition of ‘balanced use’ summarises the themes covered in principles mainly (h) and (b) in the text of the ICZM Protocol, Article 6; the ‘preservation of natural capital’ is a distillation of principles (a), (j) and (g). For further discussion see “Common conceptual Framework for the implementation of ICZM” (Task 2.1 deliverable) and the “Indicators: Methodological paper for the selection and application of PEGASO ICZM indicators”, Task 4.1)

2. Workshop Programme

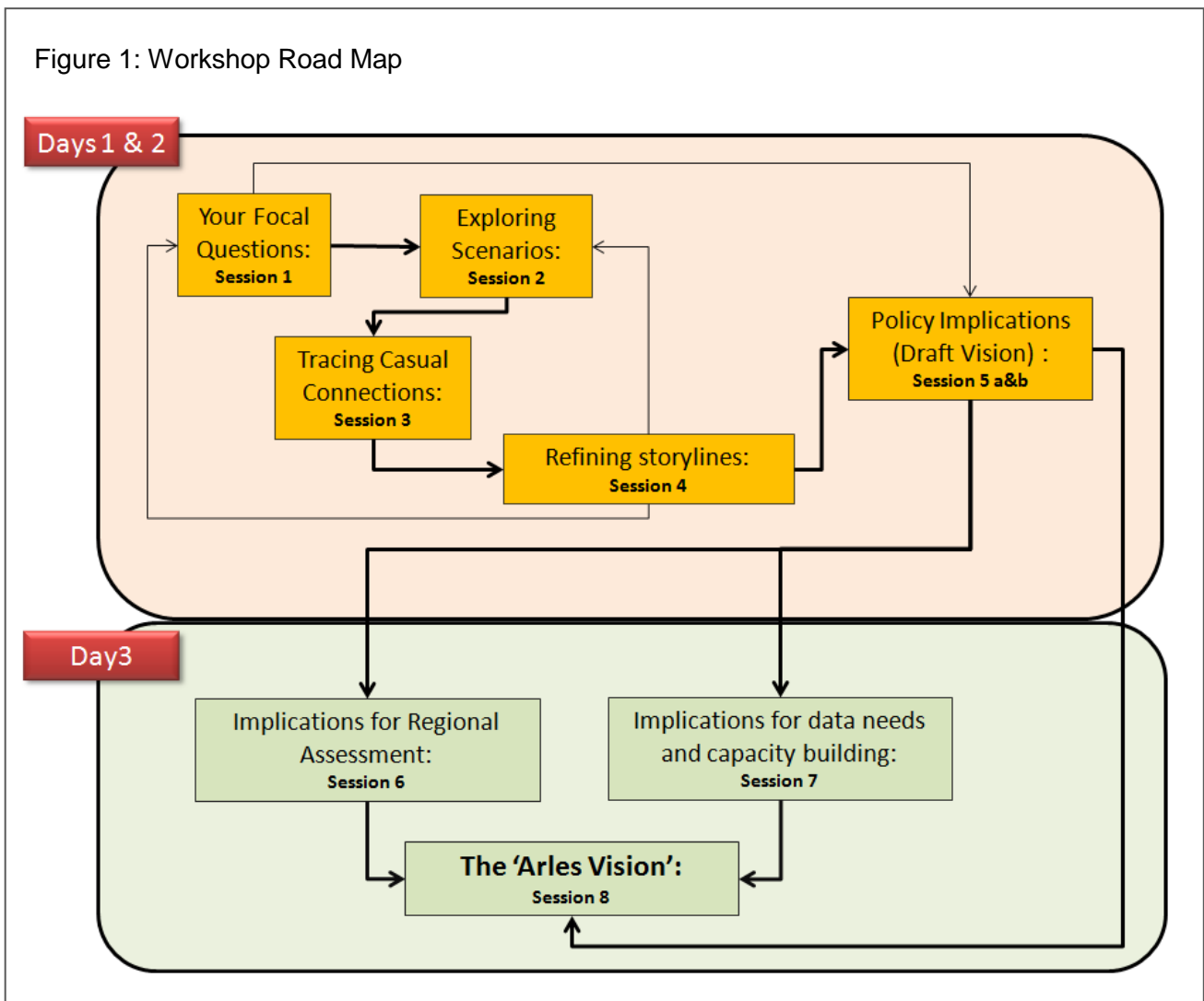
The programme for the workshop is shown below.

The sessions have been designed to build on each other, and give participants time to reflect on the materials and methods so as to provide feedback.

Figure 1 is a 'road map' of the workshop, showing how the activities are linked, and how by the end of the meeting we can develop a vision statement that can be taken forward.

During Days 1 & 2 members of the PEGASO Consortium will work with our end-users and other guests. Day 3 will provide PEGASO partners with an opportunity to talk through the implications of the workshop for their work and plan next steps.

Figure 1: Workshop Road Map



Day 1

Time slot	Session	Activities and Issues
09.00-09.30	Registration & Coffee	Registration in main meeting room
09.30-10.45	Introduction and Orientation	<ul style="list-style-type: none"> • Aims of the Workshop (RHY, FB, JLT) • Tour de table
10.45-12.15	Session 1 (Breakout): Thinking about the future: identifying the focal questions and the drivers of change at local and regional scales relevant to ICZM	<ul style="list-style-type: none"> • Breakout Scenario Groups are established • Groups present their preparatory thinking to each other in terms of key questions concerning ICZM, the things likely to drive outcomes and the uncertainties surrounding the issues
12.15-13.00	Plenary	<ul style="list-style-type: none"> • Report back on main cross-sectoral issues identified in break out groups and any geographical contrasts • Discussion on priority issues, opportunities and key threats to coastal zone
13.00-14.00	Lunch	
14.00-14.30	Introduction to some existing scenarios	<ul style="list-style-type: none"> • Plan Bleu introduces the Business as Usual (BAU, or base-line) and alternative scenario (AS). (JLT)
14.30-17.00	Session 2 (Breakout): Futures of fear and futures of desire: reviewing some initial storylines based on <i>Sustainable Future for the Mediterranean</i>	<ul style="list-style-type: none"> • Breakout Scenario Groups are re-established • Groups explore their focal questions and drivers in context of BAU and AS and identify alternative outcomes for ICZM. • Groups review range of uncertainties associated with each driver and identify range of projections for each; consider the period up to 2025 and between 2025 and 2050. • Groups consider whether BAU and AS capture the <u>full</u> range of plausible futures – do any additional futures or variations that need to be considered
Coffee will be provided at 15.30		
17.00-18.00	Plenary	<ul style="list-style-type: none"> • Questions about the existing scenarios (trends, sources, alternatives etc.) • Preliminary reflections on adequacy of existing scenarios. Can we identify other potential storylines? • Are important geographical differences likely to emerge? • What are the key trends beyond 2025 for each scenario?

Day 2

Time slot	Session	Activities and Issues
09.00-10.00	Introduction	<ul style="list-style-type: none"> • Introduction to causal chain analysis (RHY) • Introduction to accounts and their potential role in scenarios (RHY) • Introduction to cumulative impact analysis (FM)
10.00-11.15	<u>Session 3 (Breakout):</u> Working through the measures of change and uncertainties using indicators and accounts to think about the future	<ul style="list-style-type: none"> • Establish 'sector' groups (we can vote on the priorities for the sectors to be considered) • Each group works through a causal chain analysis and prepares a poster on their sector which is brought to the plenary room.
11.15-11.30	Coffee	
11.30-12.30	<u>Session 4 (Breakout):</u> Refining the storylines: identifying other perspectives, geographical differences (across regions and between CASES) and alternative development paths	<ul style="list-style-type: none"> • Re-establish the scenario groups • Members share experiences and insights gained through sector analysis • Group looks at adequacy of existing scenarios and makes recommendations on alternative/additional trends and storylines etc.
12.30-13.00	Plenary	<ul style="list-style-type: none"> • Review of adequacy and coverage of proposed BAU and AS
13.00-14.00	Lunch	
14.00-14.30	Introduction to wrap-up session	<ul style="list-style-type: none"> • Review purpose of workshop and scenario building
14.30-15.25	<u>Session 5a (Breakout):</u> Reviewing the focal questions, identifying policy implications	<ul style="list-style-type: none"> • Initial scenario groups review their focal questions and revise/add in light of workshop discussions • Groups make draft recommendations for taking regional assessment of issues forward
15.25-15.35	Coffee	
15.35-16.30	<u>Session 5b (Breakout):</u> Reflections on scenarios and regional assessment at CASE level	<ul style="list-style-type: none"> • Groups from around the cases represented at the workshop and members reflect on how workshop outcomes can inform their work with end-users
16.30-17.30	Plenary	<ul style="list-style-type: none"> • General discussion and agreement on recommendations for taking visioning exercise forward and for input into regional assessment

End users and other guests have to opportunity to leave the workshop at the close of day 2



Day 3

Time slot	Session	Activities and Issues
09.00-09.30	Introduction	<ul style="list-style-type: none">• Introduction and initial de-brief on workshop• Identification of key issues to discuss
09.30-11.15	<u>Session 6a (Breakout):</u> Reflections for the Regional Assessment	<ul style="list-style-type: none">• Discussion of relevance and role of CASE partners and issues at <u>local</u> scales
11.15-11.30	Coffee	
11.30-12.30	<u>Session 6b (Breakout):</u> Reflections for the Regional Assessment	<ul style="list-style-type: none">• Discussion of relevance and role of CASE partners and issues at regional scales
12.30-13.30	Lunch	
13.30- 14.00	<u>Session 7 (Plenary):</u> Reflections on implications of 'vision' for data, information capacity building and outreach	<ul style="list-style-type: none">• Plenary discussion of next steps (BS workshop/Rabat input)
14.00-15.00	<u>Session 8 (Plenary):</u> Finalise Arles Vision Statement	<ul style="list-style-type: none">• Review and revise text of initial draft of Arles Vision Statement
15.00-15.30	Wrap-up	
15.30	Close and Departure	

3. Workshop Briefing and Preparation

The workshop will involve an intense set of discussions and activities and so it would be valuable if participants could undertake some preliminary thinking and preparation.

We realise that you are all busy people, but if you can spare a little time it will ensure that much more rapid progress can be made. If you have to prioritise then the preparation on the focal questions (b, below) and the scenarios (c) are the most important.

a. The Arles Vision Statement

The purpose of the Arles Vision Statement is to have an identifiable and shared output from the meeting. It will be a short document that can be used to stimulate further discussion about future ICZM strategies at the regional Workshop for the Black Sea. It can potentially feed into the wider discussions at the PEGASO meeting in 2013 in Rabat.

The contents of the Vision Statement will mainly emerge from the workshop discussion and activities. However, it would be useful if you could give some preliminary thought to what it might contain given your experience. To stimulate your thoughts [Appendix 1](#) provides an example of a vision statement developed at an *Ecosystem Services Partnership* (ESP) meeting in 2011. We have deliberately chosen an example that does not deal with coastal zone issues in order not to influence you. The ESP message deals with ecosystem services.

What should an equivalent message contain in relation to the two key issues of ‘balanced use’ and ‘preservation of natural capital’ that are being considered at the workshop? Bring along your thoughts to discuss at the workshop.

b. Identifying the focal questions (Preparation for Session 1)

We want to ensure that the workshop discussions are based on the real issues that concern you in relation to the goals of ‘balanced use’ and ‘preservation of natural capital’. To start the discussions off therefore it would be valuable if you could:

- **Task:** Bring along to the workshop some simple, visual materials that illustrate the problems of ‘balanced use’ and ‘preservation of natural capital’ in the coastal zone as you see them. The materials can be postcards, pictures, maps or data – anything that you think will be useful to explain and communicate to others in your group what the issues are as you look forward to the future.
 - *This is the kind of exercise you might do with stakeholders (especially the public) to encourage them to talk about their visions for the future. At the workshop we want to use the material you bring along to build up a **rich picture** of the issues affecting the future of the coastal zone. In the workshop we will use the discussion of these materials to identify a set of **focal questions** that can be explored using scenarios.*

c. Futures of fear and futures of desire (Preparation for Session 2)

One of the reasons that we undertake visioning exercises with stakeholders is to better understand their goals and values, and the kinds of policy and management response that might be needed when planning for the future. The visions can be used in several ways:

- They can be used to build scenarios describing ‘desired futures’ for the coastal zone that can be discussed critically between stakeholders. These kinds of discussion can be helpful in formulating management or policy goals in a clear way, so that plans can be developed to try to move in the direction that people want.
- Under a different approach, the visions can be used to look at the implications of current trends or other development pathways for the coastal zone that might take us away from where we would like to be. These types of scenarios describing more troubling ‘futures of fear or fate’ can help us identify the uncertainties and risks that might affect our plans, and think about ways of making our policy or management responses more robust or resilient.

A key aim of the workshop is to allow people to work with scenarios and think about them as a tool in decision making. The time available in the workshop does not allow a full scenario building exercise to be undertaken, but the meeting does allow us to use some existing scenarios to see how they can help in planning for the future.

To stimulate thinking in the workshop we will look in detail at two scenarios developed for the Mediterranean Basin by Plan Bleu. They will be giving a briefing on the scenarios at the workshop, but it would also be useful if you could familiarise yourself with some of their key characteristics before the meeting. The Table in Appendix 2 provides a summary, which highlights the contrasts between them using a set of ‘cross-cutting issues by sectors’:

- The ‘Business as Usual’ (BAU) is an extrapolation of current trends, which (depending on your perspective!) might be regarded as a future of ‘fear or fate’; it describes a development pathway for the Basin that might result if current trends continue.
- The ‘Alternative Scenario’ (AS) is more of a visionary statement describing the kinds of development that we would need if the goals of ICZM are to be realised.
- **Task:** Of course many different future scenarios could be developed and used in an exercise such as this. The purpose of scenario building is not so much to predict the future but to identify a plausible range of futures that can be useful to us when we are developing management or policy responses. Thus the Plan Bleu scenarios are a good starting point.
 - Review the material for the two scenarios and focussing on the BAU storyline bring along your thoughts on the following questions:
 - Do the trends described in the BAU scenario capture the pressures or things that are driving change that you are dealing with in your work? Can you identify or think of any important variations?
 - How do the descriptions relate to the geographical areas that you are familiar with in your work? Are some of the trends described more important or worrying than others? Should we think about any geographical differences?
 - In terms of the focal questions or issues that you identified earlier, how are regional

pressures likely to affect the outcomes or are local factors more significant?

- This is also the kind of exercise you might do with stakeholders (both experts and the public). By looking at different scenarios we can encourage people to look at their visions more critically, and plan in more effective ways. At the workshop we want to use the scenarios to see how we can use ‘future thinking’ to learn about today. In the workshop we will use the Plan Bleu scenarios as a starting point and look at how they can be refined or whether additional scenarios might be useful to bring out the range of possibilities that might confront us.

A more detailed account of the scenarios can be found in a document prepared by Plan Blue as part of their input to the PEAGO Project, *Building on the Mediterranean Scenario Experiences: Cross-cutting approaches between regional foresight analysis and participatory prospective*.

d. Working through the measures of change and uncertainties (Preparation for Session 3)

If scenarios are to be useful as planning tools then they must help us understand the consequences of the different assumptions we make (or might make) in our decision making. To do this their ‘internal logic’ must be consistent. The logic must be based on our best understanding of how the different drivers of change impact on society and the environment. Thus we need to be clear about the cause and effect relationships in the system that is being described by the scenarios (in our case the ‘coastal zone’).

There are many ways of doing this. One widely used framework that can be used is the so-called DPSIR model that seeks to describe the relationship between Drivers, Pressures, States, Impacts and Responses (Figure 2). Some definitions are provided in Table 1.

Figure 2: The DPSIR Model (for definitions see Table 1)

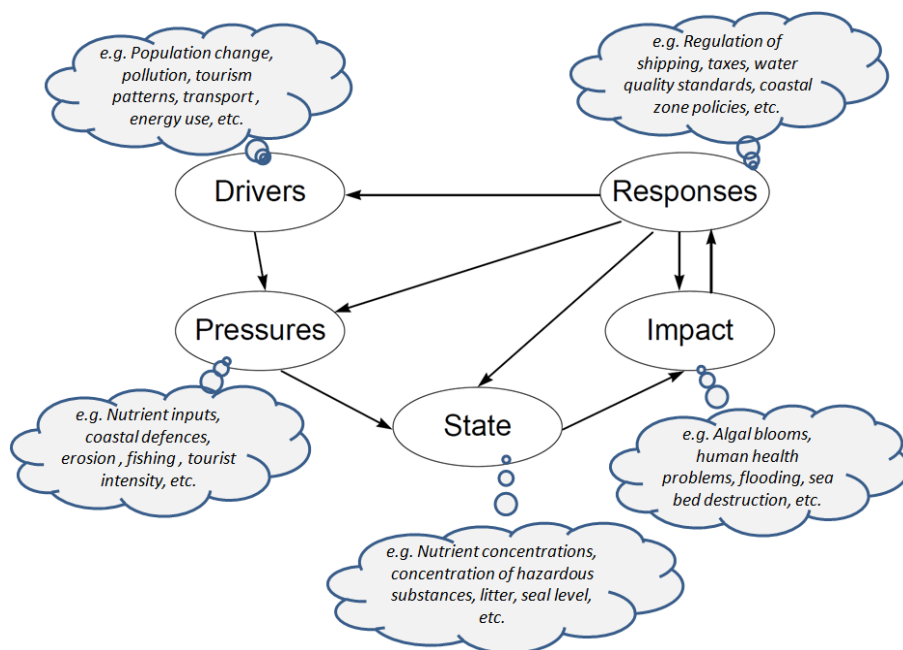


Table 1: Definitions of drivers and pressures and their correspondence within DPSIR and MA frameworks

DPSIR	Millennium Assessment	Others common terminology	Common definition
Drivers or Driving Forces	Indirect drivers	Underlying drivers, stressors, root causes	Refer to fundamental processes in society (primarily demographic, economic, socio-political, scientific and technological) that operate <u>diffusely</u> , often by altering one or more direct drivers. The influence of indirect drivers is established by understanding their effect on direct drivers (Nelson et al., 2005).
Pressures	Direct drivers	Primary drivers, primary causes, stressors.	Refers to physical, biological or chemical processes and social and economic sectors of society that tend to influence <u>directly</u> changes in ecosystem goods and services. A direct driver unequivocally influences ecosystem processes and can therefore be identified and measured to differing degrees of accuracy (Nelson et al., 2005). They include land cover change, climate change, air and water pollution, irrigation, use of fertilizers, harvesting, and the introduction of alien invasive species.

Note: Different areas of study have used different terms to describe how immediate (or close) the actions of the casual factors are to the changes they trigger. In the workshop we will use the DPSIR framework – but others may be more familiar with the terminology used in say, the Millennium Ecosystem Assessment (MA). This Table is taken from PEAGO Project, *Regional Assessment: Identification of multi-scale drivers of change, common threats/pressures, conflicting uses, and root causes*, where further discussion can be found; it also provide the full reference to Nelson et al. (2005).

The DPSIR model was developed as a framework for creating environmental indicators and is used widely. However, it is also as useful framework for making a ‘causal analysis’ that can be used to communicate internal logic on which any set of scenario elements are based.

In Session 3 of the workshop we will use DPSIR model with the scenarios to make a set of ‘what-if’ analyses for the issues that we think are important, such as those highlighted by our ‘focal questions’.

- **Task:** If you have not used the DPSIR model prepare for the workshop by making sure that you are familiar with the terminology. If you want to go further, use the diagram and definitions above to represent the different elements of the focal questions or issues that you identified in Task 1.
 - Look at the questions that you wrote down, have you identified any drivers or pressures? What states might be changing and have you described any impacts? Or is your question mainly about responses? Don’t be confined to the examples given in the diagram.
 - If you find the DPSIR model helpful you might like to rephrase your focal questions so that they more clearly capture some of the important cause-effect relationships that need to be considered.
 - Finally, you might like to think of some different assumptions that you could make about the drivers and pressures that relate to your focal questions, because this might help you to see how the assumptions in the different scenarios play themselves out in the future.

A more detailed discussion of how we might analyse the drivers of change can be found in a document prepared by IOC UNESCO as part of their input to the PEAGO Project, *Regional*

Assessment: Identification of multi-scale drivers of change, common threats/pressures, conflicting uses, and root causes.

- This is also the kind of exercise that can be quite technical and in scenario building it is probably the kind of thing that you would do with experts rather than the public. However, if people are to have confidence in what scenarios can tell us about the consequences of different future assumptions future, it is necessary to trace impact through from their causes and be able to show that the analysis is based on the best science available. The workshop will enable you to use some of the tools that might be employed.

4. Final Thoughts

As you can see from this set of briefing materials the workshop will be very demanding! However, we hope that it will provide you with the opportunity of sharing you experience with others. We also hope that it will allow the group to develop a clearer understanding of regional issues and differences that might be important in the future, and explore how local case studies can be used to test and build-up a realistic picture of the way our coastal zones are evolving.

5. Further Reading

Burkhard, B.; de Groot, R.; Costanza, R.; Seppelt, R.; Jørgenses, S.E. and M. Potschin (2012): Solutions for Sustaining Natural Capital and Ecosystem Services. *Ecological Indicators* 21: 1-6.

Haines-Young, R. and M. Potschin (2011): Integrated Coastal Zone Management and the Ecosystem Approach. PEGASO Internal Deliverable ID2.1, September 2011, 11 pp. Also available as CEM Working Paper No 7. under: <http://www.nottingham.ac.uk/CEM/WorkingPapers.html>

Morisseau, F.; Nowell, M. and F. Breton (2012): Cumulative Impact Index. A PEGASO concept note. V1.0 (06.03.2012).

also recommended: Benjamin S. Halpern, Carrie V. Kappel, Kimberly A. Selkoe, Fiorenza Micheli, Colin M. Ebert, Caitlin Kontgis, Caitlin M. Crain, Rebecca G. Martone, Christine Shearer, & Sarah J. Teck (2009): Mapping cumulative human impacts to California Current marine ecosystems. *Conservation Letters* 2 138–148

Sanna, S. and J. Le Tellier (2012): Building on the Mediterranean Scenario Experience: Cross-cutting approaches between regional foresight analysis and participatory prospective. PEGASO Project Internal Deliverable ID4.3.3 - Task 4.3 "Scenarios" 26th of October 2012 / V2. In collaboration with Jean-Pierre Giraud and Antoine Lafitte

Santoro, S.; Barbieri, J.; Lescrauwaet, A.-K.; Giraud, J.P. and A. Lafitte (2011): Task 4.1 Indicators: Methodological paper for the selection and application of PEGASO ICZM indicators. PEGASO Draft Deliverable V1.0, 03.11.2011

Santoro, F. and J Barbieri (2012): Task 5.2 Regional Assessment. Identification of multi scale drivers of change, common threats/pressures, conflicting uses, and root causes.

Appendix 1: An example of a vision statement from Burkhardt et al., (2012)

'Salzau Message' on Sustaining Ecosystem Services and Natural Capital

The human population of earth is likely to increase to 9 billion people by the end of the century, the global climate is being transformed, biodiversity loss continues, and conventional, fossil-based economies are no longer a viable option. Business as usual is a utopian fantasy. If we are to improve the sustainable well-being of humanity, we need to sustain and restore ecosystem services and natural capital. Stakes are high. The potential for irreversible, negative, outcomes is alarming, and a precautionary approach to decision-making should therefore be adopted.

We, the undersigned, believe that solutions to providing a sustainable and desirable future require broad recognition of the basic facts about ecosystem services and natural capital, and advances in two key areas: (1) integrated measurement, modeling, valuation and decision science; (2) adaptive management and new institutions, including the new Ecosystem Services Partnership discussed below.

Basic Facts about Ecosystem Services and Natural Capital

In recent decades, a shared understanding has emerged about *ecosystem services* and *natural capital*, including:

- Ecosystem services (ES) are the contributions of ecosystems - in combination with other inputs - to human well-being.
- ES, and the natural capital assets that produce them, represent a significant contribution to sustainable human well-being, a contribution that is increasingly being recognized.
- Ecosystems, ecosystem functioning, and ES are being threatened and degraded by human activities, and the situation will be exacerbated by climate change and biodiversity loss. At the same time, knowledge about how to steward and restore ecosystems is rapidly growing.
- An ES approach helps to identify and quantify the ecological and socio-economic trade-offs and synergies on which decision-making should be based.
- Many ecosystem services cannot (or should not) be privately owned. Therefore, they are for the most part ignored by conventional markets.
- Many ES are such that providing benefits to one person does not reduce the amount of benefits available for others (they are "non-rival" and "non-excludable"). They are therefore best treated as "public goods".
- While tremendous progress has been made in improving our understanding of how ecosystems

function and how humans benefit from them, there will remain enormous uncertainties about how ES are provided, the magnitude of their benefits, and how human activities affect their provision.

- Adaptive Management is an approach that allows one to learn from the system dynamics and manage under this uncertainty.

1. Integrated Measurement, Modeling, Valuation and Decision Science in support of Ecosystem Services:

The scientific community needs to continue to develop better methods to measure, monitor, map, model, and value ecosystem services at multiple scales. Moreover, this information must be provided to decision makers in an appropriate and viable way, to clearly identify differences in outcomes among choices. At the same time, we cannot wait for high levels of certainty and precision to act. We must synergistically continue the process of improvement of measurements with evolving institutions and approaches that can effectively utilize these measurements.

a. Trade-offs

Ecological conflicts arise from two sources: (1) scarcity and restrictions in the amount of ES that can be provided and (2) the distribution of the costs and benefits of the provisioning of the ES. ES science makes trade-offs explicit and, thus, facilitates management and planning discourse. It enables stakeholders to make sound value judgments. ES science thus generates relevant social-ecological knowledge for stakeholders and policy decision makers and sets of planning options that can help resolve social conflicts.

b. Accounting and Assessment

Accounting looks at the flow of processes or materials and is objective, while assessment evaluates a system or process with a goal in mind and is normative. Both are integrating frameworks that have distinctive roles. Both ecosystem service accounting and assessment need to be established and pursued in a broader socio-ecological context. We also need to balance expert and local knowledge across scales.

c. Modeling

We need modeling to synthesize and quantify our understanding of ES and to understand dynamic, spatially explicit trade-offs as part of the larger socio-ecological systems. Further participatory development of integrated, dynamic, spatially explicit models that include ES are needed. These models can incorporate and aid accounting and assessment exercises and link directly with the policy process at multiple time and space scales.

d. Bundling

Most ES are produced as joint products (or bundles) from intact ecosystems. The relative rates of production of each service varies from system-to-system, site-to-site, and time-to-time, but we must consider the full range of services and the characteristics of their bundling in order to prevent creating dysfunctional incentives and to maximize the benefits to society. For example, focusing only on the carbon sequestration service of ecosystems may in some instances reduce the overall value of the full range of ES.

e. Scaling

ES are relevant over a broad range of scales in space, time, and complexity. We need measurement, models, accounts, assessments and policy discussions that address these multiple scales, as well as interactions and hierarchies among them.

2. Adaptive Management and New Institutions for Ecosystem Services:

Given that significant levels of uncertainty always exist in ecosystem service measurement, monitoring, modeling, valuation, and management, we should continuously gather and integrate appropriate information regarding ES, with the goal of learning and adaptive improvement. To do this we should evaluate the impacts of existing systems and design new systems with stakeholder participation as experiments from which we can more effectively quantify performance and learn.

a. Property rights

Given the public goods nature of most ecosystem services, we need institutions that can effectively deal with this characteristic using a more sophisticated suite of property rights regimes. We need institutions that use a balanced combination of existing private property rights systems, and new property rights systems that can *propertize* ecosystems and their services without privatizing them. Systems of payment for ecosystem services (PES) and common asset trusts can be effective elements in these institutions.

b. Scale-matching

The spatial and temporal scale of the institutions to manage ecosystem services must be matched with the scales of the services themselves. Mutually reinforcing institutions at local, regional and global scales over short, medium and long time scales will be required. Institutions should be designed to ensure the flow of information between scales, to take ownership regimes, cultures, and actors into account, and to fully internalize costs and benefits.

c. Distribution Issues

Systems should be designed to ensure inclusion of the poor, since they are more dependent on common property assets like ecosystem services. Free-riding should be prevented and beneficiaries should pay for the services they receive from bio-diverse and productive ecosystems.

d. Information Dissemination

One key limiting factor in sustaining natural capital is shared knowledge of how ecosystems function and how they support human well-being. This can be overcome with targeted educational campaigns, clear dissemination of success and failures directed at both the general public and elected officials and through true collaboration among public, private and government entities.

e. Participation

Relevant stakeholders (local, regional, national, and global) should be engaged in the formulation and implementation of management decisions. Full stakeholder awareness and participation contributes to credible, accepted rules that identify and assign the corresponding responsibilities appropriately, and that can be effectively enforced.

f. Science/Policy Interface

ES concepts can be an effective link between science and policy by making the trade-offs more transparent. An ES framework can therefore be a beneficial *addition* to policy-making institutions and frameworks and to integrating science and policy.

ECOSYSTEM SERVICE PARTNERSHIP

The new Ecosystem Services Partnership (ESP - <http://www.es-partnership.org/>) seeks to enhance this integration by uniting the ecosystem services science and policy community and coordinating collaborative efforts on a global, national and local level. It aims to enhance and encourage a diversity of approaches, where needed, while reducing unnecessary duplication of effort in the conceptualization and application of ecosystem services. By increasing efficiency, and promoting better practice, the ESP aims to increase the effectiveness of ES science, policy, and applications.

Signed by:

(see published version)

Appendix 2: Table: Summary of scenarios (by a cross-cutting approach and by issue) detailed in the text of the PEGASO ID4.3.3 drafted by Plan Bleu (October 2012)

	« Business as Usual » scenario	Alternative scenario
Cross-cutting view	<ul style="list-style-type: none"> – Growing vulnerability to natural hazards because of an intensification of global warming (less than 1°C by 2025) and an increase of extreme climatic events in the Mediterranean area. – EU will strengthen its presence in the Mediterranean by the accession of five coastal States (Albania, Bosnia-Herzegovina, Croatia, Montenegro, and Turkey) and by the improvement Euro-Mediterranean cooperation. – Economic growth remains uncertain by 2025, but Euro-Mediterranean economic interdependencies are likely to increase. – Environmental policies: they will keep remaining basically top-down, corrective, and regulatory instead of participatory. 	<ul style="list-style-type: none"> – More efficient management of natural resources on the basis of sustainable consumption patterns. – Process of economic and social convergence in SEMCs with the European countries that takes place in the form of integration of production systems through the development of a Mediterranean network of synergies and collaboration. – Euro-Mediterranean integration: establishment of the four EU freedoms (persons, goods, services and capitals), access to the European domestic market and standardized norms allowing the emergence of a regional preference system. – New impetus to trade flows from the Middle East and the Maghreb to the European countries and the Gulf countries.
Demography	<ul style="list-style-type: none"> – Fertility rates in the SEMCs will converge towards levels of NMCs. – Demographic growth rates in the NMCs slacken. – Accentuation of differences in the age structure between the SEMCs and the NMCs. – Demographic growth in the SEMCs will determine increased demand for labour, for higher educational facilities, for housing, water, energy, transport... 	<ul style="list-style-type: none"> – The expansion of the labour market favoured by the regional integration process will limit the migration of qualified workers from the SEMCs. – Countries such as Algeria, Croatia, Serbia, Tunisia, and Turkey will stop being countries of emigration and will become one of the main Mediterranean destinations of migration.

	« Business as Usual » scenario	Alternative scenario
Coastal development	<ul style="list-style-type: none"> – Increase in urbanization in coastal areas because of the increase of population and because of the doubling of tourist flows. – Coastal overdevelopment, sprawl of large conurbations and saturation of coastal areas, together with an enormous increase in transports will not only worsen degradation of biodiversity but will increase natural and social risks in nearly 50% of the coastline. – Degradation of coastal environment because of the global warming (increased submersion of lower lying coasts, particularly deltas, lagoon coastlines, marine marshes, mangroves, coral reefs and certain islands; accelerated cliff and beach erosion; increased salinity in the estuaries). 	<ul style="list-style-type: none"> – Sustainable management of the Mediterranean natural and cultural coastal heritage thanks to the implementation of policies aiming at the protection of ecosystems, at ensuring a quality environment for local populations and at the development of sustainable tourism. – Strategic urban planning through multilevel cooperation (cities, regions, States).
Urbanization	<ul style="list-style-type: none"> – The considerable increase of urban population (expected to amount to 220 million in 2025 against 151 million in 2005) – A raise of urbanization of coastal regions (one third of the urban population in 2025 will focus right on the Mediterranean coasts) – Wild urbanization in SEMCs will limit access to water, sanitation, and other basic facilities to urban-dwellers – In SEMCs waste production levels will increase. – Losses of agricultural land contributing to extending artificial land cover 	<ul style="list-style-type: none"> – Sustainable urban development based on urban regeneration, on urban renewal, on the promotion of Mediterranean cultural heritage – Integration of transport and urban planning, protection of farmland and natural areas, creation of green areas, promotion of hinterland tourism and urban tourism, improvement of maritime and rail transport – Reduction of total waste production in Mediterranean countries – Amelioration of participatory process and improvement of Euro-Mediterranean cooperation (at local level and national level) in governance of urban development
Tourism	<p>(Only drivers and current trends)</p> <ul style="list-style-type: none"> – The market share of Mediterranean destinations in total tourist arrivals worldwide will decrease slightly from 32% in 2010 to 28% in 2030. – Sharp increase in touristic flows towards Balkans and the Middle East (Turkey) forecast to become the new main important destinations in the area. – Environmental pressures coming from tourism on landscapes, biodiversity, and quality of the urban environment and natural resources quality are expected to grow. – Problems related to drinking water quantity and quality, seawater quality, energy consumption, and noise could seriously affect those areas which are expected to face a growth in touristic arrivals. 	
Cruise sector	<p>(Only drivers and current trends)</p> <ul style="list-style-type: none"> – Cruise tourism sector has high growth potential in Mediterranean Sea. If one focuses on the five-yearly rate of change over the past 25 years, cruises increased by only 3% between 1985 and 1990, then fell sharply (by 45%) between 1990 and 1995, before experiencing 15 years of rapid growth (106% between 1995 and 2000, 55% between 2000 and 2005 and 57% between 2005 and 2009). 	

	« Business as Usual » scenario	Alternative scenario
	<ul style="list-style-type: none"> – Greece, Italy, Spain, France are the major Mediterranean cruise destinations. – In Italy and France the cruise segment has high added value compared with the tourism sector in general. In Italy, cruises generate, per night, four times more revenue than tourism (over €800 per night compared to over €200 for tourism in general) and in France, the ratio is six to one (about €600 for cruises and €100 for tourism in general). – 35% of Mediterranean ports that receive cruises are Italian and 34% are Greek, pointing to an almost identical number of ports in both countries. In contrast, 63% of ports of departure are located in Italy (France comes in 2nd place with 13%) and 42% of ports of call are in Greece (Italy 2nd with 28%). – In order for the cruise industry to stimulate regional development, countries must combine cruise ship production with a high ratio of ports of departure to ports of call and a considerable number of overnight stays. In the Mediterranean, only Italy manages to combine these different factors. – Inability of the dominant model of Mediterranean tourism development to meet sustainable tourism objectives because of an inefficient governance of tourism on the international, national and local scales. 	
Marine and Coastal Protected Areas (MCPA)	<ul style="list-style-type: none"> – The 2010 Aichi target of protecting 10% of Marine and Coastal Areas by 2020 is currently far from being achieved in this region. – Slight increase in the protected surface, along with a stagnation, or even decline, of the budgets of existing MCPA, sometimes leading to an abandonment of some MCPA that are generally perceived as obstacles to local economic growth. 	<ul style="list-style-type: none"> – Awareness raising on local benefits brought by MCPA leading to easier local acceptance, a deeper implication of local stakeholders in MCPA management including compensatory measures for the sectors that are negatively affected, and eventually the multiplication of MCPA until the Aichi target is reached.
Water resources	<ul style="list-style-type: none"> – Climate change, reduced rainfall, excessive pressure on water resources, and reduction of renewable water resources will result in a substantial water shortage affecting almost 290 million people in the SEMCs. – Aquatic ecosystems, providing procurement services and regulation as wetlands (natural purification and filtration of water) will be increasingly at risk because of urbanization, particularly on the coasts. – In terms of management policy for the water supply, implementation of desalination or wastewater reuse techniques is coming increasingly to meet the more and more growing demand. – Development of new forms of water production: desalinization of sea water or brackish water. 	<ul style="list-style-type: none"> – Improved water demand management: water savings. – Implementation of sustainable policies able to promote improved water and soil conservation, and increased recourse to the artificial replenishment of water tables in arid areas.

	« Business as Usual » scenario	Alternative scenario
Energy	<ul style="list-style-type: none"> – Primary energy demand in the Mediterranean will grow over the next few years because of high demographic growth combined with rapid urbanization and major socio-economic development needs. – The increase in energy demand will be more pronounced in Southern Mediterranean countries in parallel with their demographic and economic growth. – The energetic infrastructure of the SEMCs is developing fast and the construction sector is expected to double by 2030. – The Mediterranean energy mix will still be dominated by fossil fuels and the region will enter the natural gas era from 2020. – The power generation industry will continue to expand. – Renewable energies will grow strongly, by the equivalent of two Mediterranean Solar Plans by 2020 and two others between 2020 and 2030. – Energy efficiency offers significant and attainable potential and is a priority. – Environmental challenges exacerbated: climate change, interaction with water resources. – Energy dependence could thus hit 40% by 2030, which would exacerbate tension around the security of supply. 	<ul style="list-style-type: none"> – Sustainable and efficient use of energy resources thanks to a rapid improvement in use of renewable energies: solar, wind, geo-thermal energy and hydroelectricity. – Thanks to a reduction of 18% in energy dependency (compared with 38% in the trend scenario) and of 860 million tons less of CO₂ in greenhouse gas emissions the new trend will take to the creation of numerous jobs in the innovative sectors of the ‘post-oil’ era.
Transports	<ul style="list-style-type: none"> – Massive growth of transport by 2025: a 2.6 fold increase in land freight traffic, 3.7 fold in maritime freight traffic, and a virtually two-fold increase in passenger traffic. Impacts on environment are dramatic because of the raise of congestion, noise pollution, greenhouse gas emission and local pollution. 	<ul style="list-style-type: none"> – The intermodal rail transportation system and maritime reach up 20% of the mode of transportation choices: that means a limitation of the road primacy. – Extended and stricter implementation of rules to combat pollution from ships. – Sustainable policies aiming at guaranteeing efficiency will need to be adopted at all governance levels: Euro- Mediterranean, national, regional, and local.

	« Business as Usual » scenario	Alternative scenario
Maritime transports	<ul style="list-style-type: none"> – Mediterranean basin as the main transit area for trade flows between Asia and Europe. – Economic growth gives new impetus to the mass movement of goods. – Greater flow of investment in port and logistics platforms. – Governments envision scale-ups and construction of deep water ports. – Increase by a factor of 2.2 over twenty-year container handling capacity. 	<ul style="list-style-type: none"> – Significant investments in ports and the support of proactive public policies in terms of the development of rail transport: connections to ports, logistics platforms, and institutional reform. – Leading groups hold control over logistic chains. – Development of logistic platforms connected to the railway would reduce the pressure on coastal and ease road congestion. – Intra-Mediterranean exchanges remain quite low with respect to exchanges with Asia and do not alter the status of the Mediterranean as a “transit sea”. – Proactive policies help multiply railway traffic by facilitating good connection of the ports with the railway network.
Agriculture	<ul style="list-style-type: none"> – Increasingly problem of water shortage, desertification, increase of population, not-planned urbanization and enhancement of tourism will threaten Euro-Mediterranean agriculture. – Maintaining or enhancing desertification and rural poverty in SEMCs. – Growing vulnerability to the risk of fires and floods. – Irreversible loss of biodiversity. – Weakening of family farming. – Fluctuations of agricultural products prices. 	<ul style="list-style-type: none"> – Agricultural competitiveness increases. – Modernized crops subsistence farming. – Development of little and medium agriculture. – Promotion of high quality food products, corresponding to the Mediterranean cultural and gastronomic traditions.
Fisheries	<ul style="list-style-type: none"> – Widespread overexploitation of living marine resources. – Economic and demographic drivers will provoke an increase in intensive fish farming (aquaculture) and in fishing activity. – Development of new techniques and increase in boat size will determine ever more acute fishing pressure with increasing risks for environment and especially for some major fish species (e. g. Red tuna). 	