

Chapter 6

Guidelines for the Implementation of Ecosystem-Based Coastal and Ocean Management

Santoro F., Lescrauwet A.K., Taylor J.

This IRA proposal covers efforts and progress made in the context of the PEGASO project towards the implementation of the ecosystem-based approach with regard to coastal and ocean management for the Mediterranean and Black Sea regions. Moreover, a common conceptual framework was developed by PEGASO partners in order to highlight similarities between the concepts of ICZM and the Ecosystem Approach and offer a common ground for work [49] (see Box 1). The development of this common conceptual framework shows that the EsA is embedded in the ICZM thinking, and reveals a number of key points:

- While the two sets of ideas are broadly consistent, the ICZM framework tends to focus more on institutional and governance issues whereas the EsA tends to present more of an ecosystem or biodiversity management perspective. Thus, in adhering to ICZM Principles as a basis for management there is a partial shift in emphasis towards societal issues;
- The extent to which EsA promotes sustainability and conservation of natural resources is also covered in ICZM, but it does not contain particularly strong emphasis on issues of liability and restoration of ecosystem functionality. Thus, linking these ideas in the ICZM framework is a valuable step in taking the CBD principles forward into operation.

It is also very important to highlight that the principles of ecosystem based management, as they apply to the coastal zone, need to be considered from a process perspective. Hence, they are as much about designing management and governance processes as they are about helping to set objectives for current or future management and governance structures. This IRA proposal has, therefore, focused on two ICZM-EsA common framework principles:

- ICZM seeks to take account of the **wealth of natural capital in coastal zones** and the specific ecosystem services that depend on the complementary and interdependent nature of marine and terrestrial environments
- The **allocation of uses** throughout the entire coastal zone **should be balanced**. Moreover, coastal developments need to be in balance with related processes in their hinterlands.

Based on these two principles, the IRA proposal tested the value of using the PEGASO integrated assessment toolbox. The results of the analysis and assessment components were tested in the governance platform, making use of the SDI, with a view to produce a blueprint for integrated assessments of coastal and marine environments.

A number of lessons were taken from applying the various methods and approaches in the context of the Mediterranean and Black Sea basins at different scales. These lessons can be considered as the legacy of PEGASO and pave the way for future assessments at national and/or local scales.

6.1 Setting Priorities and Bridging Themes

With the purpose of making a concrete proposal for implementing ecosystem-based ocean and coastal management, a matrix was developed (Table 2). The matrix is a reflection of the assessment elaborated in this IRA proposal as devised by the editors, and using feedback from the PEGASO end-user committee, mainly from a participatory workshop held in Rimini, Italy in September 2013. The aim of the workshop was to convene members of the PEGASO end-user Committee and partners to analyse preliminary results of the IRA. The validity of these methods and tools were reviewed in light of developing proposals for policy responses and guidelines to implement ICZM in the Mediterranean and Black Seas.

Based on the analysis of the current situation, and insights about how the future might unfold, a discussion was held concerning the use of policy instruments and management tools for responding to the main identified issues, as well how they could best inform governance processes (e.g. how to continue promoting a better dialogue between scientists, practitioners and policy and decision makers). Moreover, a reflection was made on the methodologies proposed and the validity of using PEGASO tools and methods to support decision-making for ICZM.

The meeting was carried out in collaborative sessions, in line with one of the main PEGASO principles; to work in a collaborative and participatory manner to promote exchange between scientists, practitioners, and decision-makers. This collaborative exercise aimed at building a common knowledge base, building on science, field experiences and expertise to ensure an efficient ICZM governance platform.

Table 2.
Matrix of priority areas, bridging themes and suggestions for future work, summarising the main findings of the IRA proposal

| Bridging themes Priority Areas | Governance Platform | Building Basin-Wide Views | Research and Science-Policy Interface: Gaps | Building capacity | ICZM and other relevant policies |
|--|--|---|---|---|--|
| Science-Policy Interface | Further develop mechanisms for exchange of information e.g. workshops, conferences, intranet, fora, etc. | <ul style="list-style-type: none"> - Maintain updated stocktakes of experts, expertise, institutions, and networks - Develop compatible data that can be collated at a basin-wide level to inform decision-makers | <ul style="list-style-type: none"> - Translate scientific data to inform decision-making - Translate policy-related material to better-inform members of the public and scientific community - Further develop tools that aggregate data such as CIM, LEAC | Develop targeted training for Science-Policy interactions for scientists, policy and decision-makers, and ICZM practitioners | Create mechanisms for scientific input to ICZM legislation e.g. 100m setback zone, vulnerability of ecosystems |
| Bridging the gap between different sub-regions of the two basins and beyond | Increasing ownership of processes by providing opportunities for inputs from initiatives and networks throughout the two regions | <ul style="list-style-type: none"> - Strengthen data-sharing, SDI - standardise data-collection methods for cross-comparisons - Utilise data to create basin-wide snapshots of where there are research gaps and help define management priorities | Create common standards and methodologies that can be pooled for data analysis | Create a 2-way process of sharing methods, tools, approaches to implement management at the regional-seas level e.g. geonodes, training on indicators | Explore and facilitate the replication of the ICZM Protocol to other regional seas |

| Priority Areas Bridging themes | Governance Platform | Building Basin-Wide Views | Research and Science-Policy Interface: Gaps | Building capacity | ICZM and other relevant policies |
|--|--|---|---|---|---|
| Ecosystem-based Management | Seek consensus on the societal perceptions and choices on the priorities for coastal and marine management | Translate theoretical concepts into the field | <ul style="list-style-type: none"> - Set priorities for research agenda (societal challenges) - Incorporate ecosystem-based management into methods of EIAs / SEAs | <ul style="list-style-type: none"> - Translate theoretical concepts into the field - Build common understanding of concepts | <ul style="list-style-type: none"> - Better consideration of environmental degradation costs - Incorporate ecosystem-based management into legal requirements for EIAs / SEAs |
| Scalability | Test the validity and relevance of regional measures at a local scale | Link regional priorities with local specificities | Develop and test research techniques that can be scaled up or down depending on objectives e.g. LEAC at Nile delta scale | | <ul style="list-style-type: none"> - Correct fit between scales of management objectives and governance levels - Subsidiarity Principle |
| Land-Sea Interface and Interactions | Ensure there are land-based and marine-based representatives | Have a holistic view of interactions between land-based activities and marine-based, and vice-versa, showing real dimensions of potential impacts | <ul style="list-style-type: none"> - Improve knowledge of impacts from cumulative and synergistic pressures - Improve knowledge of how marine developments impact development in the coastal zone | Bring awareness to scientists, managers, and people involved in industries that are land-based or marine-based | Integrate policy instruments MSP / ICZM to address mismatch between land-based and marine-based policies |

| Priority Areas Bridging themes | Governance Platform | Building Basin-Wide Views | Research and Science-Policy Interface: Gaps | Building capacity | ICZM and other relevant policies |
|--|--|---|---|--|--|
| Integrated Approach (multi-disciplinary, multi-sectoral, and multi-level) | Further develop mechanisms for testing and sharing integrated regional assessments, approaches, methods, and tools | Evolve from a sectoral to an integrated basin-wide view | <ul style="list-style-type: none"> - Improve knowledge of impacts from cumulative and synergistic pressures, and feedback loops - Find ways of integrating different sources and methods - Improve methods of integrated assessments to support better-informed decisionmaking | Stimulate multi-disciplinarity, inter-disciplinarity, and trans-disciplinarity | Integrate policy instruments to address mismatch between sectoral policies |

Five priority areas have been identified:

1. The Governance Platform

The Governance Platform is undoubtedly one of the most important added values of the PEGASO project. Future work will be determined by the prioritisation of different issues (e.g. institutional settings, ICZM practice) and elements (e.g. the SDI and the tools), as deemed appropriate by the Platform.

2. Building a Basin-Wide View

In order to prioritise actions for management and policy-making, efforts to build views at a basin level need to continue. Deficiencies in data that could be addressed by adopting a basin-wide view should be focused on e.g. improving the precision of land-cover analyses at the regional level by acquiring new, and higher-resolution data, or expanding the CIM to other sub-regions of the two basins. This will define a baseline condition in order to measure progress towards the implementation of ecosystem-based management at a basin scale.

3. Filling Research Gaps

PEGASO highlighted a number of research gaps that need to be filled in future research programmes and frameworks, which will require strong collaborations across multiple disciplines. As reported in Chapter 2 of this IRA proposal, ICZM science is still predominantly situated in the natural sciences, therefore efforts should promote a stronger presence of the social sciences to support the ecosystem-based management e.g. further develop tools to make socio-economic evaluations of coastal and marine resources, and on the cost of environmental degradation.

4. Building Capacity

Although significant progress has been made in the context of PEGASO, there is still a lot of work to be done with regard to building capacity in the two basins if the principles of ecosystem-based management are to be fully implemented. Targeted trainings should be developed for policy and decision –makers, ICZM and MSP practitioners, and scientists in order to create a common understanding of concept, methods and tools.

5. ICZM and Other Relevant Policies

Although the ICZM Protocol represents a milestone for sustainable development in the Mediterranean, there are still some policy gaps. Moreover, much work needs to be done in the future to define strategies for the full implementation of existing legislations. Chapter 5 presents some concrete examples and proposals for future policy developments.

In order to define some specific actions and guidelines that suitably exemplified these five priority areas, the editors identified six themes that bridged various PEGASO objectives:

1. Science-Policy Interface

The PEGASO experience illustrated a need for better-informed solutions to address EsA in current governance and institutional settings. This requires improved knowledge-producing systems that are capable of informing and shaping tailored solutions. Progress has been made through various stages of the PEGASO process, by stimulating dialogues and debates among scientists, practitioners and policy and decision –makers. However, some of the clear actions defined in this IRA proposal should be put forward in order to better develop this interface in a way that could produce more effective outcomes. For example, the value of tools that help aggregate different sources and types of data. CIM and LEAC, despite their limitations and drawbacks, have been highly appreciated by the members of the end-user committee. These tools satisfy a pressing need in many different sectors to use indices and indicators to e.g. estimate potential impact intensities of different human activities (both marine-based and land-based) on marine and coastal environments and their ecosystem functioning.

2. Bridging the Gaps Between Different Sub-Regions of the two Basins and Beyond

Throughout the PEGASO project a continuous search for exchange among different contexts and cultures took place. This proved to be an essential condition for the full implementation of common objectives and views. However, there is still much room for improvement, for example in field of: the definition of concepts and approaches; legislation; data acquisition; and standardisation of data-collection methods. This is also pertinent when addressing issues at a global scale, or when extending practices and experiences outside of the Mediterranean–Black Sea basins.

3. Ecosystem-Based Management

Ecosystem-based management was the guiding approach throughout this PEGASO assessment and it is clear that work still needs to be done to continue putting this concept into practice. One of the main principles of the EsA is that economic, cultural and social perceptions of ecosystems vary. Human rights, interests and cultural diversity must be taken into account, and ecosystems should be equitably managed for their intrinsic, tangible and intangible benefits. The governance platform provided an ideal setting for discussions among all areas that are influenced by, or rely on marine and coastal ecosystems. Ecosystem-based

management must seek to identify, prioritise, and provide a consensus on the objectives from all of the different areas that have an interest in the ecosystem.

4. The Land-Sea Interface and Interaction

The Mediterranean and the Black sea are two semi land-locked basins where interactions between the land and sea have to be studied in more detail. Examples are *i.a.* related to river run-off and the effects this has on marine habitats, as well as impacts that marine activities have on land. Attention tends to focus on the effects of land-based activities on the marine environment, yet in light of the rapidly increasing blue economy, efforts should also focus on the potential impacts of marine activities (e.g. renewable energy, shipping) on coastal zones, such as urbanisation and coastal development.

5. Scalability

Working at different scales has been one of the other added values of PEGASO. For the first time, regional views of land cover throughout the Mediterranean and Black Sea coastal zones were produced, as well as cumulative impact mapping of land and marine activities at sub-regional scales. Assessment tools like LEAC have been experimentally applied at the local scale in Bouches du Rhône, in the Northern Adriatic, in the Cyclades and in the Nile Delta. Future work needs to be done in order to verify the scalability of the PEGASO tools, in order to finetune methods and approaches to adapt them for use at appropriate scales for various actions. Since impacts are context-specific, mitigation efforts should also be adaptable depending on the context. Management of the different processes and ecosystem activities should be scalable based on wide-ranging variables, such as: temporal and spatial variability; the vulnerability of different ecosystem components; the intensity of impact(s); and cultural and economic values, to name but a few. The aim should be for decentralised management (*i.e.* following the EU principle of subsidiarity). Management should: involve all stakeholders; balance local interests and wider public interests; ensure that management is closely related to the ecosystem; and encourage ownership and accountability for all of those that are influenced by the ecosystem.

6. The Integrated Approach

The previous PEGASO Desktop review of assessments, as well as the AoA, clearly identified a major gap in the lack of integrated assessments. Assessments that take account of interactions and cumulative effects across all pressures and ecosystem components are needed to fully inform policy development and management. Moreover, PEGASO has made an attempt to adopt inter- multi- and trans-disciplinary approaches. *“Because of the complexity involved, it is usually difficult if not impossible for one or few people to possess the range of knowledge needed for effective ecosystem management”* [50]. Collaborative sessions among PEGASO partners and PEGASO end-users have proven to be an effective way to quality-check scientific work, as well as guide future improvements.



A Roadmap for ICZM Implementation in the Black Sea

The Black Sea represents a specific case in the context of the PEGASO project. The project was considered as a manner to restart the debate on ICZM in the region. Some specific activities were undertaken in collaboration with the Permanent Secretariat for the Black Sea Commission PSBSC, with the main intention to develop a policy document similar to the ICZM Protocol for the Mediterranean. To test the feasibility of establishing an instrument of this kind, the PSBSC engaged the Black Sea country representatives (ICZM National Focal Points to the Black Sea Commission and Members of the ICZM Advisory Group) in the PEGASO project task, together with the Mediterranean countries. Jointly they embarked in conducting an ICZM implementation audit inventory, modelled against the requirements of the ICZM Protocol and appropriately modified for the Black Sea to reflect the non-binding nature of the ICZM Protocol for this region. The Black Sea countries successfully completed the individual stock-taking exercise and produced a regional synthesis report, which is documented in Abaza *et al.* [22] and in Antonidze *et al.* [21].

Instrumental in reviewing the state of coastal governance in the Black Sea region and in brainstorming the recommendations for the next steps was the PEGASO Visioning Workshop for ICZM in the Black Sea, organized by Permanent Secretariat in Istanbul, Turkey, on 5-7 December 2012 (similar visioning exercise for the Mediterranean Sea was held on 16-17 October 2012 in Arles, France). The discussions during this visioning workshop aimed at assessing the potential for coastal management, related policy initiatives and support tools, as a governance response to threats posed by the impacts of various coastal pressures and drivers in the Black Sea region. Outcomes of the workshop also aimed to contribute to the development of the PEGASO deliverables for the Black Sea region, such as the roadmap for institutional and legal development, coastal management guidelines (key requirement of BS-SAP, 2009), as well as the integrated regional assessment.

The visioning workshop for ICZM in the Black Sea came up with certain conclusions on priorities with regard to coastal governance needs in the region. Note should be taken of the substantive similarity in the findings of two independently composed working groups of regional stakeholders, present at the Istanbul Visioning Workshop. The identified key-outcomes and needs can be summarized as follows:

- ICZM Regional Activity Centre/Advisory Group with sustainable support
- ICZM Governance Framework/Platform/Guideline/Forum etc. for the Black sea with legal mandate
- ICZM Pilot Projects and CASES study sites
- Public participation/communication set up
- Education of coastal managers

- Informal education
- Public access to data and information
- Economic and social incentives for sustainable development
- Ultimately, an ICZM Regional Legal Act

The concluding session of the Istanbul Visioning Workshop on ICZM in the Black Sea Region provided certain guiding considerations and wrap-up discussions with regard to how to shape the Guideline for ICZM In the Black Sea, recommending specifically the following two points:

- The Guideline should utilize the language of the Protocol at full extent and serve to interpret its provisions for furtherance of good coastal governance in the spirit of the existing Protocol. Above all, this would further harmonize ICZM approaches in the Mediterranean and Black Seas.
- The Guideline should further extend by incorporating PEGASO Tools (stock-taking, indicators, marine and land ecosystem accounts, scenario building, SDI, CASES, etc.) and other ICZM tools successfully applied in the Black Sea region (coastal code of conduct, ICZM spatial planning methodology, progress indicators, etc.). The ICZM Platform, including the CoastalWiki and SDI tools, could provide the best format for the development and presentation of the Guideline.

