



MARINEPLAN

WP 1: ECOSYSTEM-BASED MARITIME SPATIAL PLANNING KNOWLEDGE AND GUIDANCE

TASK 1.1

FRAMING AND OPERATIONALISING ECOSYSTEM-BASED MARITIME SPATIAL PLANNING

CONCEPTS AND DEFINITIONS

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Table of Contents

| | | |
|----------|-----------------------------------|-----------|
| 1 | INTRODUCTION | 4 |
| 2 | TERMS AND DEFINITIONS..... | 5 |
| 3 | REFERENCES | 13 |

1 INTRODUCTION

The purpose of this document is to support a common understanding of most frequently used terms in the framework of Maritime Spatial Planning¹ and the Ecosystem-based approach.

The present document is based on “Marine Strategy Framework Directive Terminology Definitions and Lists” developed by Smith *et al.* (2022) in the context of the European Project GES4SEAS (<https://www.ges4seas.eu/>) and completed with additional concepts and definitions related to MarinePlan project.

The definitions have been adopted following a bibliographic and technical document search under the following order of criteria:

1. Official documents (e.g., Maritime Spatial Planning Directive (MSPD), Marine Strategy Framework Directive (MSFD), Habitats Directive (HD), Birds Directive (BD), Biodiversity Strategy and the Green Deal.
2. Technical reports published or contracted by the European Commission (EC), European Environment Agency (EEA), etc.
3. Other high-level international institutions such as the Convention on Biological Diversity (CBD), Regional Sea Conventions, etc.
4. Scientific publications and technical reports.

¹ It shall be understood as a synonym for “marine spatial planning” or “maritime spatial planning.”

2 TERMS AND DEFINITIONS

| No. | Term | Definition | Additional information |
|-----|--|--|---|
| 1 | Ecosystem-based approach (to management) (EBM) | An 'ecosystem-based approach' or 'ecosystem-based management' is an integrated approach to the management of human activities that considers the entire ecosystem including humans (CSWD, 2020). | <p>The main goal of ecosystem-based management is to maintain ecosystems in a healthy, clean, productive and resilient condition so that they can provide humans with the services and goods upon which they depend. It is a special approach that builds around a) acknowledging connections, b) cumulative impacts and c) multiple objectives. In this way, it differs from traditional approaches that address single concerns (e.g., species), sectors, or activities (CSWD, 2020).</p> <p>Other definitions: The comprehensive integrated management of human activities based upon the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the Good Environmental Status (GES according to Marine Strategy Framework Directive; MSFD) of marine ecosystems, thereby achieving sustainable use of goods and services and maintenance of ecosystem integrity (ICES, 2003).</p> <p>An interdisciplinary management approach that acknowledges the complex nature of ecological systems and integrates social, ecological, and governance principles to achieve sustainable use of natural resources in an equitable way (Domínguez-Tejo <i>et al.</i>, 2016).</p> |
| 2 | Marine or Maritime Spatial Planning (MSP) | 'Maritime spatial planning' means a process by which the relevant Member State's authorities analyse and organise human activities in marine areas to achieve ecological, economic and social | A process to apply an adaptive ecosystem-based approach (as referred to in Article 1(3) of MSFD Directive 2008/56/EC9) in order to manage the oceans towards the sustainable use of marine resources, this is, ensuring that the collective pressure of all activities is kept within levels compatible with the achievement of good environmental |

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| | | objectives (Directive 2014/89/EU). | <p>status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised while contributing to the sustainable use of marine goods and services by present and future generations (MSPD, 2014/89/EU).</p> <p>MSP is also part of the overarching “Integrated Maritime Policy of the EU” (COM(2009)0540), which has its objective to ‘support the sustainable development of seas and oceans and to develop coordinated, coherent and transparent decision-making in relation to the European Union’s sectoral policies affecting the oceans, seas, islands, coastal and outermost regions and maritime sector.</p> <p>Other definition: The process by which relevant authorities analyse and allocate the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that have been specified through a political process (UNESCO/IOC).</p> |
| 3 | Ecosystem-based marine spatial planning (EB-MSP) | The comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of marine ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity (HELCOM and OSPAR, 2003) | The application of an ecosystem-based approach in MSP will contribute to promoting the sustainable development and growth of the maritime and coastal economies and the sustainable use of marine and coastal resources (MSPD, 2014/89/EU). |
| 4 | Marine Protected Area (MPA) | Geographically distinct zones for which protection objectives are set (EEA, 2018). | According to Grorud-Colvert <i>et al.</i> (2021), MPAs are conservation tools intended to protect biodiversity, promote healthy and resilient marine |

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| | | | ecosystems, and provide societal benefits. MPAs have become the main management tools in coastal ecosystems to maintain key habitats and viable fish populations. |
| 5 | Natural habitat types of Community Interest | Habitats which, within the territory referred to in Article 2: (i) are in danger of disappearance in their natural range, or (ii) have a small natural range following their regression or by reason of their intrinsically restricted area; or (iii) present outstanding examples of typical characteristics of one or more of the five following biogeographical regions: Alpine, Atlantic, Continental, Macaronesian and Mediterranean. Such habitat types are listed or may be listed in Annex I (EU Habitat Directive, 92 /43 /EEC). | |
| 6 | Species of Community Interest (SCI) | Animal and plant species including endangered, vulnerable, rare and endemic species, or those requiring particular attention (EU Habitat Directive, 92 /43 /EEC). | Such species are listed or may be listed in Annex II and/or Annex IV or V of the Habitats Directive. |
| 7 | Special Protection Areas (SPA) | Suitable territories/habitats designated by Member States ensuring their protection for endangered and migratory bird species included in Annex 1 (Birds Directive, 2009/147/EC). | Since 1994, all SPAs are included in the Natura 2000 ecological network, set up under the Habitats Directive 92/43/EEC. |
| 8 | Special Areas of Conservation (SAC) | A site of Community Importance designated by the Member States through a statutory, administrative and/or contractual act where the | |

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| | | necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and /or the populations of the species for which the site is designated (EU Habitat Directive, 92 /43 /EEC). | |
| 9 | Ecologically and Biologically Significant Areas (EBSA) | Special areas in the ocean that serve important purposes, in one way or another, to support the healthy functioning of oceans and the many services that it provides (CBD, 2006). | CBD scientific criteria for ecologically or biologically significant areas (EBSAs) (annex I, decision IX/20): Uniqueness or Rarity; Special importance for life history stages of species; Importance for threatened, endangered or declining species and/or habitats; Vulnerability, Fragility, Sensitivity, or Slow recovery; Biological Productivity; Biological Diversity; Naturalness. |
| 10 | Human activities | Various actions for recreation, living, or necessity done by people. In the marine environment, EEA identifies the following activities related to six key sectors: energy, industry, transport, fishing and aquaculture, tourism and recreation, and households. | |
| 11 | Driver | Drivers or driving forces describe the social, demographic, and economic developments in societies and the corresponding changes in lifestyles, overall levels of consumption and production patterns (EEA, 1999). | Societal basic needs – the qualities and their quantities that humans need from the natural and built environment for health and well-being, e.g., space, food, water, clean air, shelter, energy, comfort, employment, enjoyment and relaxation, education, good mental and physical health. In Smith <i>et al.</i> , (2022) from Elliott <i>et al.</i> , (2022). |

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| 12 | Pressures | Resulting from [human] activities - defined as the mechanisms (as rate processes) of change, in the way in which an activity will change the natural and societal systems, by modifying the structure and functioning of the systems. In Smith <i>et al.</i> (2022) from Elliott <i>et al.</i> , (2022). | |
| 13 | Cumulative impacts | The impacts (positive or negative, direct and indirect, long-term and short-term impacts) arising from a range of activities throughout an area or region, where each individual effect may not be significant if taken in isolation (European Commission, 1999). | <p>The impacts can arise from the growing volume of traffic, the combined effect of a number of agriculture measures leading to more intensive production and use of chemicals, etc. Cumulative impacts include a time dimension since they should calculate the impact on environmental resources resulting from changes brought about by past, present and reasonably foreseeable future actions (European Commission, 1999).</p> <p>Other definition: Aggregated, collective, accruing, and (or) combined ecosystem changes that result from a combination of human activities and natural processes (Scherer, 2011). They can be antagonistic, synergistic, and additive. In Smith <i>et al.</i> (2022) from Birk <i>et al.</i> (2020).</p> |
| 14 | Cumulative Effects Assessment-CEA (Combined Effects Assessment, Cumulative Impact Assessment, In combination Effects Assessment) | Assessment of ecosystem changes that accumulate from multiple pressures, both natural and manmade. In Smith <i>et al.</i> (2022) from Dubé <i>et al.</i> (2013). | <p>Terminology varies slightly between studies and Directives (e.g., cumulative/collective/combined impacts/ effects), but essentially, they refer to the same, i.e., a methodological approach to map and analyse the potential effects of multiple human pressures on marine species, habitat and communities (Kirkfeldt and Andersen, 2021).</p> <p>Other definition: Holistic evaluations of the combined effects of human activities and natural processes on the environment and constitute a specific form of</p> |

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| | | | environmental impact assessment (Jones, 2016; ICES, 2019). |
| 15 | Type of cumulative pressures | <p>Additive: the cumulative pressure is equal to the sum of the individual pressures.</p> <p>Antagonistic or countervailing: the cumulative pressure is less than the sum of its individual pressures.</p> <p>Synergic: the cumulative pressure is greater than the sum of the individual pressures.</p> | |
| 16 | Endogenous managed pressure | Anthropogenic pressures which originate within the management system, i.e. the causes of change can be controlled and their consequences addressed. Borja <i>et al.</i> (2010) | |
| 17 | Exogenous unmanaged pressure | Causes of change which have their origin outside of a management system and cannot be controlled by local measures whereas the consequences which occur in the management site are subject to management measures. Based on Borja <i>et al.</i> (2010) | |
| 18 | Ecosystem services | The final outputs or products from ecosystems that are directly consumed, used (actively or passively) or enjoyed by people (CSWD, 2020). | <p>The Common International Classification of Ecosystem Services (CICES) is the 'EU reference' typology for all ecosystem services (CSWD, 2020).</p> <p>CICES defines ecosystem services as the contributions that ecosystems make to human well-being, and distinct from goods and benefits that people subsequently derive from them (Haines-Young & Postchin, 2018).</p> |
| 19 | Socio-ecological system (SES) | Complex adaptive systems where human | It is considered a helpful framework for understanding and management of |

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| | | societies are embedded in nature and where an ecological (biophysical) system is intricately linked with and affected by one or more social (human) systems (adapted from Anderies <i>et al.</i> , 2004). | complex systems, where bidirectional human-nature interactions occur through multiple feedback mechanisms (Berkes <i>et al.</i> , 2002; Everard, 2020; Gain <i>et al.</i> , 2020). Usually, the objective of applying the SES framework is to improve resource management (Colding and Barthel, 2019). |
| 20 | Systematic Conservation Planning (SCP) | The science of choosing which actions to take where for the purpose of conserving biodiversity (Moilanen <i>et al.</i> , 2009; Possingham <i>et al.</i> , 2006). | The most common form of systematic conservation planning is creating a system of protected areas. SCP focuses on locating, designing, and managing conservation areas that collectively represent the biodiversity of a region for the least socioeconomic cost (Watts <i>et al.</i> , 2017). |
| 21 | Decision support tool (DST) | Software-based simulative and analytical tool that provides support in an evidence-based, decision-making process (Rose <i>et al.</i> , 2016). | <p>A decision support tool is a specific tool or software application that provides information and guidance to support decision-making. They can be either fully computerised, human-powered or a combination of both (Curtice <i>et al.</i>, 2012; Rose <i>et al.</i>, 2016).</p> <p>It may include features such as data analysis, modelling, and visualization, but is typically focused on providing a specific type of support for a particular decision-making process.</p> <p>DSTs can be used to support decision-making processes in a more systematic and objective manner and alternative management plan development (Pınarbaşı <i>et al.</i>, 2017).</p> <p>Tools may help users, including managers (but also scientists, industry, or NGOs, among others), and support decision-making. These tools can also be used for data and information transfer, analysis or storage (Rose <i>et al.</i>, 2016).</p> <p>DSTs can be used to support management plan development, including ecosystem-based MSP (Pınarbaşı <i>et al.</i>, 2019).</p> <p>A DST is a component of a decision support system (DSS), which is a broader and more comprehensive system for supporting decision-making.</p> |

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| 22 | Decision support system (DSS) | A decision support system (DSS) is an information system that supports decision-making activities. | Decision support systems are designed to help users which rely on knowledge in decision-making to solve problems. Decision support systems are comprehensive and integrated systems that include a range of tools and resources to support decision-making. Thus, a DSS typically includes multiple decision support tools (DSTs), databases, and other resources that are integrated to provide a comprehensive and unified decision-making environment. It may also include features such as communication and collaboration tools, decision-making processes, and feedback mechanisms to support ongoing improvement. DSS specifically focuses on features which make them easy to use by non-computer-proficient people in an interactive mode. |
| 23 | Ecosystem component | Biotic and abiotic elements that constitute the ecosystem. | |
| 24 | Ecosystem restoration | The process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity (The United Nations Decade on Ecosystem Restoration). | Ecosystem restoration encompasses a wide continuum of practices, depending on local conditions and societal choice. In particular, active restoration (i.e., the process of actively assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed; Society for Ecological Restoration International Science Policy Working Group, 2004) is considered an effective strategy to supplement current conservation and management actions when the natural recovery of ecosystems is precluded. |

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