

CHAPTER 1

Introduction

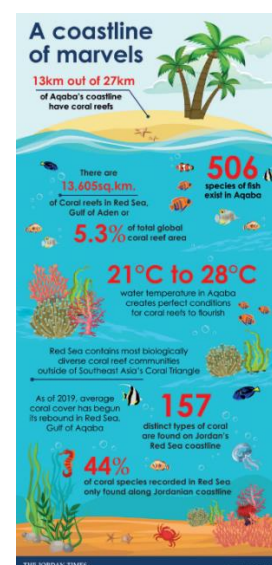
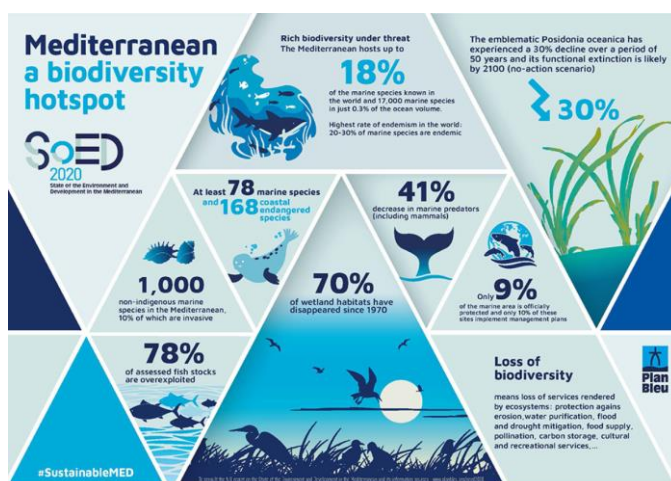
1 - INTRODUCTION

1.1 – Background

Mediterranean and Red Seas have high levels of biodiversity, and they provide crucial ecosystem services (Figure 1 and 2). They are characterised by a variety of vulnerable ecosystems, subjected by multiple threats and pressures from human activities (Katsanevakis et al 2014; Lique et al 2016; UNEP/PAP/RAC Report 2016; Sonnewald and El-Sherbiny 2017; Rodríguez-Rodríguez and Malak 2022). To mitigate the impacts on both the marine and land ecosystems, and – at the same time – to maintain the different uses of the resources and human activities, the most appropriate approach should be able to quantitatively describe the complexity and the dynamic processes of coastal ecosystems and landscapes, aiming to reach a sustainable management (UNEP/MAP and Plan Bleu, 2020). The Agenda 2030 for Sustainable Development (SD) reaffirms the urgent need to the effective protect of coastal areas. Twenty targets in five of the 17 SDGs are related to managing and conserving marine/coastal areas. Moreover, it should ensure effectiveness, mainstreaming of resources, sustainability and being suitable to measure the rapid changes of the coastal areas and propose long-term adaptive management solutions.

Figure 1.1

Infographics of Mediterranean and Gulf of Aqaba biodiversity and its threats (from UNEP website and Jordan Times website respectively)



One of the main objectives of ICZM is to “facilitate, through the rational planning of activities, the sustainable development of coastal zones by ensuring that the environment and landscapes are taken into account in harmony with economic, social and cultural development” (art. 5).

For these reasons, the Agenda 2030 firmly established the role of Integrated Coastal zone management (ICZM) as a core SD strategy.

The concept of Integrated Coastal Zone Management (ICZM) was introduced in 1970 to reduce the negative human impacts along the coastal ecosystems (Breen and Hynes 2014). The Integrated coastal zone management (ICZM) is “a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest

sense), decision making, management and monitoring of implementation. ICZM uses the informed participation and cooperation of all stakeholders to assess the societal goals in a given coastal area, and to take actions towards meeting these objectives. ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics. 'Integrated' in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space" (EEA Glossary 2000).

ICZM integrates the terrestrial and marine components of the target territory, in both time and space, and includes marine and terrestrial environments. It takes in consideration economic, ecological and social processes, a variety of actors, and laws (Duavin et al 2004).

The ecosystem-based management (EBM) framework started to be used in marine and coastal environments since the '90s (Grumbine 1994) and became one of the most appropriate strategies in preserving marine ecosystems. Long et al (2015) defined the EBM as "an interdisciplinary approach that balances ecological, social and governance principles at appropriate temporal and spatial scales in a distinct geographical area to achieve sustainable resource use. Scientific knowledge and effective monitoring are used to acknowledge the connections, integrity and biodiversity within an ecosystem along with its dynamic nature and associated uncertainties. EBM recognizes coupled social-ecological systems with stakeholders involved in an integrated and adaptive management process where decisions reflect societal choice."

ICZM emphasises maintenance and development of coastal and marine dependent economies, it focuses on conflicts resolution, usually using a short-term pragmatic approach. EBM's goal is to protect ecosystems, maintaining healthy and resilient, and this requires a longer-term approach. ICZM and EBM share an integrated approach of management, so from this perspective the ICZM can be considered an appropriate operational tool in achieving ecosystem-based management (EBM) approach, despite that the practical implementation of both has been reported challenging or unsuccessful (Golitsyn 2010; Sandersen et al 2013).

1.2 - Problem statement

ICZM is one of the more complex governance tasks in public policy. This complexity increases even further when ICZM is expected to adopt also the principles of the EBM. Like ICZM, EBM is an integrated approach to management. Although both ICZM and EBM are committed to protect the environment, ICZM has its main focus on conflict resolution, while EBM has the strongest emphasis on keeping the ecosystem healthy, productive, and resilient (Bailey 2010). The concepts of ICZM and the EBM are integrative frameworks that aim to overcome different kinds of fragmentation, and they are in many ways overlapping and similar. The actual mainstreaming of Ecosystem-Based Management (EBM) in Integrated Coastal Zone Management (ICZM) is still limited mainly because the practical application of EBM is a challenging task for ICZM actors. These are related to the difficulties that the decision-makers and the professional team involved still face because EB-ICZM require: (1) intense and continuous efforts to coordinate management actions across a wide array of stakeholders (e.g. governmental agencies; international programs and projects; social and economic associations) and application sectors (e.g. fisheries, tourism, transport, biodiversity conservation); (2) intensive work by the team of professionals implementing EB-ICZM, with particular reference to adjusting the available guidelines to the specificities of the relevant ecological and socio-economic systems, as well as in operationalising them for their effective application in area of interest; (3) significant amount of data and large databases.

In Europe, four main instruments targeted on marine governance create the political conditions for the adoption and the implementation of the EBM: Marine Strategy Framework Directive (MSFD; 2008/56/EC); EU Biodiversity Strategy to 2030 (COM (2020) 380); Common Fishery Policy (CFP, 1380/2013); Maritime Spatial Planning Directive (MSP, EC 2014/89/EU). In Aqaba the Integrated Coastal Zone Management (ICZM) was, for the first time, recently implemented (Al-Hayek 2016).

The Mediterranean faces a multitude of common challenges, including climate change, pollution, youth unemployment and social inequality. The European Neighbourhood Instrument (ENI) - Cross-Border Cooperation (CBC) finances cooperation projects for a more competitive, innovative, inclusive and sustainable Mediterranean area. As part of ENI CBC Med mission to foster cooperation for more competitive, innovative, inclusive and sustainable Mediterranean area, Mediterranean Forum For Applied Ecosystem-Based Management (MED4EBM) project was funded under the thematic objective B.4 Environmental protection, climate change adaptation and mitigation; to add another step toward achieving priority B.4.4 Integrated coastal zone management (ICZM).

MED4EBM involved one lead beneficiary and five partners (Table 1.1) and the following target area of the four countries involved: 1) Natural Reserves of “Tarsia” lake and mouth of “Crati” river, Italy (PP2); 2) Gulf of Aqaba, Jordan (PP3); 3) Kneiss islands, Tunisia (PP4); 4) Tyre Coastal Nature Reserve (PP5). A synthetic introduction to the areas is attached in the Appendix 1.2.

Table 1.1

Role	Acronym	Name of the organisation	Country
BEN	UNDP	United Nations Development Programme, Jordan Country Office Jordan	Jordan Country Office Jordan
PP1	PROGES	PROGES - Planning and Development Consulting	Italy
PP2	AdT	Amici della Terra, managing body of "Riserva Naturale del Lago di Tarsia e della Foce del Fiume Crati"	Italy
PP3	JREDS	Royal Marine Conservation Society of Jordan	Jordan
PP4	INSTM	National Institute of Marine Sciences and Technologies	Tunisia
PP5	TCNR	Tyre Coast Nature Reserve	Lebanon

1.3 - Objective and approach

The general objective of the MED4EBM project has been “contributing to the preservation and sustainable development of Mediterranean coastal zones for the benefit of present and future generations by establishing effective ecosystem-based ICZM protocols. MED4EBM was implemented in full partnership with all concerned stakeholders with focus on local authorities, NGOs, research institutions, and the private sector. The further objective of MED4EBM was coordinating-with and building-upon other levant initiatives in its target areas, thus ensuring a good level of coordination between all institutions, non-governmental and private organisations toward the effective governance of ICZM dynamics” (MED4EBM Report, September 2020).

The specific objectives of MED4EBM project were:

1. Enhancing capacities of various stakeholders and institutional actors involved in the management of coastal and marine areas, with a specific focus on the Ecosystem-Based Management practices in the Mediterranean.

2. Establishing a cooperation and coordination platform for administrators of institutions and stakeholders involved in the management of coastal and marine areas to effectively implement ecosystem-based EBM-ICZM.
3. Apply and pilot-testing a straight-forward methodological protocol and a standard management tool to facilitate coordination and harmonization of conservation and sustainable development practices and facilitate dialogue between practitioners of EBM in the Mediterranean.

MED4EBM has been using an innovative land and sea management package which makes EB-ICZM much easier to achieve for the professional team, the stakeholders and the decision-makers involved. This package has been developed by PROGES and is named Integrated Spatial Planning (PROGES-ISP); it consists of a software application and a set of methodological tools, to plan, implement and monitor EBM through a participatory and evidence-based approach. The said methods allow handling the EB-ICZM multi-stakeholders analytical processes through a straightforward path, providing analytical methods based on deterministic rather than statistical ecological and socio-economic assessments. These methods help the planning team and relevant stakeholders to identify and quantitatively assesses the relationships between ecosystem components, functions, and services, along with the associated human activities, toward the establishment of a multi-stakeholders ICZM scheme. The software package enables the analysis of spatial and tabular datasets and the compilation of data-aware advanced reports via a multi-windows interface which facilitates the browsing of large datasets through an ecosystem-based logical mapping framework.

MED4EBM aimed at enhancing capacities of various stakeholders and institutional actors involved in the management of coastal and marine areas, and at establishing a cooperation and coordination platform for them to effectively implement Ecosystem-Based Integrated Coastal Zone Management (EB-ICZM). Governments and other EB-ICZM stakeholders can use this platform to take informed decisions on planning and managing coastal resources and to achieve effective coordination on the ground. In turn, this will help wide-spreading Ecosystem Based Management (EBM) in the Mediterranean consistently with the pursuits of the Barcelona Convention and its ICZM Protocol.

References:

Al-Hayek W. Y. 2016. Assessing Integrated Coastal Zone Management (ICZM) Status in Aqaba: A Participatory Geographic Information System (PGIS) Approach. PhD thesis (University of York): 305pp.

Al Tawaha M., Omar, K., El Haddad, K., Abu Awali, A., Abdelazeem, I. (2019). Ecological Assessment of Coastal Ecosystems in Aqaba, Jordan "Marine Habitat Mapping "2019. The Royal Marine Conservation Society of Jordan. Amman, Jordan. ISBN: 978-9957-8740-4-9. 400pp.

Bailey M. 2010. Ecosystem-based Management for the Oceans edited by Karen McLeod and Heather Leslie (2009), xxii 368 pp., Island Press, Washington, DC, USA. ISBN 9781597261548 (hbk). Oryx, 44 (2): 304-305. Doi:10.1017/S0030605310000244.

Breen, Benjamin & Hynes, Stephen, 2014. "Shortcomings in the European principles of Integrated Coastal Zone Management (ICZM): Assessing the implications for locally orientated coastal management using Biome Portfolio Analysis (BPA)," *Marine Policy*, Elsevier, vol. 44(C), pages 406-418.

Dauvin J., Lozachmeur O., Capet Y., Dubrulle J., Ghezali M. and Mesnard A. 2004. Legal tools for preserving France's natural heritage through integrated coastal zone management. *Ocean and Coastal Management*, 47: 463–477.

EEA Glossary 2000. <https://www.eea.europa.eu/help/glossary/eea-glossary/integrated-coastal-zone-management>

Golitsyn V. 2010. Major challenges of globalisation for seas and oceans: Legal aspects. In: D. Vidas (Ed.) *Law, technology and science for oceans in globalisation*: 59–73.

Grumbine, R. E. 1994. What is ecosystem management? *Conservation Biology* 8: 27-38.

Katsanevakis, Stelios & Coll, Marta & Piroddi, Chiara & Steenbeek, Jeroen & Lasram, Frida & Zenetos, Argyro & Cardoso, Ana. (2014). Invading the Mediterranean Sea: Biodiversity patterns shaped by human activities. *Frontiers in Marine Science*. 10.3389/fmars.2014.00032.

Liquete, C., Piroddi, C., Macías, D. *et al.* Ecosystem services sustainability in the Mediterranean Sea: assessment of status and trends using multiple modelling approaches. *Sci Rep* 6, 34162 (2016). <https://doi.org/10.1038/srep34162>

Long, R.D., Charles A., Stephenson R.L. 2015. Key principles of marine ecosystem-based management. *Marine policy* 57:53-60

MED4EBM Report, September 2020. <https://www.enicbcmed.eu/sites/default/files/2021-03/MED4EBM%20-%20Anual%20Report.pdf>

Rodríguez-Rodríguez D. and Malak D. A. 2022. An assessment of marine biodiversity protection in the Mediterranean Sea: a threatened global biodiversity hotspot, Interreg Med Biodiversity Protection project: 17 pp. https://planbleu.org/wp-content/uploads/2023/01/An_assessment_of_marine_biodiversity_protection_in_the_Mediterranean_Sea_3.pdf

Santoro F., Lescauwat A.K., Taylor J., Breton F. (eds) 2014. *Integrated Regional Assessments in support of ICZM in the Mediterranean and Black Sea Basins*. Paris, Intergovernmental Oceanographic Commission of UNESCO: 84 pp. (IOC Technical Series, 111; IOC/2014/TS/111.) (English only)

Sandersen H. T., Mikkelsen E., Moksness E. and Vølstad J. H. 2013. From: Knowledge issues in ICZM and EBM Applied on small geographic scales: lessons from a case study in Risør, Norway. *Global challenges in Integrated coastal zone management*, first edition, Edited by Erlend Moksness, Einar Dahl and Josianne Støttrup. Chapter 10: 127- 143.

Sonnenwald, M., El-Sherbiny, M.M. Editorial: Red Sea biodiversity. *Mar Biodiv* 47, 991–993 (2017). <https://doi.org/10.1007/s12526-017-0648-9>

United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi: pp 341.

UNEP/PAP/RAC Report 2016. The way to a regional framework for ICZM in the Mediterranean 2017-2021: pp 112.

Figures:

- 1) <https://www.unep.org/unepmap/resources/factsheets/biological-diversity>
- 2) <https://jordantimes.com/news/local/withstanding-climate-change-jordans-coral-reefs%C2%A0struggle-against-human-impact>