

Managing marine activities in transboundary ecosystems

SIMAtlantic is a two-year EU-funded project (2019–21) supporting the establishment and implementation of maritime spatial planning (MSP) in five European Atlantic countries: France, Ireland, Portugal, Spain and UK. This factsheet summarises our work on the Carlingford Lough case study, one of four project case studies. Find out more at www.simatlantic.eu.

Highlights

- Carlingford Lough is a transboundary sea lough bordering the Republic of Ireland (ROI) and Northern Ireland (NI)
- Although there is a substantial amount of environmental data for the lough in both ROI and NI, there is further opportunity for integration from a management perspective
- Managing marine activities within a transboundary waterbody is complex and there is an opportunity for further enhancement of cross-border cooperation
- We have produced a non-statutory practical guidance document, which addresses these issues and provides a template for similar work in other transboundary areas

The case study

Carlingford Lough is a transboundary sea lough at the mouth of the Newry (or Clanrye) River on the east coast of Ireland, bordering both the Republic of Ireland (ROI) and Northern Ireland (NI).

This case study looked at marine activities, conservation objectives, data integration and stakeholder involvement, with a view to understanding maritime spatial planning approaches in a shared waterbody. The case study focused on aquaculture activities within the shared waters of Carlingford Lough.

What are the main challenges?

Whilst the position of the land border is known, the positions of where maritime boundaries could lie are much more complex and have never been formally agreed.

Transboundary waterbodies require a collective approach towards maritime spatial planning and while there is a substantial amount of environmental monitoring data in both ROI and NI for the case study area, there is less integration from a management perspective.

Right: Aquaculture trestles on the northern shores of Carlingford Lough (credit: AFBI)



Key findings

A non-statutory practical guidance document is being produced to assist developers, regulators and those working in or with a shared interest in the coastal region.

It provides practical information on who is responsible for the planning and management of current activities within the Lough. It highlights the complex nature of such a multi-functional waterbody and the need for an integrated ecosystem-based approach to management and planning.

It is hoped this guidance document can be used as a template to produce similar supporting work in other transboundary areas of the European Atlantic region.

Local impact

Our case study has produced a review of marine activities occurring within the shared waters of Carlingford Lough, with a focus on aquaculture. This has also been summarised into a factsheet for use by local stakeholders.

A breakdown of relevant EU and national legislation, relevant to the case study area, for both jurisdictions has been produced and an operational guidance graphic created, providing direction for stakeholders to the relevant regulatory bodies for maritime sectors within each jurisdiction.



Further information

[Non-statutory practical guidance document](#)

[Carlingford Lough factsheet](#)

Above: Seed mussel (*Mytilus edulis*), which is cultured within Carlingford Lough (credit: AFBI)

Right: View from the southern shores of Carlingford Lough looking over to the northern shores (credit: AFBI)



Communication on maritime spatial plans

SIMAtlantic is a two-year EU-funded project (2019–21) supporting the establishment and implementation of maritime spatial planning (MSP) in five European Atlantic countries: France, Ireland, Portugal, Spain and UK. This factsheet summarises our work on the Gironde Estuary and Pertuis Sea case study, one of four project case studies. Find out more at www.simatlantic.eu.

Highlights

- The holistic approach of MSP brings a high level of complexity that can limit stakeholder engagement
- Our case study developed a web application to communicate the management plan of the Gironde Estuary and Pertuis Sea Marine Nature Park in France
- The case study aims to address some of the main challenges: facilitating better understanding of the plan's purposes, fostering ownership and thereby encouraging better compliance and enforcement

The case study

The aim of the case study was to develop a web application to enhance stakeholder ownership of maritime plans.

We tested this application on the management plan of a multi-objective Marine Protected Area (MPA): the Gironde Estuary and Pertuis Sea Marine Nature Park, whose management plan structure is very similar to French maritime plans delivered under the EU MSP Directive.

The resulting demonstration web portal is at <https://plan-gestion.parc-marin-gironde-pertuis.fr/>.

What are the main challenges?

The holistic approach of MSP, aiming to address the whole range of interconnected economic and environmental demands through an ecosystem approach, taking land-sea interactions into consideration, brings a high level of complexity that could constitute a significant limitation to stakeholder assimilation.

Moreover, maritime strategies, objectives and plans are often delivered through very large and complex documents. Stakeholders frequently claim that they have neither the competences nor the time to understand, get a sense of ownership and comment on the documents released for consultation.

Images: Ile de Ré (right); Gironde Estuary (next page)



Aims of the case study

This case study was about exploring perspectives offered by web solutions to deliver complex plans in an intelligible way. We aimed to tackle several key challenges:

- Reduce the number of documents to be consulted upon
- Make information more accessible for a broader range of stakeholders
- Enable information in the plan to be updated in real time
- Make the link between textual and spatial information more explicit

Key findings

We succeeded in developing a web application to display 'factsheets' detailing elements of the management plans (stakes, objectives, actions and surveys) in parallel with spatial information related to each element addressed.

We also re-wrote technical descriptions of the initial management document (in paper format) to make them more accessible to stakeholders.

Finally, we established dynamic relationships between linked elements of the management plan (objectives and action concerning a particular stake for example), enabling users to navigate throughout the management plan and understand planning decisions.



Local impact

The expected outcome of this work is to enable the park management board, comprising the State representatives and stakeholders, to use the management plan for decision making during the consultation process, which is not currently the case.

Further information

Stakeholder ownership of maritime plans: Perspectives created by web-based solutions

Web portal for communicating on the management plan of the Gironde Estuary and Pertuis Sea Marine Nature Park



Transboundary impact assessment

SIMAtlantic is a two-year EU-funded project (2019-21) supporting the establishment and implementation of maritime spatial planning (MSP) in five European Atlantic countries: France, Ireland, Portugal, Spain and the United Kingdom. This factsheet summarises our north-western Iberian Peninsula case study, one of four project case studies. Find out more at www.simatlantic.eu.

Highlights

- Sustainable development and specifically sustainable blue economy asks for an ecosystem-based approach (EBA) to maritime spatial planning (MSP)
- Cumulative impacts/effects assessment (CIA/CEA) is an essential part of this process as it supports the identification, description and evaluation of significant effects of implementing the plan on the marine environment
- Through this case study, we developed a methodology to assess cumulative impacts/effects at a transboundary scale
- For the study area, we mapped the impacts of activities and their relation to protected areas

The case study

The case study area is located at the northwest border between the North Region (Portugal) and the southern coast of Galicia (Spain).

A framework was developed to explore cause and effect relationships between activities, pressures and impacts. The methodology is described in detail in the case study report, with recommendations for how it might be improved further.

Local impact

The case study provides an opportunity for further exploration of how to apply a CEA methodology to evaluate and analyse the pressures and impacts of maritime uses and activities in the study area, supporting an ecosystem-based management approach to MSP. Furthermore, a region like the European Atlantic could benefit from this kind of standardised methodology, not only at local level but also at sea basin level, to have an overall view of cumulative effects in order to take specific actions at the appropriate scales.

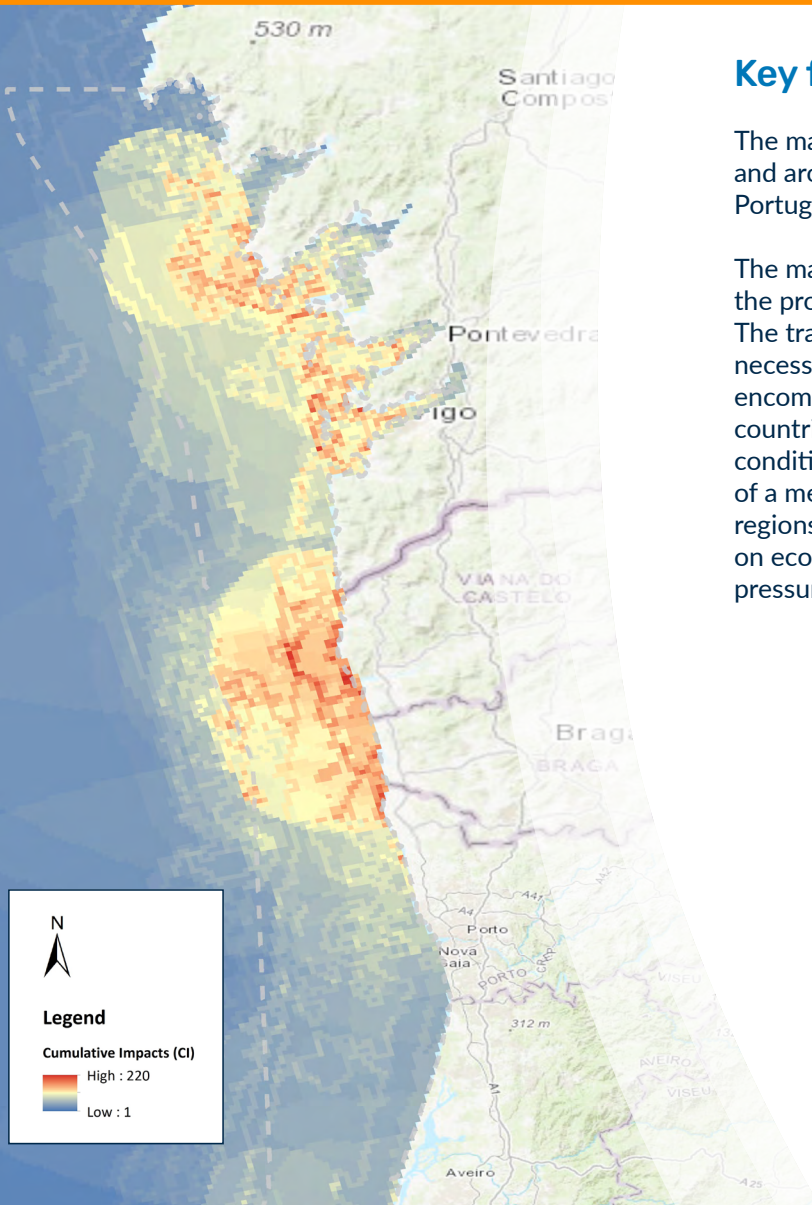
Further information

[Cumulative impacts and Strategic Environmental Assessment: Literature review](#)

[Transboundary impact assessment in the north-western Iberian Peninsula: Case study report](#)



Image: Anchored fishing boats, Galicia



Key findings

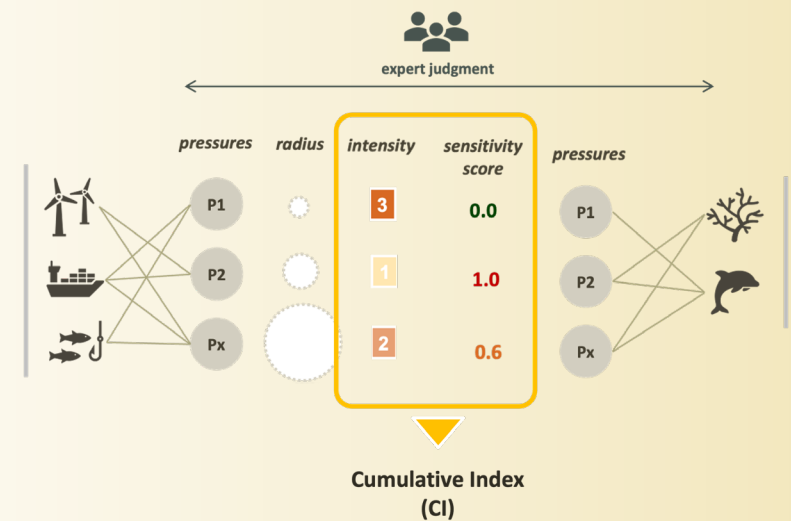
The map on the left shows cumulative impacts in and around the study area from current activities in Portugal and Spain and potential activities in Portugal.

The main benefits of this work were related to the process of developing the methodology itself. The transboundary nature of the case study made necessary the adoption of an approach that could encompass the specificities and peculiarities of both countries while providing standardised results. These conditioning factors influenced the development of a methodology that can be extrapolated to other regions and updated over time, with new knowledge on ecological components and their sensitivities to pressures caused by activities.



We encountered some constraints to obtaining appropriate information inputs to the methodology. Aspects of the methodology rely on expert opinion and there can be challenges ensuring enough views are collected across all the topic areas that need to be considered (e.g. cetaceans, seabirds, marine turtles and habitats) to allow robust statistical analysis to be carried out. Another constraint found is that there can be limitations in providing appropriately detailed background information to experts to allow them to make a judgement in assessing ecological components' sensitivity to pressures and determining any given pressure's radius of influence.

The methodology is summarised by the diagram below.



Land-sea interactions in the Irish Sea

SIMAtlantic is a two-year EU-funded project (2019–21) supporting the establishment and implementation of maritime spatial planning in five European Atlantic countries: France, Ireland, Portugal, Spain and UK. This factsheet summarises our Irish Sea case study, one of four project case studies. Find out more at www.simatlantic.eu.

Highlights

- Many sea-basin maritime sectors have significant land-sea interactions (LSI) that can be understood using analytical methods
- Climate change-induced impacts heighten the need to understand LSI at a sea-basin level
- The BT-Swift method helps to identify LSI-related pressures and risks, and to develop mitigation strategies
- Value-chain analysis can help to identify the potential socio-economic impacts and benefits across a sea basin

The case study

We carried out an investigation of LSI within the Irish Sea region (see Fact Sheet 'Land-sea interactions' for our definition of LSI). We involved key stakeholders from the Republic of Ireland and Northern Ireland, including government bodies, NGOs and maritime sectors, and from the Irish Sea Maritime Forum. We explored two methodologies for analysing LSI, in the context of two different maritime sectors.

Offshore wind energy

Offshore wind energy has only been developed on a small scale so far in Irish waters, but Ireland has ambitious targets for development. Offshore wind has important LSI, such as the economic benefits for land-based supply chains, and there are considerable opportunities for firms in Ireland and Northern Ireland to benefit from manufacturing demands.

We used value chain analysis to examine the potential socio-economic impacts of Irish Sea-based wind farm development. The proposed development by Ireland of 3.5GW of offshore wind energy by 2030 could create over 20,000 employment opportunities, though much of this would be based overseas due to limited manufacturing capabilities.

Image: Wind turbines off the coast of the UK



However, the prospect of maintenance and operation positions has seen a boost in investment in engineering apprenticeship schemes, which have seen an 81% increase in take up between 2012 and 2017. There is also considerable potential for Northern Ireland-based manufacturing and engineering companies to benefit from future contracts.

Shellfish aquaculture

Shellfish aquaculture is an important economic activity in Ireland's sea loughs, such as Carlingford Lough which borders the Republic of Ireland and Northern Ireland. For stakeholders, this is an emerging blue growth sector, both blue mussel and pacific oyster, cultivated in bags on metal trestles on the foreshore.

It has significant LSI, which were examined using a 'BT-SWIFT' methodology. This allowed us to identify the pressures and risks, consequences of those risks, and safeguards or mitigation strategies that can be used in the management of shellfish aquaculture. The 16 key pressures included: decreased survival of aquaculture species; increased catchment land-based pressures; and increased pressure from non-native and invasive species. These are especially in the context of the potential effects of climate change.

The methodology allowed us to examine the consequences of these pressures and possible mitigation strategies. This provided insight into the management of risks in relation to job losses, changes



to existing food webs, changes in aquaculture technology and permanent changes to the ecosystem.

Top priorities that emerged from the analysis included the need to promote the use of different technologies and introduce greater control on trade in aquatic species.

Further information

[Irish Sea pilot: LSI case study report](#)

[Overview of MSP and LSI in the European Atlantic](#)

Images: Mussel farming in an Irish sea lough (above); oysters (right)



Governance

SIMAtlantic is a two-year EU-funded project (2019–21) supporting the establishment and implementation of maritime spatial planning (MSP) in five European Atlantic countries: France, Ireland, Portugal, Spain and UK. This factsheet summarises our work on governance and MSP, one of the cross-cutting themes of the project. Find out more at www.simatlantic.eu.

Highlights

- MSP is seen as an approach that can help to deliver coherent and coordinated sustainable development of seas and oceans
- There is no existing mechanism to facilitate cooperation between the Atlantic countries
- All Atlantic countries have invested significant efforts into promoting and sustaining participation in their MSP process, but this has not extended to transboundary cooperation
- Whilst overall engagement and participation at the national level is significant, less focus has been paid to transboundary participation which has been exclusively limited to formal channels
- Research projects that include Competent Authorities and Public Bodies can enable planners and others to work collaboratively to address issues of mutual concern

Coherency and coordination in MSP

Article 5 of the EU MSP Directive directs Member States to ensure transboundary cooperation in accordance with Article 11 when developing their plans. Article 11 seeks to ensure that maritime spatial plans are “coherent and coordinated across the marine region concerned” through (a) existing regional institutional cooperation structures such as Regional Sea Conventions; and/or (b) networks or structures of Member States’ competent authorities; and/or (c) any other method that meets the cooperation requirements, for example those that operate in the context of sea-basin strategies. How this may be achieved, or evaluated in future, is currently unclear.

As the MSP Directive already has requirements in terms of cooperation and coherence it is timely to look at how this is achieved in other legal requirements in Atlantic countries, and what this means for coherent and coordinated approaches to address transboundary issues.

To provide recommendations on common approaches to management in transboundary spaces reflecting common legal requirements and sectoral interests, the SIMAtlantic project explored how design and implementation of MSP interacts with other EU legal instruments: specifically, the Marine Strategy Framework Directive (MSFD), Water Framework Directive (WFD) and nature conservation legislation (Birds and Habitats Directive including Natura 2000 sites). Additionally, the work reviewed existing MSP governance structures at a transboundary level in the European Atlantic region in contrast with transboundary mechanisms that exist under other legal instruments.



Image: RRS Discovery

Key findings

The work explored aspects of MSP and other policy instruments in France, Ireland, Portugal, Spain and the United Kingdom. In relation to policy:

- All Atlantic countries have attempted to align MSFD objectives and implementation with MSP.
- Other law and policy objectives rely significantly on the consenting and licensing processes in place and are only covered by MSP in that public authorities and developers must take account of them in their planning functions.
- Generally Maritime Spatial Plans state that they will contribute to the achievement of other policy objectives but no details on how this is to be achieved or evaluated is given.
- In a similar vein, however, no mention is given to what happens where policy objectives are not complimentary.

In relation to transboundary cooperation and coordination

- All Atlantic countries have carried out formal consultation with neighbouring countries on their Maritime Spatial Plans.
- All EU Atlantic countries participate with other EU coastal Member States in the EU's MSP Expert Group and also in research projects, which can assist in advancing cooperation on specific areas of mutual concern.

- The realities of Brexit will necessitate some additional effort in terms of cooperation and coordination for France and Ireland. Ireland and the UK countries have instigated a group to discuss MSP but this does not extend to all Atlantic countries.

At the transboundary level, coherence is much more difficult to achieve. A number of cooperative mechanisms exist but none are specific to MSP in the Atlantic region. To deliver an ecosystem approach and sustainable development it is essential that all parties can cooperate in equal measure. Transboundary cooperation to date has focused exclusively on consultations relating to the national and regional marine plans, but could become more of a priority as countries enter the MSP implementation phase when areas of mutual interest and/or concern could arise. An Atlantic Vision should enable leadership and policy interactions with monitoring, reporting and evaluation protocols to enhance transboundary coordination and cooperation.

Further information

[Processes and procedures for establishing coherency in policy objectives for Maritime Spatial Planning in the Atlantic region](#)

[Guidance on transboundary working between Northern Ireland and Republic of Ireland](#)

[Transboundary impact assessment in the north-western Iberian Peninsula](#)



Data use and sharing

SIMAtlantic is a two-year EU-funded project (2019–21) supporting the establishment and implementation of maritime spatial planning (MSP) in five European Atlantic countries: France, Ireland, Portugal, Spain and UK. This factsheet summarises our work on data use and sharing, one of the cross-cutting themes of the project. Find out more at www.simatlantic.eu.

Highlights

- Data and information underpin MSP and are important for cross-border cooperation
- There is a consensus between European Atlantic countries on the need to share data on pressures and impacts, physical characteristics and maritime boundaries
- National plans and raw data for these countries are mostly available online and in geo-referenced formats; however, variable compliance with shared standards strongly limits their interoperability
- The establishment of a Europe-wide geoportal would be a valuable tool for cross-border cooperation
- We have produced a demonstrator geoportal for the European Atlantic region

Data and information in MSP

Data and information are fundamental to underpin the implementation of maritime spatial planning (MSP), including for cross-border cooperation. Previous transnational MSP projects SIMCelt, SIMNORAT, SIMWESTMED and SEANSE found methods for sharing of spatial data was very varied between countries, presenting barriers to interoperability. These past projects proposed ways to improve information sharing and identified the need for a Europe-wide tool and centralised data portal dedicated to MSP geographic information.

To follow up on these results, we undertook to understand how European Atlantic countries produce and disseminate MSP data, and to define their needs relating to spatial data and services, in regard to facilitating cooperation on cross-border MSP issues.

A suite of documents and tools has been produced:

- Survey report providing findings on data organisation in the project countries
- Country factsheets to provide general information on MSP and national geoportals
- Data portal to centralise geographical data collected from relevant national sources
- A catalogue of resources for data use and sharing, providing access to all the above
- An interactive map of socio-economic issues for the French Atlantic coast
- Proposals to improve data sharing for the French MSP DSF (*Documents stratégiques de façade - Strategic Sea Basin Documents*)



Image: RRS Discovery

Key findings

The number of plans associated with the maritime space varies between countries as each has different approaches to defining the planning units of national plans, according to their strategic objectives or distribution of activities and uses. They are available in the national language, and in some cases also in English, and are all available, or partially available, online and in geo-referenced formats. Web services used to communicate the maps and associated metadata are not all Open Geospatial Consortium (OGC) compliant, which strongly limits their interoperability.

All countries have or are planning a geoportal to communicate MSP plans and most have developed a geoportal to provide raw data. Some are multi-purpose and not only for MSP. For most, content is available only in the national language. Access to the portals is public, but there may be different levels of access to data. Few are accompanied by a metadata catalogue and where they are, these are not always interoperable or exhaustive.

We found a consensus for the need to share data on pressures and impacts, physical characteristics and maritime delimitations, with the major constraint being data ownership. To ensure consistency, the OGC standards are recommended. Transboundary cooperation could be enabled through common methods, guidelines and tools for sharing data still to be established and strengthened communication.

The establishment of a European geoportal (EMODnet type) is seen as a valuable tool for collaboration in cross-border areas. This should display the boundaries of plans, their zonings and management policies. It should provide quick access to metadata, web services and translation. The main challenge is the identification of reference data, while there are underlying issues with access to metadata, the development of a data centralisation system, management and control of updates and agreeing spatial coverage and resolution.

Further information

[SIMAtlantic data study: survey results](#)

[Country factsheets](#)

[SIMAtlantic data portal](#)

[Catalogue of resources for data use and sharing](#)

[Interactive map of socio-economic issues for the French Atlantic coast](#)

[Proposal for tools to improve data sharing and stakeholder engagement - French maritime spatial plans use case](#)

Image: SIMAtlantic data portal

Cumulative impacts and Strategic Environmental Assessment

SIMAtlantic is a two-year EU-funded project (2019–21) supporting the establishment and implementation of maritime spatial planning (MSP) in five European Atlantic countries: France, Ireland, Portugal, Spain and UK. This factsheet summarises our work on cumulative impacts and Strategic Environmental Assessment, one of the cross-cutting themes of the project. Find out more at www.simatlantic.eu.

Definitions

Cumulative Effects Assessment (CEA): “A systematic procedure for identifying and evaluating the significance of effects from multiple pressures or activities”, 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, 2005

Cumulative effects: “Changes to the environment that are caused by an action in combination with other past, present and future human actions”, Hegmann et al., 1999

Cumulative impacts: “Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”, European Commission, 1999

Highlights

- Applying CEA and SEA to MSP is the best way to ensure that MSP takes into account all pressures
- There is no common approach to CEA and this is an obstacle to transboundary cooperation
- Our report on SEA for MSP analyses some examples of SEA, CEA/CIA and ecosystem services related to MSP processes and identifies challenges and opportunities
- Challenges include the complexity of models, the uncertainty and the communication and dissemination of results
- Opportunities include utilisation of expert judgement as a basis for model inputs, to address uncertainty, and development of methodologies for integrated analysis
- Identifying challenges and opportunities in a transboundary context enables proposal of common approaches to these issues for the European Atlantic region

Why is SEA important for MSP?

SEA complements the preparation process of MSP plans, providing a mechanism for the consideration of environmental effects, assessment of plan alternatives and potential development of mitigation measures. An ecosystem-based approach is a fundamental requirement of MSP, and it can be said that SEA contributes to this, as it frames the evaluation of effects on species and habitats important for conservation. Cumulative effects are a key aspect of SEA for MSP.

Key findings

Challenges and opportunities of these approaches are shown in the table on the right.

Further information

Cumulative impacts and Strategic Environmental Assessment:
Literature review

Transboundary impact assessment in the north-western Iberian Peninsula:
Case study report

Challenges	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	Development of methodologies that promote an integrated analysis of cumulative impact and ecosystem services.
Stakeholder involvement in the planning process	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. 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.
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 analysis 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.

Land-sea interactions

SIMAtlantic is a two-year EU-funded project (2019–21) supporting the establishment and implementation of maritime spatial planning in five European Atlantic countries: France, Ireland, Portugal, Spain and UK. This factsheet summarises our work on land-sea interactions, one of the cross-cutting themes of the project. Find out more at www.simatlantic.eu.

Highlights

- Land-sea interactions (LSI) can be transboundary in their influence, making it more difficult to assess them in maritime spatial planning (MSP)
- Techniques for understanding LSI include bow-tie analysis, value chain analysis and stakeholder-led approaches
- There is no 'one size fits all' technique; scale and spatial implications must be considered
- Climate change has the potential to increase the impacts of LSI and therefore the need for them to be taken into consideration
- Our report on LSI in the European Atlantic provides a method and examples for addressing LSI in MSP processes

What are land-sea interactions?

Our definition of LSI is:

Interactions in which land-based natural phenomena or human activities have an influence or an impact on the marine environment, resources and activities, and interactions in which marine natural phenomena or human activities have an influence or an impact on the terrestrial environment, resources and activities. The influence of these phenomena and activities are not considered to be confined by economic, planning or national boundaries.

The coastal zone, covering areas of both land and sea, is used for particular types of employment, food production, land-sea transport links and recreational and cultural resources. Approximately 40% of the world's population lives within 100km of the coast, and many of the world's megacities are in coastal locations.

Pressure on the coastal zone and its resources is increasing, driven by a rapidly expanding global population and recent advances in technology that have led to further use of marine resources such as offshore renewable energy. The recent 6th Assessment Report of the Intergovernmental Panel on Climate Change warns that these pressures will be increasingly exacerbated by sea level rises, increased frequency of extreme sea level events, increased severity and frequency of coastal flooding and erosion, and increased frequency of precipitation leading to greater run-off intensity. These interlinked changes will affect the impacts arising from LSI, which are not only confined to the coastal zone of a country, but can reach further inland or out to sea.



What are the main challenges?

The transboundary nature of LSI makes it more challenging to address. For example, energy being supplied from offshore wind arrays being distributed to another country via cables, or agricultural run-off from farming impacting marine ecosystems beyond the source country's own waters, highlight how far-reaching the impacts can be. Our case study conducting a value chain analysis of offshore wind in the Irish Sea seeks to investigate the transboundary footprint of this offshore activity and its LSI implications.

LSI concern many groups of stakeholders. Bringing together stakeholders with different goals and helping them understand impacts is key to making LSI planning effective. Our case study on aquaculture and climate change in Carlingford Lough illustrates this.

Key findings

Many established techniques of assessing LSI are transferrable to an Atlantic context, such as the bow-tie analysis technique, value chain analysis and stakeholder-led approaches.

When investigating LSI, a 'one size fits all' approach cannot be taken. The scale and spatial implications of the LSI need to be taken into consideration; for example, offshore wind arrays may provide power

for areas in a different jurisdiction or country. Similarly, the socio-economic benefits of an offshore wind array may be reaped far beyond the location of the array itself in areas where manufacturing and maintenance take place.

Issues such as aquaculture may have more localised implications and require a more stakeholder-led approach to encourage dialogue and resolve potential conflict. The project report on LSI in the European Atlantic outlines the different approaches that can be used to address LSI and provides examples and a step-by-step approach for addressing LSI throughout the marine planning process.

LSI cannot be addressed by MSP alone; cooperation with other land- and sea-focused departments is required to ensure a robust process for the management of LSI.

Further information

[Irish Sea pilot: LSI case study report](#)

[Report overview of MSP and LSI in the European Atlantic](#)

Image: Another Place by Antony Gormley on the Irish Sea coast at Crosby, UK