

Introduction to the CEA and SEA topic

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Introduction: definitions

Cumulative Effects Assessment (CEA)

- “Cumulative effects assessment is a systematic procedure for identifying and evaluating the significance of effects from multiple pressures or activities.” OSPAR Intersessional Group on Cumulative Effects, OSPAR, 2013.

Strategic Environmental Assessment (SEA)

- “The process by which environmental considerations are required to be fully integrated into the preparation of Plans and Programmes and prior to their final adoption”, UNEP, 2004.

Ecosystem services (ES)

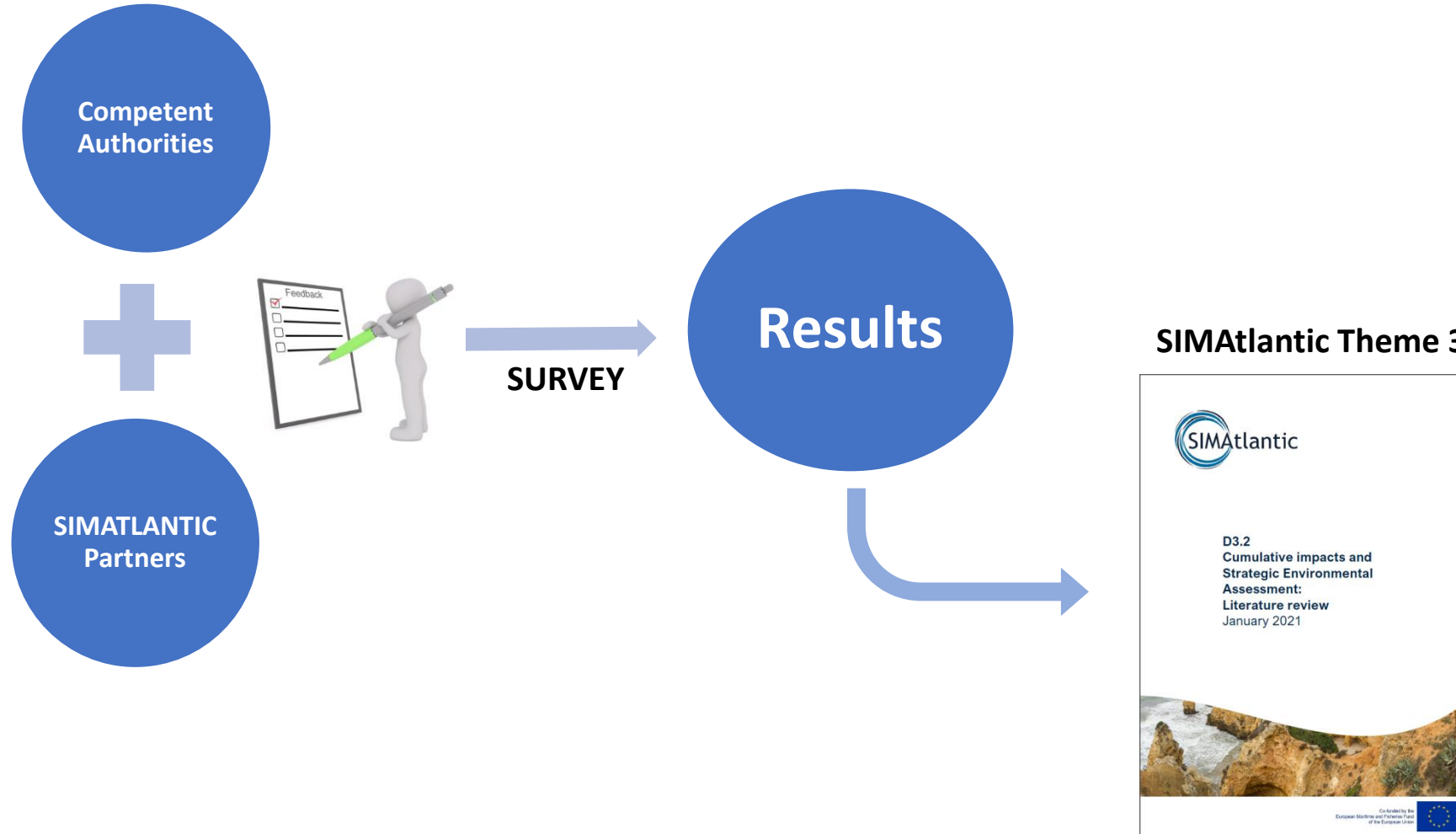
- “The benefits that humans derive from ecosystem functions, either directly or indirectly, including provisional, regulating, cultural and supporting services”, Millennium Ecosystem Assessment.

SEA, CEA, ES and MSP

- Cumulative effects are a **key aspect of SEA for MSP**, given the broad scale and diversity of proposed development.
- CEA requires several data in order to **identify and assess** the direct and indirect interactions between multiple activities with multiple receptors (e.g. species) .
- The aim of CEA is to understand the **causes** (the source of pressures and effects), producing an estimate of the expected impact, and assist in **management decisions** based on possible scenarios of the spatial and temporal effects of the causes identified
- The EU has still little or no guidance for CEA, and since it is necessary under many legal requirements (SEA and EIA), this leads to **different approaches and methodologies** being used in different contexts (and different Member States), so there's **no 'common' approach** to CEA and this is an obstacle for transboundary cooperation. CEA is still complex and has some challenges to overcome
- Applying CEA and SEA to MSP is the best way to **ensure** that all the interactions between human activities/uses and the marine ecosystem are being considered in our MSP approaches.
- MSP has a clear connection to CEA, since the **ecosystem based approach** is a fundamental requirement of MSP, dealing with cumulative effects is one of the main supports for the development of MSP itself. **Spatial analysis** of human activities/uses and their cumulative impacts in the marine environment is consequently **necessary** for implementing the ecosystem-based approach to MSP.
- MSP represents an **opportunity** for planners and decision makers to spatially assign human uses at sea to favour socio-economic development, preserving the good status of the marine environment and the sustainable use of its resources, meeting both ecological, economic and social objectives, integrating ES.

SIMAtlantic deliverable

Survey on Cumulative Effects/Impacts Assessment (CEA/CIA) and SEA practices



<https://www.simatlantic.eu/wp-content/uploads/2021/02/D3.2-Cumulative-impacts-and-SEA-literature-review.pdf>

Challenges and opportunities of the above approaches (SEA/CEA/CIA/ES)

Challenges	SEA	CEA/CIA	ES
The complexity of models (Models are usually complex and, most MSP planners do not have the background knowledge to fully understand them.)	X	X	X
Data availability and access to tools (Data availability and access of the tools and the geographical coverage and resolution of the data. This limits accuracy and usefulness of the results.)	X	X	X
Data format (Since most of the data used for the assessments comes from multiple sources, usually the data comes with different formats and scales.)	X	X	
Uncertainty (Many ecosystem features and functions are yet to be fully researched, therefore most analysis have a degree of uncertainty regarding data input. This way, the results must be analysed considering the level of uncertainty indicated.)	X	X	X
Temporal conditions (The ability to account for future conditions is limited, mainly by ecological understanding and corresponding data. In CEA, most tools are not equipped to consider season factors in the assessment.)		X	X
Interpretation of results (Usually the output of CEA are maps, which do not capture the multi-dimensional nature of the assessment. The results need to be analysed following some criteria guidelines.)		X	
The limitation in recognising and predicting the numerous interactions and (indirect) effects of pressures.	X	X	X
Sustainability of the tools (Most of the tools used in CEA were developed for a short-term use. As knowledge will evolve and more information will be available, there is the risk that most of the tools will not be prepared to be used in long-term.)		X	
Sectoral approach to assessment (Cumulative effects and ecosystem services are particularly difficult to quantify and manage in the marine environment because of the multitude of impacts and activities interacting.)	X	X	X
Complexity of the marine environment (The dynamic and complex nature of the marine environment, its high connectivity and widespread of species and spatial distributions of any ecological limits the support of ES assessment.)			X
Stakeholder involvement in the planning process	X	X	

Communication and dissemination of results (Most of the projects, tools and studies carried out in these areas of knowledge lack the dissemination necessary to reach more stakeholders. The technical language can be a barrier to the dissemination of the results.)	X	X	X
Open access to the tools developed		X	
Absence of a comprehensive analyses of the different approaches (With the development of several methodologies to face the challenges of SEA, CEA and ES assessment, there is an absence of a comprehensive analyses of the different approaches.)	X	X	X
Connectivity between the several policies (The EU has a vast range of directives and policies regarding the management of the maritime space. There is the challenge of establishing the connectivity between the several policies.)	X	X	X

Opportunities in CEA, SEA and ES

Challenge	Opportunities
Data format	Development of initiatives to centralised data, to serve as data repositories.
Uncertainty	The importance of expert judgement as an initial basis for model inputs, which can be further supplemented to increase certainty as more knowledge and data is collected.
Temporal conditions	Defining and analysing future conditions to allow for longer term predictions resulting from MSP.
Interpretation of results	Development of guidelines for result interpretation.
Sectoral approach to assessment	Develop methodologies that promote an integrated analysis of cumulative impacts and Ecosystem services.
Stakeholder involvement in the planning process	<p>Close collaboration between tool developers, scientific researchers and MSP planners or another target group can ensure that outputs are customised to inform decisions related to clearly defined MSP objectives and impact / risk assessment criteria.</p> <p>In CEA, for instance, by working hand-in-hand on tool development with this common basis in mind, there is an improved likelihood of tool results being used in MSP decision making.</p>
Communication and dissemination of results	The results of the tools and methodologies used in SEA, CEA and ES assessment have the potential to be used for raising awareness among stakeholders about the ecosystem-based approach and to make sure the scenarios developed will be considered during the MSP process. Sharing results and processes with stakeholders engaged in MSP can
	help clarify conceptual definitions, risks and decision criteria, allowing them to gain better understanding of these planning and management concepts in a demonstrative way.
Open access to the tools developed	Several of the existing tools are web-based and ready for use, and others under development will be made available online as well. Given that data is already gathered in the correct formats for use in the tool/model, online tool availability makes it easy for multiple planners to use a specific tool.
Absence of a comprehensive analyses of the different approaches	The identification of similarities between methodologies and tools will allow further collaborations and the development of best practices guidelines for future use and implementation in the MSP process.
Establishing the connectivity between the several policies	Most of the tools and approaches developed for CEA, SEA and ES provide a connection to other relevant policies (MSFD; Natura 2000, etc.). This can help MSP authorities with 'coherence' between MSP and MSFD, for instance, and fulfil one of the minimum requirements of the MSP Directive.