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Overview Report on Maritime Spatial Planning and Land-Sea Interactions in the European Atlantic

September 2020

Co-funded by the European Maritime and Fisheries Fund

SIMAtlantic:
Supporting implementation of maritime spatial planning in the Atlantic region

EU project officer: Davide San Miguel Esteban
Project coordinator: University College Cork
Project start date: 1 July 2019
Project duration: 30 months

Document title: Overview Report on Maritime Spatial Planning and Land-Sea Interactions in the European Atlantic
Date: 7th February 2022
Version: Final

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Recommended citation

Jones, H. 2022. Overview Report on Maritime Spatial Planning and Land-Sea Interactions in the European Atlantic. Deliverable 3.4 of the SIMAtlantic project, 35pp

(EASME/EMFF/2018/1.2.1.5/SI2.806423). 37 pp. **Disclaimer:** This document was produced as part of the SIMAtlantic project (Grant Agreement: EASME/EMFF/2018/1.2.1.5/SI2.806423-SIMAtlantic). The contents and conclusions of this document, including any maps and figures, were developed by the participating partners with the best available knowledge at the time. They do not necessarily reflect the national governments' positions and are therefore not binding. This document reflects only the SIMAtlantic project partners' view and the European Commission or Executive Agency for Small and Medium-sized Enterprises is not responsible for any use that may be made of the information it contains.

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1 Introduction

Maritime Spatial Planning (MSP) has become an increasingly prominent mechanism of bringing together multiple users for the management of our seas and oceans in a strategic and sustainable manner.

The concept of MSP has been in existence in academic literature since the 1970's. However, recent years have seen huge growth in both academic research into the subject and practical application and implementation of the MSP process (Frazão Santos et al., 2020). The term MSP was first popularised in academic and policy literature following the 1st International Workshop on marine/maritime spatial planning at the UNESCO Headquarters Paris in 2006.

MSP was defined following the 2006 workshop as "a process of analysing and allocating parts of three-dimensional marine spaces to specific uses, to achieve ecological, economic, and social objectives that are usually specified through the political process; the MSP process usually results in a comprehensive plan or vision for a marine region. MSP is an element of sea use management" (Elher and Douvre, 2006). In Europe in particular this definition has been supplemented by that stated in the EU Directive on MSP as "a process by which the relevant Member State's authorities analyse and organise human activities in marine areas to achieve ecological, economic and social objectives" (EC, 2014). These two milestones have triggered noticeable increases in research activity on the subject of MSP (Frazão Santos et al., 2020).

Following the adoption of the MSP Directive in 2014, research into methodologies and approaches for fulfilling the requirements outlined in the Directive have also seen a sharp increase. The EC MSP Directive 2014/89 required all member states to have marine spatial plans in place by March 2021. This includes a set of minimum requirements must be met, including that of taking land-sea interactions (LSI) into account (Box 1).

- Take into account **land-sea interactions**
- Take into account environmental, economic and social aspects, as well as safety aspects
- Aim to promote coherence between maritime spatial planning and the resulting plan or plans and other processes, such as integrated coastal management or equivalent formal or informal practices
- Ensure the involvement of stakeholders
- Use of the best available data
- Ensure transboundary communication between member states
- Promote cooperation with third countries
- Maritime spatial plans shall be reviewed by member states as decided by them but at least every 10 years

Box 1: Minimum requirements of the MSP Directive 2014/89/EU

2 LSI in the SIMAtlantic Project Region

The 1st International Workshop described MSP as analogous to terrestrial spatial planning, but taking place in the marine environment. Subsequent approaches have sought to demonstrate the need for greater understanding of the human relationship with the sea and the links and causes and effects that the marine and terrestrial environments can have on one another, by, for example, using a 'one-space planning' approach covering both terrestrial and MSP areas.

The concept of examining both the land and the sea using a more holistic approach is not a new one. For example, the 1982 United Nations Convention on the Law of the Sea (UNCLOS) highlights the nature of human connection with the marine environment, as well as the requirement for all nations to protect the oceans from land-based sources of harm. It also asserts the importance of international right of passage with regards to maritime cargo transport; this has socio-economic implications for the national economies of both coastal and land-locked countries (Kidd, Jones and Jay, 2020).

Projects examining land-sea interactions have been taking place for a number of years. The Land-Ocean Interactions in the Coastal Zone project (LOICZ), currently known as Future Earth Coasts, was established in 1993 by IGBP (International Geosphere-Biosphere Programme) and IHDP (International Human Dimensions Programme). Under the Future Earth Coasts umbrella since 2015, there has been a shift from the initial biological and chemical impacts to a broader scope in the activities being investigated, including more socio-economic issues. Considerations of LSI from the early 2000's have focussed primarily on Integrated Coastal Zone Management (ICZM).

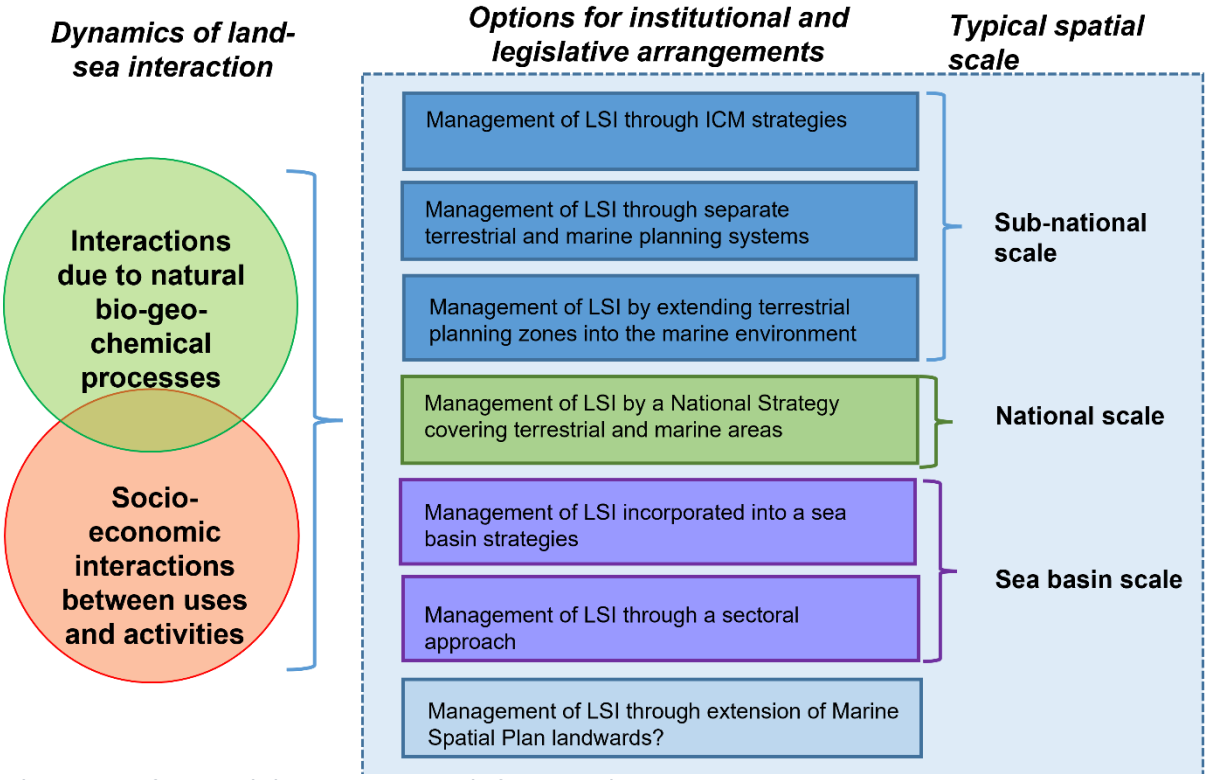


Figure 1. LSI framework (source EU MSP Platform, 2015)

In order to address to complex phenomena of LSI, a framework was produced as part of a study and workshop organised by the EU MSP Platform held in Malta in June 2017. In preparation for this, organisers developed a framework which could be used to investigate the topic more thoroughly (Figure 1).

2.1 France

In France, the national authority responsible for maritime space is the French Ministry for the Sea (Ministère de la Mer). For mainland France, the sea and seashore space has been divided into four distinct regions or “façades maritimes” which have been defined according to criteria outlined in the EU Marine Strategy Framework Directive (Box 2).

The four marine regions are as follows:

1. East Channel-North Sea: includes the coastal areas of the regions Hauts-de-France and Normandy and the maritime areas under French sovereignty and jurisdiction bordering these regions.

2. North Atlantic-West Channel: includes the coastal areas of the regions Pays de la Loire, Brittany and the maritime areas under French sovereignty and jurisdiction bordering these regions.

3. South Atlantic: includes the coastal areas of Nouvelle-Aquitaine and the maritime areas under French sovereignty and jurisdiction bordering this region.

4. Mediterranean: includes the coastal areas of Occitanie, Provence-Alpes-Côte d'Azur, Corsica and the maritime areas under French sovereignty and jurisdiction bordering these regions.

For the purposes of the SIMAtlantic only the **North West Atlantic Channel** and **South Atlantic Channel** are covered within the area covered by the project.

Box 2: French marine regions (regions in the SimAtlantic area shown in bold)

The MSP Directive was transposed into French law (article 123 of law n° 2016-1087 for the “reconquest of biodiversity, nature and landscapes”) which defines MSP as the “the process by which the State defines and organises human activities at sea from an ecological, economic and social perspective. It does not apply to activities related to defence or national security”. The article introduces the *Stratégie Nationale pour la Mer et le Littoral* (SNML), or National Strategy for the Sea and Coast. The National Strategy for the Sea and Coastline is responsible for providing a framework for public policy on the sea and coast. This includes the National Strategy for the Ecological Transition to Sustainable Development, the National Research Strategy and the National Biodiversity Strategy which are the benchmark for the sea and coastline. One of the priorities stated in the SNML is to “build a maritime spatial planning to reconcile uses, seek synergies between activities and integrate new

activities”. The key importance of MSP is the organisation of sectoral uses within maritime space, particularly in relation to the coexistence of activities.

Although LSI are not explicitly mentioned in the SNML, reference is made in Section 2 stating that the aim of the strategy is to ensure integrated management of the interface between the sea and land, in particular the link between watershed management and coastal management. It is noted this is of particular importance due to the higher intensity of uses within the coastal zone, and the scale for zoning and management should be adapted accordingly. The National Council for the Sea and Coastal Areas (*Conseil National de la Mer et des Littoraux*), made up of elected officials and representatives of civil society, is to develop, enforce, monitor and assess the SNML.

Figure 2. French marine regions.

For each maritime region in France (Figure 2), there is a planning document, the Sea Basin Strategy Document (*Document Stratégique de Façade* (DSF)).

Within these sea basin strategies, more explicit reference is made to the importance of LSI, and the management of LSI is a key theme running through the documents. The legal basis for both the North and Southern Atlantic Strategy documents is the same and is as follows:

- At sea, plans, programmes and projects for works, structures and developments shall be compatible (or be rendered compatible) with the objectives and provisions of the sea basin strategy document. Compatibility implies not departing from the basic orientations, in this case the strategic objectives and vacations map, while allowing some flexibility in terms of specifying their application.
- On land but with an influence at sea, they shall take the objectives and provisions of the sea basin strategy document into consideration; specifically, they are subject to the compatibility requirement, with concessions possible where justified.

2.2 Ireland

Ireland has considerable marine resources at its disposal. It has, in fact, one of the largest marine areas in Europe, ten times greater than the area covered by land (Figure 3). Prior to the introduction and adoption of MSP, management activities taking place on the coast and in the marine environment up to 12 nautical miles were licenced or leased under the Foreshore Act, 1933, which still remains the key legal regulatory tool for managing marine activities (later amended in 1992 and 2011) (O'Hagan et al (2020)).

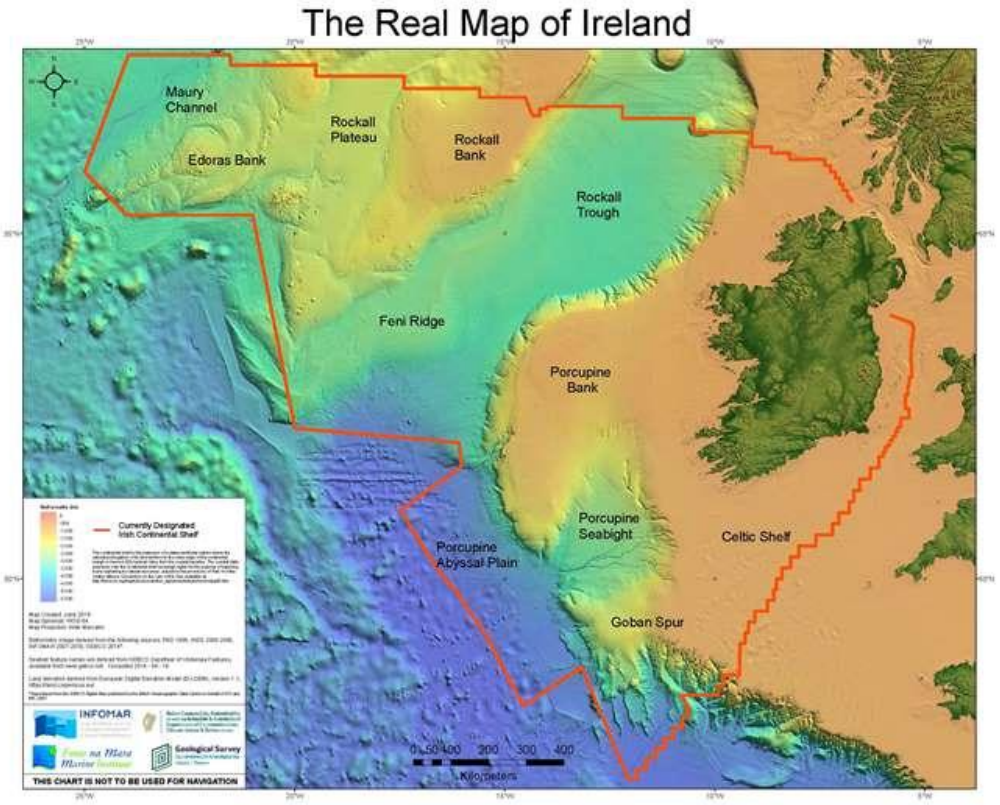


Figure 3. The Real Map of Ireland (source: Marine Institute).

Planning beyond 12nm has previously been given little attention, with fishing being the main activity taking place in these further offshore areas. However, recent advances in technology and marine science may see these areas being further utilised for economic gain. Terrestrial planning in Ireland has historically been under the legislation of the Local Government (Planning and Development) Act, 1963 and

subsequently by the Planning and Development Act, 2000. Historically, there has been little integration between planning on land and at sea making the management of LSI very difficult and complex.

MSP in Ireland is the responsibility of the Department for Housing, Planning and Heritage, which acts as the official competent national authority under the direction of the current Minister. LSI are covered in a number of important pieces of recent legislation which dictate that LSI should be included in key decision-making processes. The Planning and Development (Amendment) Act 2018, which transposes the EU MSP Directive into Irish legislation, requires that LSI are considered in particular with reference to how they should be addressed by the National Planning Framework (NPF). The Act states in Section 20C paragraph 2 of Chapter 11A that the NPF should address "the promotion of co-ordination of development between the terrestrial and marine sectors, having regard to Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning, and of any measures taken by the State to give effect to that Directive". Part 5 of the Act specifically covers marine spatial plans, but makes no specific reference to their integration with the terrestrial planning process or LSI.

NPF, along with the National Development Plan (NDP) 2021-2030, form Project Ireland 2040, a long-term overarching strategy for a resilient and sustainable future for the country. The NDP outlines the investment strategy necessary to achieve the national strategic objective, while the NPF provides a vision and development strategy. Consideration for the management of LSI within Project 2040 is covered within the NPF. The NPF was drafted and underwent consultation in parallel with the National Marine Planning Framework (NMPF). LSI are mentioned within the vision outlined line the NPF to create a "Strengthened and more Environmentally Focused Planning at Local Level", which will include a more streamlined and integrated planning process to manage marine and coastal areas including those at the land-sea interface. A primary aim of this is economic in focus to double the value gained from the ocean by 2030. National Policy Objective 38 of the NDP states that "Regional, metropolitan and local development plans will take account of and integrate relevant maritime spatial planning issues". In addition, Chapter 7 of the NPF focuses on realising the potential of Ireland's island and marine potential recognising the two are inextricably linked. Section 7.1 outlines the need for integrated land and maritime planning in order to facilitate the sustainable utilisation of Ireland's marine resources. In order to both develop and protect marine resources marine and land-based planning processes outlined in the NPF and NMPF will work alongside one another. Figure 4, taken from the NPF, highlights the common aims and overlaps of the NPF and NMPF. The relationship between Planning and Maritime Policy will be addresses at various scales, national, regional and local using the national framework and plans, regional spatial and economic strategies and local area plans, development plans and the utilisation of tools such as coastal management planning and Integrated Coastal Zone Management (ICZM).

Both the NMPF and the Marine Planning Policy Statement (MPPS) 2019 reference LSI throughout. Within the MPPS, LSI is one of the overarching principles and high-level priorities. It goes so far as to define LSI along with clear examples digestible for a broad audience. The alignment of land and MSP elements is noted to be necessary

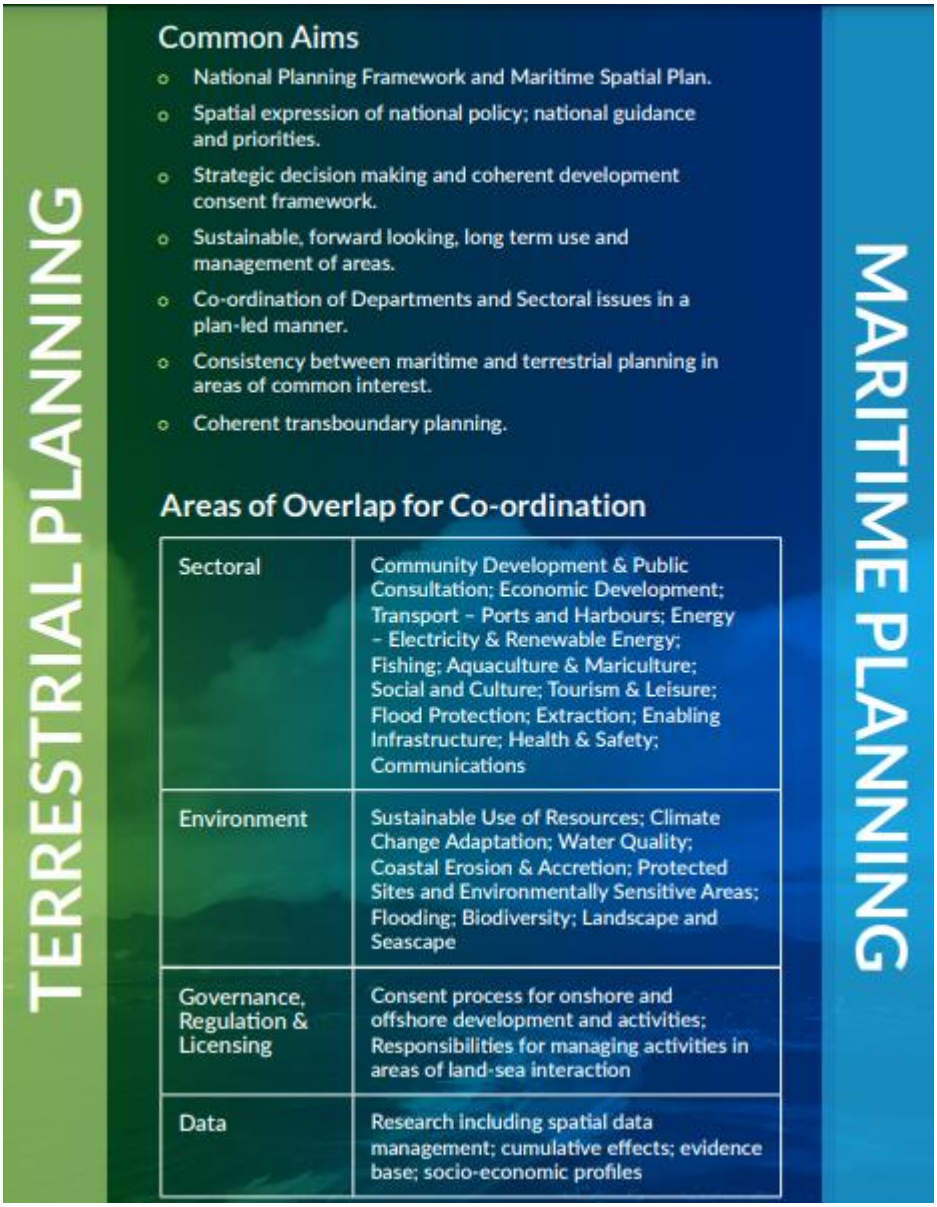


Figure 4. Common aims and areas of overlap of terrestrial and maritime planning (source: National Planning Framework (Ireland)).

in order to achieve the efficient management of LSI. Decision-making at the coast in particular is highlighted as an area to be monitored closely as the impacts and effects can be both far reaching and diverse, both on land and at sea. Local authorities in these areas are stated to be of key importance.

The NMPF was published in July 2021 and follows a sectoral approach for MSP with LSI referenced throughout. Consideration has been given to the management measures that need to be undertaken on land, at sea and specifically within the coastal zone. The impact of climate change is a key consideration of the NMPF, as is the impact LSI will have on coastlines and communities that live on the coast due to increased extreme coastal flooding events, storm surges and the level of defences required. Climate change will also have community implications from an economic perspective, with increasing water temperature changes. This could potentially lead to species or habitat loss or shift industries such as fisheries and aquaculture which

are being driven forward as part of the HOOW blue growth strategy. Efforts to reduce the impacts of climate change, with ambitious targets regarding offshore renewable energy generation (5GW capacity for offshore wind by 2030), will themselves have impacts on land, from employment creation, to bringing the power on land via additional cables and pipelines.

LSI is also referenced in many of the sectoral specific policies described in the latter half of the NMPF. Many of these relate to the land-based infrastructure necessary to support industries such as those mentioned in Aquaculture Policy 3, Offshore Renewable Energy Policy 10, Transmission Policy 4 and Telecommunications Policy 4. With specific regard to Wastewater Treatment and Disposal, the vast majority will have been derived from land-based sources; WWTD Policy 1 outlines the need for meeting environmental safeguards put in place by a number of plans and policies including Ireland's River Basin Management Plan 2018-2021, the Water Services Policy Statement 2018-2025 and the MSFD 2012-2020. Irish Water needs to be advised of any potential activity which could adversely impact existing wastewater treatment and management.

2.3 Portugal

The National Maritime Spatial Planning Situation Plan (PSOEM), corresponding to the subdivision of the mainland, the subdivision of Madeira and the subdivision of the Extended Continental Shelf, was approved in December 2019 by the Council of Ministers (Resolution No. 203-A/2019) (DGRM, 2019). LSI is only explicitly mentioned once in this document, in Section 4.2 which discusses European Policies and Directives, in the context that the consideration of LSI is a minimum requirement to be taken into account in all marine plans. LSI is also referenced in various places throughout the PSOEM, including in Section 2 which notes that the highly densely populated states of the North East Atlantic, including Portugal are highly industrialised and agricultural use is intense. The effects of human activities in this area have resulted in pollution and eutrophication via the entrance of increased nutrients and harmful substances through rivers, the atmosphere and domestic and industrial discharges.

The importance of planning at the coast and the concept of the coastal margin was first introduced by Decree-Law 468/471 in 1971 and is highlighted in Section 3 of PSOEM. The coastal margin is described as a strip of contiguous land over the baseline at the limit of the watershed. This margin referred to in subsequent legislation as the 'coastal zone' is described in PSOEM as the meeting place between the land and water and is considered to be "essential for the regulation of activities and domain protection".

Decree-Law 309/93 approved in 1993, and referenced in PSOEM, explicitly recognises the importance of planning at the coast, defining criteria for the attribution of private use of plots of land in the public domain. This refers to the implementation of infrastructure and equipment to support the use of beaches and other coastline areas, covering both the *Domínio Público Marítimo* (DPM), or Maritime Public Domain, and a "terrestrial protection zone" whose maximum width does not exceed 500 m, counted from the margin of the sea waters, and a "maritime protection strip" whose maximum limit is a 30 m bathymetrical depth.

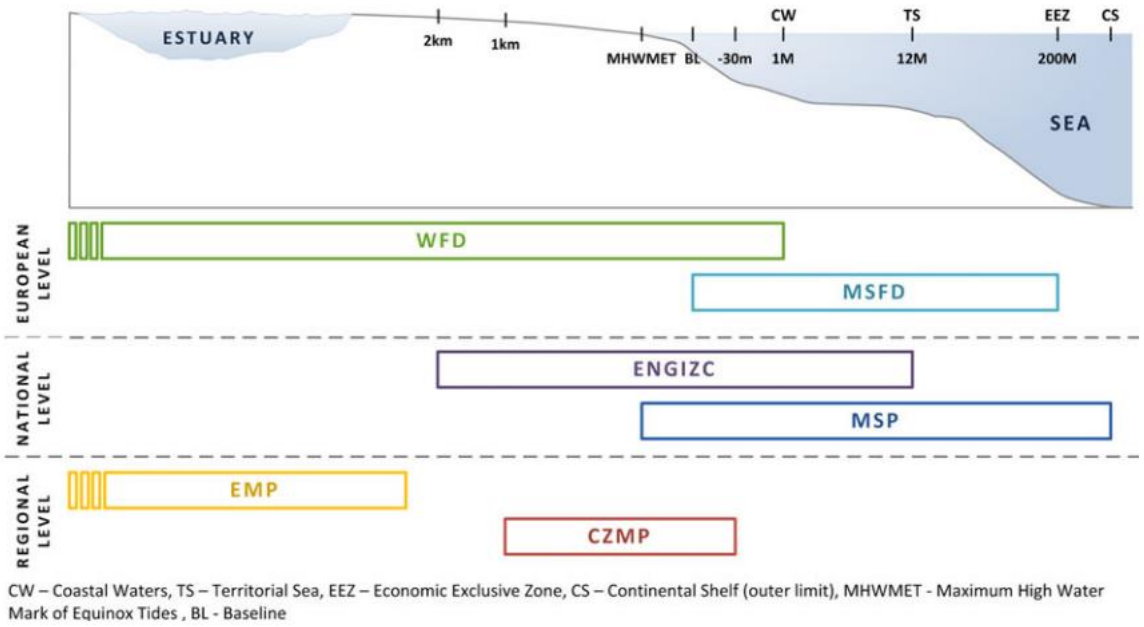


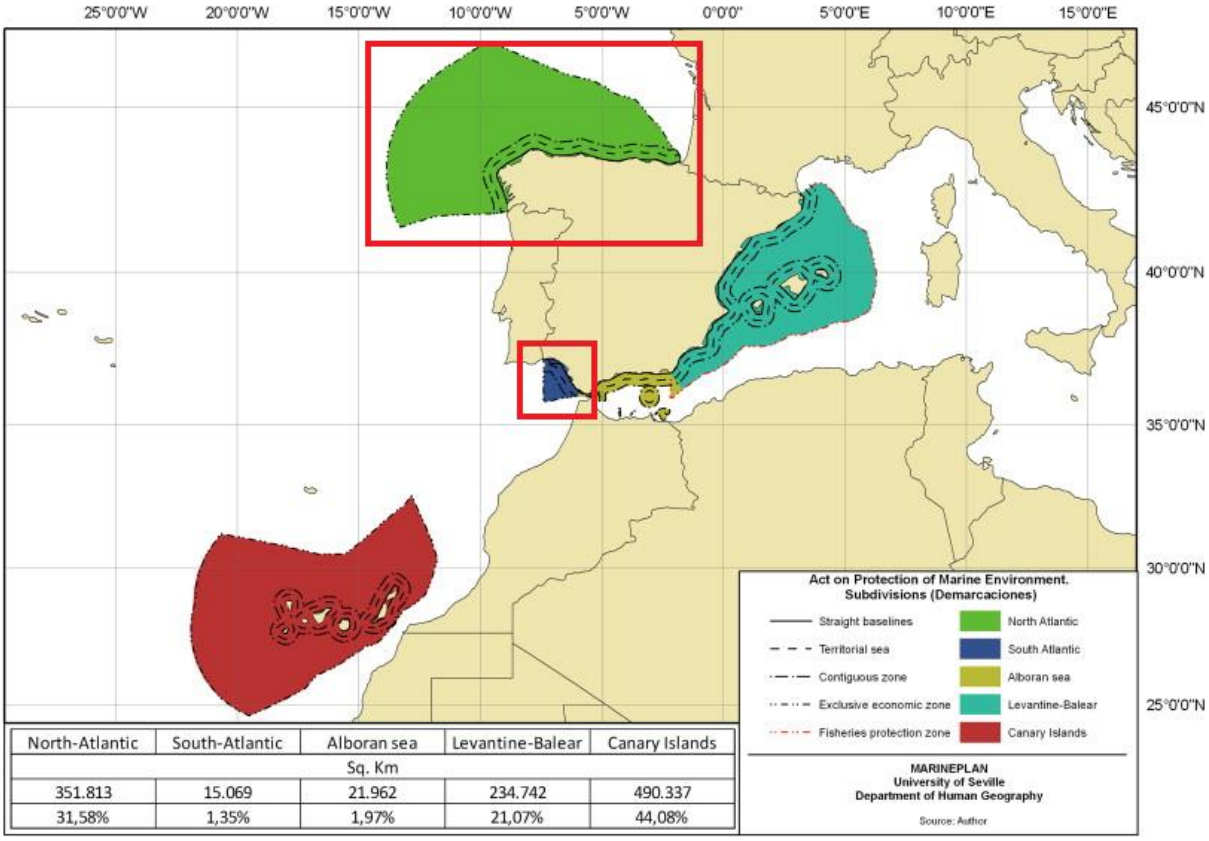
Figure 5. Portuguese coastal regulatory regimes (source: Alves et al, 2013).

The integration of the Water Framework Directive (WFD) into national law in 2005, reinforced the need to clarify and homogenize concepts and boundaries related to water resources. This was later consolidated by the National Strategy for the Integrated Management of Coastal Zones (ENGIZC) (2009), which aims to deliver "a harmoniously developed and sustainable coastal zone within a period of 20 years". The ENGIZC mentions the Maritime Spatial Plan which was in the early stages of development at the time, and Measurement M01 states that the future territorial instruments for the coastal zone should be developed in close articulation with the Maritime Spatial Plan. Whilst no direct reference to LSI is made, the need for cooperation to ensure their management within the coastal zone is implied. In addition, there are overlaps in spatial responsibility for coastal waters in Portugal between the ENGIZC and the Portuguese Maritime Spatial Plan (Alves et al, 2013). Planning at the coast in Portugal is undertaken in the form of Coastal Zone Programs (*Programas da Orla Costeira*) (POC) or Coastal Zone Management Plans (*Planos de Ordenamento da Orla Costeira*) (POOC).

LSI is not clearly defined in any pieces of national legislation in Portugal; however, references are made to the coastal zone and the interactions which occur there. In this context the coastal zone is defined as "the portion of territory directly and indirectly influenced, in biophysical terms, by the sea, in particular by waves, tides, winds, biota or salinity, and which, without prejudice to the specific territories, has, on the land side, a width of 2 km, measured from the line of maximum high-water mark in equatorial waters and extending, on the seaward side, to the limit of territorial sea side, to the limit of territorial waters, including the bed" (paragraph l) of Article 2 of Decree-Law No. 159/2012, of July 24).

2.4 Spain

Spain adopted the Royal Decree 363/2017 of 8 April (*Real Decreto 363/2017*) establishing a framework for MSP that transposes into Spanish legislation the Maritime Spatial Planning Directive 2014/89/EC and also provides provision for protection of the marine environment. Article 1 of the decree states the objective, which includes the need to take into consideration LSI and improve cross border cooperation.



North-Atlantic	South-Atlantic	Alboran sea	Levantine-Balear	Canary Islands
Sq. Km				
351.813	15.069	21.962	234.742	490.337
31,58%	1,35%	1,97%	21,07%	44,08%

Figure 6. Subdivisions from Spain's Marine Protection Environment Act (source: Suárez de Vivero & Mateos, 2012).

Unlike the other countries within the SIMAtlantic project area, Spain does not yet have a maritime spatial plan in place and is currently in the latter stages of public consultation. According to the Assistance Mechanism for the Implementation of MSP for the European Union the plans are anticipated to be finalised in 2022. Currently five plans are in development, one for each of the marine demarcations designated as part of Article 6.2 of Law 41/2010 of 29 December (*Orden AAA/705/2014, de 28 de abril*). Of the five marine areas defined by Spanish law, two fall within the SIMAtlantic Project area, namely the North Atlantic demarcation and the South Atlantic demarcation (Figure 6). LSI is defined in Article 3 of Royal Decree 363/2017 as "the effects that human activities on land can have on maritime space and maritime activities can have on the territory". However, according to Chapter 2, other instruments and tools should be used to define and manage such interactions within the plans themselves. Finally, according to Article 6, it is a legal requirement that all plans shall take LSI into consideration.

The draft Maritime Spatial Plan for Spain is divided into five constituent parts outlining the context and scope, guiding principles, the MSP process, current and projected plans for development and future monitoring and assessment. Addressing LSI is addressed in Chapter I, Section 2.1.3 which describes the methodology of MSP development. The concept of LSI is described as per the EU MSP Directive, but expands upon this by the incorporation of the ICZM Protocol which was ratified by Spain in 2010. Various pieces of legislation, including Royal Decree 139/2020 and subsequently 500/2020, have, via the Directorate General for the Coast and the Sea (*La Dirección General de la Costa y del Mar*), granted various government authorities, including the Ministry for the Ecological Transition and the Demographic Challenge (MITECO), the competent authority for MSP in Spain, the responsibility to implement these changes.

The Maritime Spatial Plan for Spain also describes how the complexities of LSI should be addressed (Table 1).

Table 1. Aspects to be taken into account in LSI (Source: translated from Planes de Ordenación del Espacio Marítimo, 2020).

Appearance	Explanation
Interactions due to natural land-sea processes	Maritime spatial planning must take into account the processes of ecosystem functioning, and how the natural processes in the land affects the marine environment (inputs from rivers, sediments, water pollution, etc.) and vice versa (coastal erosion, etc.)
Interactions between uses and activities	These interactions can be of different natures, with cases of possible **conflicts** between activities that take place on the coast and at sea (for example, conflicts between coastal tourism or coastal cultural heritage, with offshore energy installations), or of **interdependence** (for example, certain maritime activities that require or stimulate the development of certain coastal activities, such as the interaction between navigation and port infrastructures, renewable energy installations that require land-based infrastructures, etc.).
Interactions between processes from planning that take place on land, and at sea.	The set of plans that affect the land-sea complex should maintain coherence, so that the MEOPs are not contradictory with coastal planning tools, or hydrological plans and marine strategies for example.

This complex issue is addressed directly in the plan which states that management plans should “seek to promote coherence between maritime spatial planning and the resulting management plan(s) and other processes such as integrated coastal management or equivalent formal or informal practices". The Spanish MSP process follows a phased approach, starting with the identification of the relevant LSI in each

demarcation where appropriate. A detailed analysis of each issue is then undertaken, followed by a review of existing tools available which may be used to address them. The final stage of the process is the proposition of specific criteria and measures aimed at resolving the issues that have been identified as relevant, and which are not addressed by previously explored planning tools.

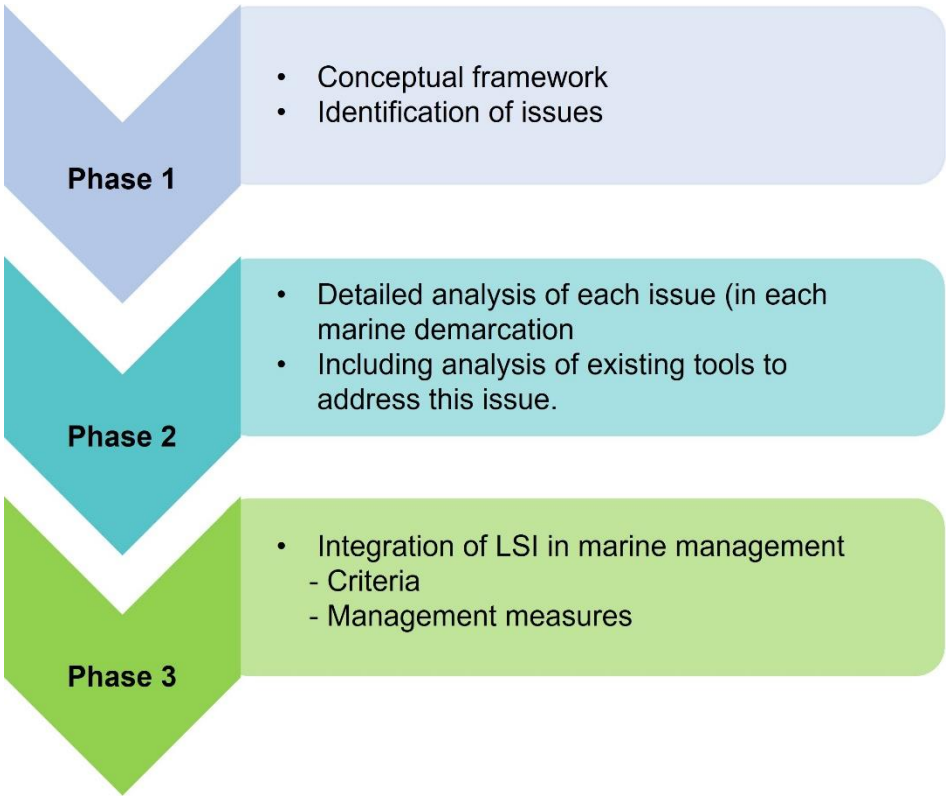


Figure 7. Phases of integration of LSI (source: Planes de ordenación del espacio marítimo, 2020).

In addition to the measures outlined within the Draft National Plan, specific LSI are also addressed within the plans for each of the five marine demarcation documents which are publicly available.

2.5 United Kingdom

The Secretary of State for the Environment is responsible for the development of marine plans within the UK. In each of the devolved administrations, the majority of functions relating to the implementation of MSP have been delegated to different public bodies.

In the UK, the Marine Policy Statement (MPS) 2011 provides an overarching framework for the creation of marine plans for England and the devolved administrations in Northern Ireland, Scotland and Wales; it was prepared under the Marine and Coastal Access Act 2009. The key aim of the MPS is to provide the context for MSP within UK marine waters along with creating the basis for consistency within the MSP process between the different UK administrations. In addition, where marine plans have not yet been created or adopted, the MPS will guide the decision making and enforcement made in these areas. An overall summary taken from the MPS highlights how MSP and terrestrial planning will be integrated in the UK.

- Consistency between marine and terrestrial policy documents and guidance. Terrestrial planning policy and development plan documents already include policies addressing coastal and estuarine planning. Marine policy guidance and plans will seek to complement rather than replace these, recognising that both systems may adapt and evolve over time;
- Liaison between respective responsible authorities for terrestrial planning and MSP, including in plan development, implementation and review stages. This will help ensure, for example, that developments in the marine environment are supported by the appropriate infrastructure on land and reflected in terrestrial development plans, and vice versa; and
- Sharing the evidence base and data where relevant and appropriate so as to achieve consistency in the data used in plan making and decisions.

Box 3: Integration of MSP and terrestrial planning in the UK (*source: UK Marine Policy Statement 2011)*

The MPS was published in 2011 and therefore pre-dates the EU MSP Directive 2014. The MPS does not refer to LSI directly; however the importance of the integration of MSP processes with their terrestrial counterparts is covered in Chapter 1.3. The MPS states that MSP systems in all administrations will sit alongside existing terrestrial planning systems, including but not limited to town and country planning and development plans, including national infrastructure projects. In England and Wales, these national infrastructure projects may include major offshore wind development projects or port developments, which must adhere to the Planning Act 2008 along with MSP processes in place. In Scotland, projects will also be required to liaise with local terrestrial planning authorities as per the terms of the Marine and Coastal Access Act 2009 and the Marine (Scotland) Act 2010. The MPS also notes the principles of ICZM within its marine management processes, in particular with reference to the preservation of marine habitats, climate change, pollution reduction and management of flood risk. Within each of the UK administrations LSI are addressed based upon individual geographical needs.

<u>England</u>

On behalf of the Department for Environment, Food and Rural Affairs (DEFRA) the Marine Management Organisation (MMO) is the responsible authority for MSP in England. English marine waters have been divided into 11 MSP areas. Of those, four

fall within the SIMAtlantic Project Area: the South West Inshore and Offshore Areas (8 and 9 in Figure 8) North West Inshore and Offshore Areas (10 and 11 in Figure 8).

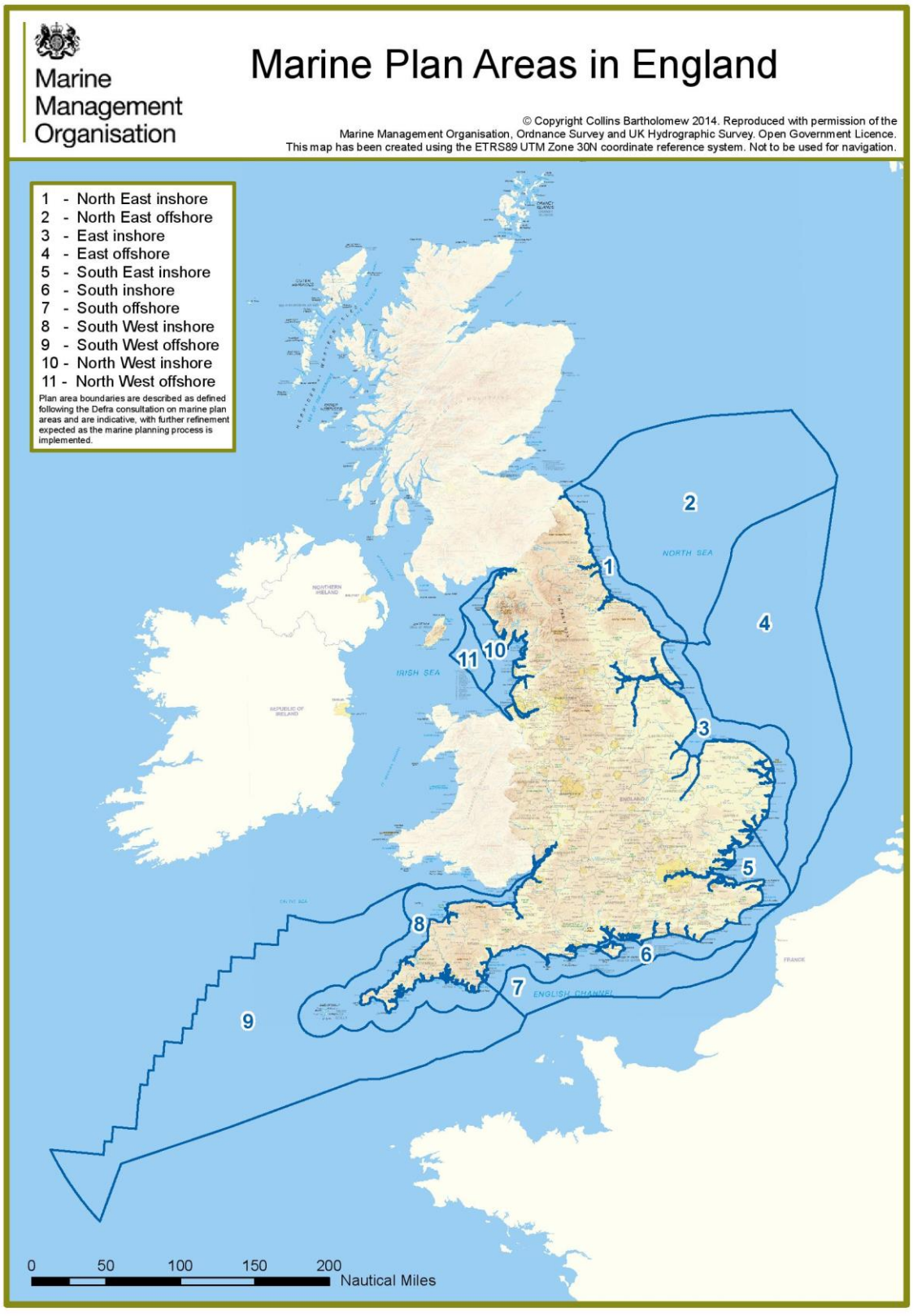


Figure 8. MSP areas in England (source: Marine Management Organisation).

The North West Inshore and Offshore Marine Plan was published in June 2021. The document outlines in Chapter 1.3 that the plan should "take all reasonable steps to ensure compatibility with any related relevant development plans (or their equivalent), and having regard to other plans, is in line with the principles of Integrated Coastal Zone Management, addressing the importance of land-sea interactions" within a legal and policy context. In addition, the management of LSI is addressed by a number of key policies in the North West Marine Plan, particularly in relation to infrastructure, cumulative effects and cross-border co-operation. Particular policies of relevance to the management of LSI are summarised in Table 2 below.

The South West Marine Plans were also published in June 2021. The legal and policy context for addressing LSI in the SW remains the same as in the NW.

Table 2. Policies of the NW Marine Plan relating to LSI (source: North West Marine Plan, Marine Management Organisation).

Policy Codes	Policy text	Policy Aim
NW-INF-1 SW-INF-1	Proposals for appropriate marine infrastructure which facilitates land based activities, or land-based infrastructure which facilitates marine activities (including the diversification or regeneration of sustainable marine industries), should be supported.	Many marine activities in the north west / south west and adjacent marine plan areas are reliant on land-based infrastructure. Similarly, activities on land may also be reliant on marine infrastructure. Supporting infrastructure development, diversification and regeneration will provide socio-economic benefits and support marine businesses, including those that are land-based. NWINF-1 and SWINF-1 supports the integration of the marine and terrestrial systems. It does so by encouraging proposals (and other measures) that maintain or improve existing, or provide new, sustainable marine or land-based infrastructure that facilitates activity in the other system.
NW-INF-2 SW–INF-2	(1) Proposals for alternative development at existing safeguarded landing facilities will not be supported. (2) Proposals adjacent and opposite existing safeguarded landing facilities must demonstrate that they avoid significant	Landing facilities in the north west / south west inshore marine plan area are critical for enabling industries, including shipping, tourism/travel (eg to Ireland and the Isle of Man), offshore wind, fisheries and aggregates. By protecting existing landing facilities, identifying the difference in safeguarding, NW-INF-2 and SW-INF-2 mirror similar provisions in terrestrial planning and supports the continued operation of vital existing landing facilities.

	adverse impacts on existing safeguarded landing facilities. (3) Proposals for alternative development at existing landing facilities (excluding safeguarded sites) should not be supported unless that facility is no longer viable or capable of being made viable for waterborne transport.	
NW-CE-1 SW-CE-1	Proposals which may have adverse cumulative effects with other existing, authorised, or reasonably foreseeable proposals must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse cumulative and/or in combination effects so they are no longer significant.	While cumulative effects are considered in relevant assessments and decision-making, the increasing use of the marine area reinforces the need to consider and address cumulative effects, of both terrestrial and maritime projects, in line with the aims set out in the UK Marine Policy Statement. In conjunction with and in support of other relevant north west / south west plan policies, this policy is intended to ensure relevant effects, including those that may seem less significant in their own right, are taken account of and addressed. In doing so, the policy will help to ensure that the cumulative effect on the wider environment of the north west / south west marine area and other relevant receptors are effectively managed.
NW-CBC-1 SW-CBC-1	Proposals must consider cross-border impacts throughout the lifetime of the proposed activity. Proposals that impact upon one or more marine plan areas or terrestrial environments must show evidence of the relevant public authorities (including other countries) being consulted and responses considered.	NW-CBC-1 requires a considered approach to enhance cross-border co-operation between the terrestrial planning and MSP systems in the north west / south west marine plan areas and the neighbouring administrations of Scotland, the Isle of Man and Wales. and the neighbouring jurisdictions of Wales, France, Ireland and the Bailiwick of Guernsey

Northern Ireland

In Northern Ireland, the Department for Agriculture, Environment and Rural Affairs (DAERA) is responsible for the creation and implementation of MSP. As with the other UK devolved administrations, the Draft Marine Plan for Northern Ireland (Draft MPNI) follows the vision for UK marine waters outlined in the MPS 2011. The overarching legislation managing the marine waters are the MPS 2011 and the Marine and Coastal Access Act 2009 and the Marine Act (Northern Ireland) 2013.

The Draft MPNI sits as one document comprising of two plans for both the inshore and offshore areas shown in Figure 9 below.

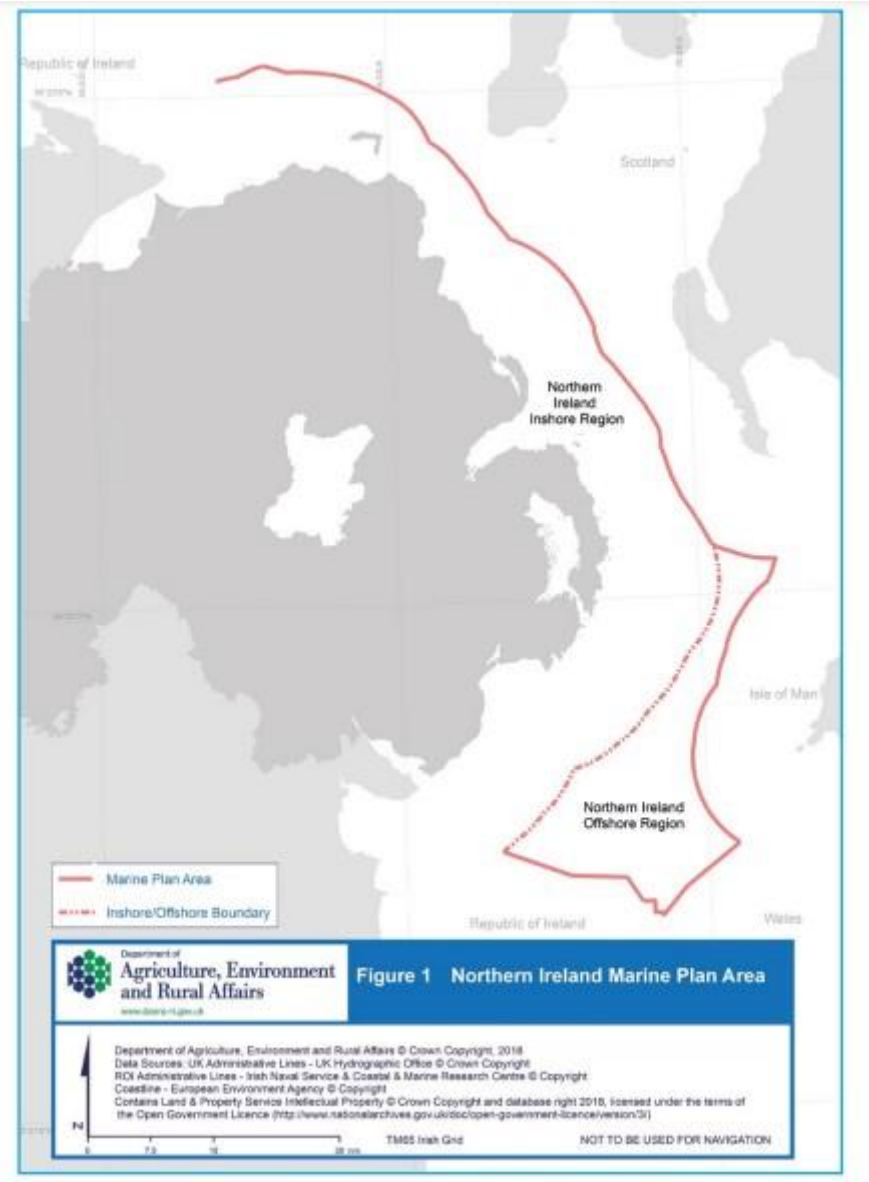


Figure 9. MSP areas in Northern Ireland (source: Draft Marine Plan Northern Ireland).

The policies within the plan are in line with those of the other UK administrations and aim to contribute to the sustainable development and integration of MSP and terrestrial planning and management processes. The impact of LSI on seascape and

other cultural and other heritage sites are particularly important aspects which are covered within the Draft MPNI. Conservation is also an important aspect, aided by the fact that DAERA is the responsible authority for both the inshore marine area and the terrestrial environment.

In addition to the plan, in 2017 DAERA published a Best Practice document for Planning in the Coastal Area, which aims to outline how onshore activity can impact the marine environment and how development along the coast can be effectively managed in an integrated manner. Significant overlap exists legally within the intertidal zone as highlighted in Figure 10 below.

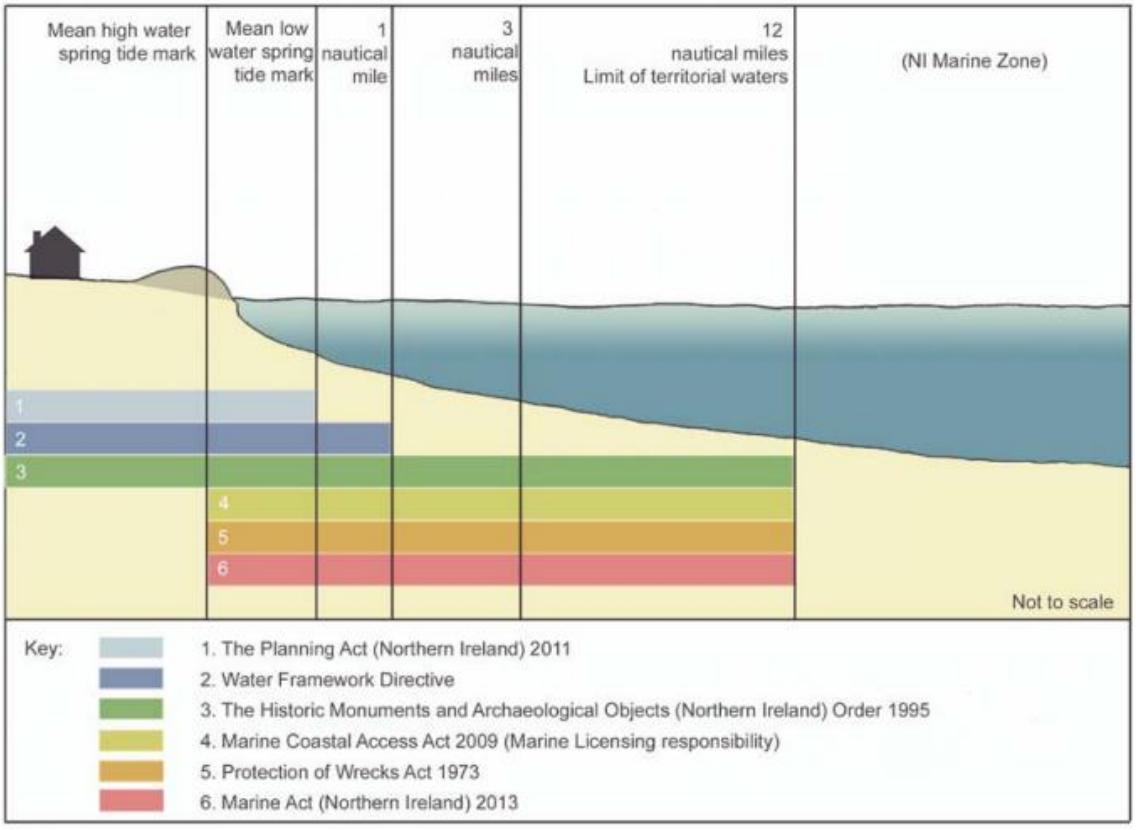


Figure 10. Geographical overlap between the marine and terrestrial environment (source: Planning in the Coastal Area – Best Practice Guidance, DAERA, 2017).

The best practice document highlights that all terrestrial planning and enforcement must be in accordance with the rules outlined in the MPS 2011, MCAA 2009 and the Marine Act (NI) 2013.

Scotland

MSP in Scotland is government by the Marine and Coastal Access Act 2009, and the Marine (Scotland) Act 2010. Scotland's National Marine Plan was first published in 2015 and was subsequently reviewed in 2018. The plan covers the management of both Scottish inshore waters (out to 12 nautical miles) and offshore waters (12 to 200 nautical miles). The plan states in point 1.6 of the introduction that as per the guidance from EU Directive 2014/89/EU, LSI have been taken into consideration.

The integration of terrestrial planning and MSP is addressed in Chapter 2 of the marine plan, which highlights the fact that most marine based activities have their own onshore components which need to be considered under the National Planning Framework 3 (NPF3) and other Local Development Plans. In 2015 a Planning Circular was published outlining how the relationship between the Statutory Land Use Planning System and Marine Planning and licencing should be addressed. As with other UK authorities, an overlap exists in the intertidal zone between low and high water springs, hence between terrestrial planning authorities and Marine Scotland's responsibilities for the marine area. The marine plan recognises that marine activities require both marine and terrestrial components and also that marine activity has potential to impact on adjacent coastal areas, islands and communities through service provision and issues such as visual impact. The National Marine Plan therefore recognises and is consistent with the National Planning Framework and Scottish Planning Policy.

In addition to the National Marine Plan, a series of regional MSP have been or are being developed, and MSP will be implemented at a local level. 11 Scottish marine regions were established by the Scottish Marine Regions Order 2015.

Within Scotland's National Marine Plan, a number of policies seek to address LSI and promote coherent planning practices on land and at sea, including GEN 15 Planning alignment A. which states "Marine and terrestrial plans should align to support marine and land based components required by development and seek to facilitate appropriate access to the shore and sea". In addition, there are a number of sector specific policies which cover the management of LSI, including AQUACULTURE 2, which states that new sites for aquaculture should be selected jointly by both local and regional marine plans. Similarly, CCS 1, relating to future Carbon Capture and Storage activities in Scottish waters, state the requirement for the alignment of terrestrial and marine infrastructure for the use to this technology, including the use of redundant oil and gas infrastructure as part of any decommissioning. Planning relating to offshore electricity infrastructure and transmission for marine renewables will also be required to be aligned as part of the plan. REC AND TOURISM 4 notes that both marine, terrestrial planners and other decision makers need to give consideration to land based infrastructure requirements that will be required for these activities. TRANSPORT 7 states marine and terrestrial planning processes should be coordinated to support, ports, harbours and ferry terminals and ferries should be coordinated in order to provide sustainable transport options.

Within the MSP regions in Scotland, Marine Planning Partnerships (MPPs) have been or are in the process of being established in order to create and implement the planning process at this level. Of the 11 MSP regions, two plans have been published to date for the Shetland Islands and Clyde marine regions. Significant progress has also been made on the Orkney Islands.

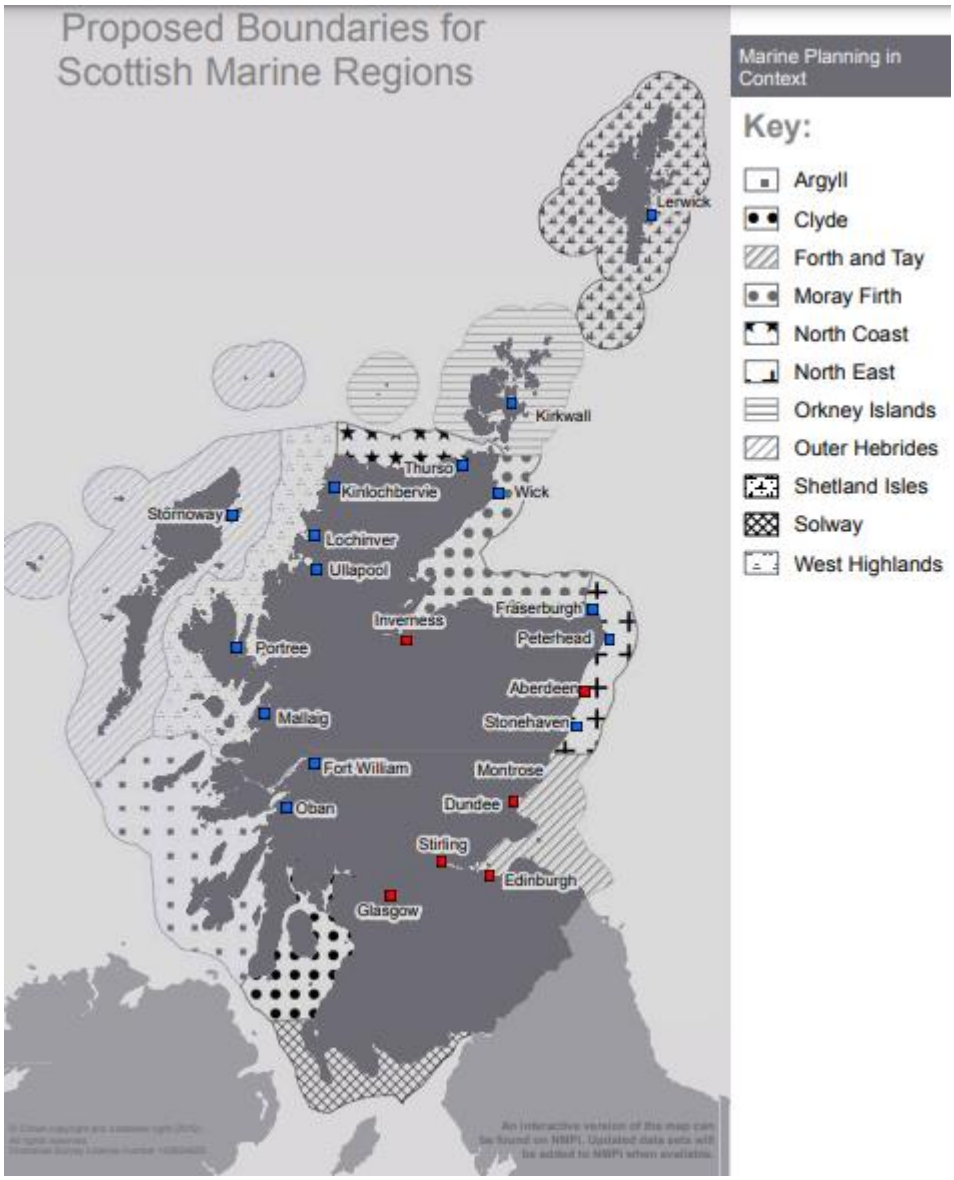


Figure 11. Scotland's marine plan areas (source: Scotland's National Marine Plan, 2015).

Wales

The Welsh National Marine Plan (WNMP) was prepared by Welsh ministers and adopted in 2019 under the Marine and Coastal Access Act 2009 and is, like all other UK plans, in conformity with the UK MPS 2011. Like the MPNI, the WNMP is one plan covering two planning regions and inshore and an offshore shown in Figure 12 below.

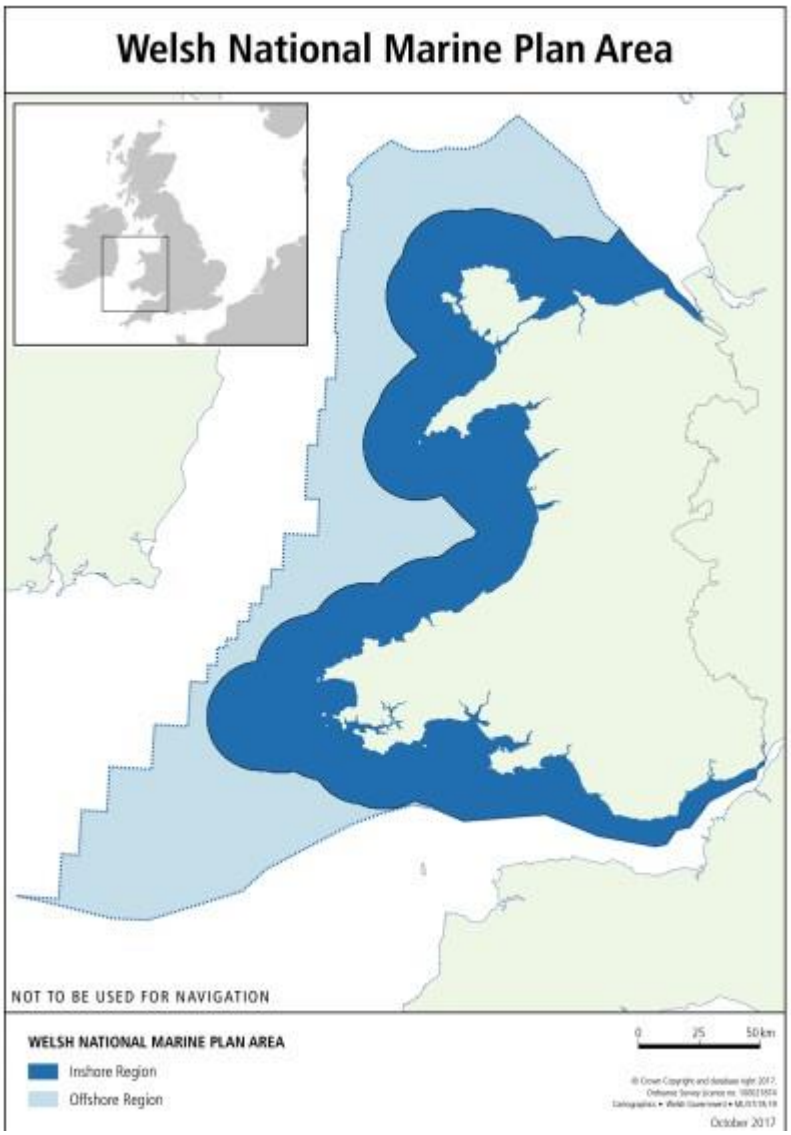


Figure 12. Welsh marine plan area (source: Welsh National Marine Plan 2019).

The WNMP contains a number of policies designed to manage and address LSI. In addition to general and sectoral policies, relating to the environment, infrastructure and blue growth. As in other UK marine plans, significant emphasis is placed upon the value of marine and coastal environments to society in line with the Wellbeing of Future Generations Act (Wales) 2015. Figure 13 below outlines the planning context in Wales.

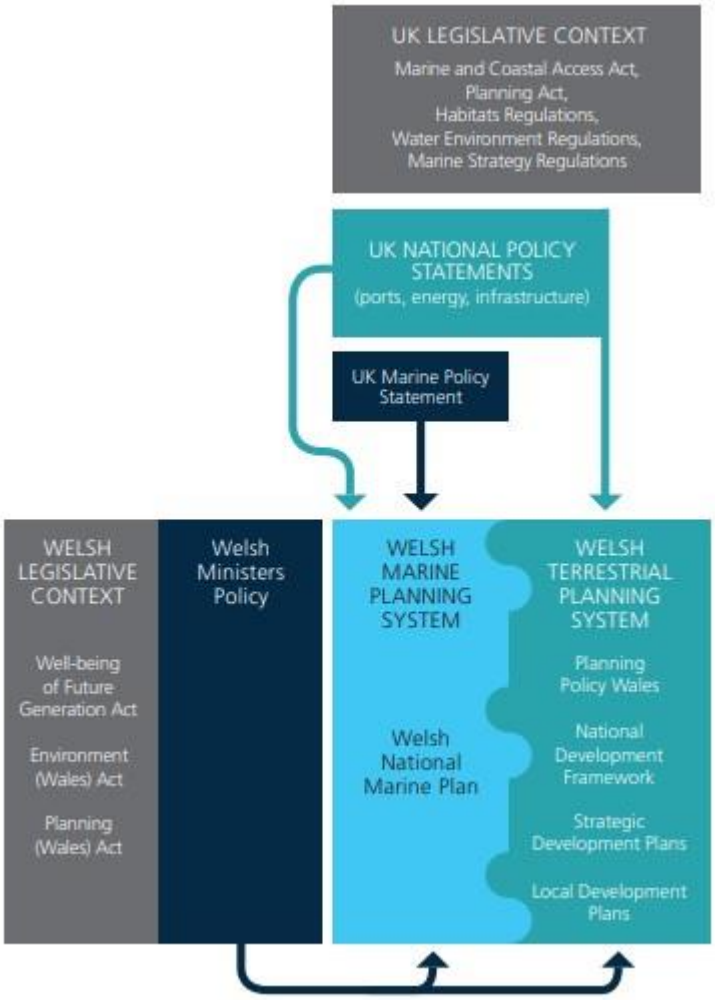


Figure 13. Planning in Wales in context (source: Welsh National Marine Plan 2019).

A number of policies within the plan seek to address LSI. General policies are sub-divided into different categories including, economic, environmental, societal and those promoting good governance and sound science. Policy ECON_02 promotes the co-existence of uses in order to make the best and most sustainable use of the marine environment, and this includes land-based activities adjacent to marine areas in order to manage impacts. Policy GOV_02, relating to cross border collaboration, notes the direct impact activities both on land and at sea can have on a wide area and that the integration of planning over these areas is coupled with wider stakeholder engagement.

P&S_02 note that ports and harbours hold significant land resources and will require close coordination between marine and terrestrial planning authorities. Coherent terrestrial and marine plans are also required to ensure the provision of surface water and wastewater treatment and disposal. The mechanism by which this will be delivered in Welsh waters is that while all decisions made by the sector will usually be made by terrestrial authorities, infrastructure relating to this sector must have a marine licence.

3 Approaches to LSI in Europe

Over the past 5 years, research into how LSI can be managed in MSP has occurred in a number of studies, including a number of ESPON, DG MARE and Horizon2020 funded projects. The complexity of LSI means that they can be highly geographically specific in nature and vary greatly in the scale at which they need to be addressed; hence a number of different approaches have been taken. This chapter presents the work of some of these projects and discusses their suitability to be replicated elsewhere, particularly within the SIMAtlantic Project Area.

3.1 ESPON MSP-LSI: Value Chain Analysis Methodology

The ESPON MSP-LSI Project ran from 2018-2019 and focused on an economic-based targeted value chain analysis which explores how LSI can be defined and operationalised within an MSP process. The approach which was developed was tested through five pilot case studies within Europe: Slovenia, the Gulf of Gdańsk, the Croatia Coast and Islands, the Pomeranian Bight and the Dutch North Sea. The research undertaken by the MSP-LSI project was underpinned by the concept of a 'one space' approach to territorial planning envisioning the close integration of terrestrial planning and MSP. Building upon the previous framework developed by the EU MSP Platform (Figure 1) a new framework was created, highlighting the complexity of LSI as a dynamic phenomenon, with changing linkages between offshore and onshore socio-economic activities and the biogeochemical processes taking place within a region (Figure 14). This shows a structured framework within which LSI can be addressed by governance arrangements.

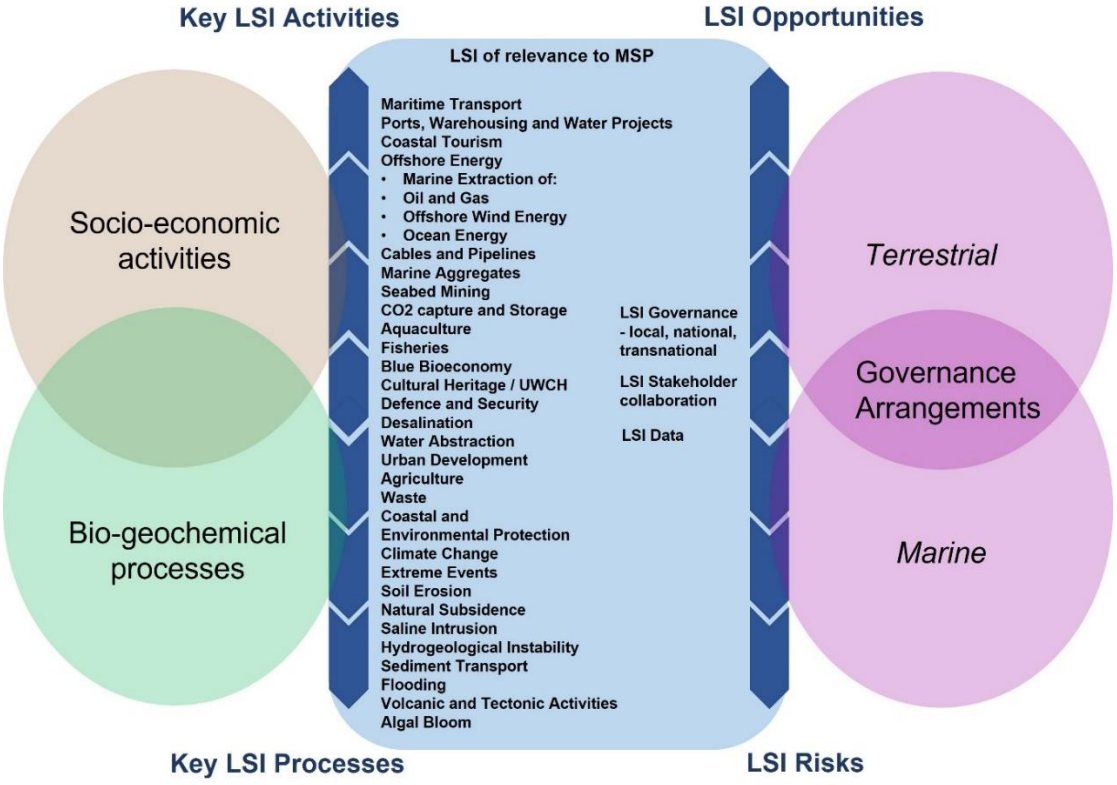


Figure 14. Framework for considering LSI in MSP (source: Maritime Spatial Planning and Land-Sea Interactions - Targeted Analysis, ESPON 2020).

In order to operationalise the management of LSI in MSP, a four-step methodology was developed to allow for further replicability of this tool. The methodology for LSI investigation is summarised in Figure 15 below. This begins with an initial scoping phase, including discussions with key stakeholders, including marine and land planning authorities and other bodies relating to infrastructure and the environment. This leads to the identification of key issues and defines the coastal and core area being analysed; in essence agreeing the scope of the value chain analysis to be undertaken. Secondly using an approach based upon an established World Trade Organisation methodology, a value chain analysis is conducted for key maritime sectors, in order to identify the 'spatial footprint' of a particular activity. This step is often accompanied by a mapping exercise which allows the spatial footprint to be easily visually represented. In order to frame the context of how MSP can be used to address a particular issue or activities, a governance analysis is also conducted, including a review of all marine and terrestrial plans, development plans and identification of relevant competent authorities. Depending on the scope agreed upon during step 1, this may cross national boundaries and require a degree of cross border cooperation. Finally, recommendations for Good Management are produced, based on the findings obtained for implementation within the Core Area.

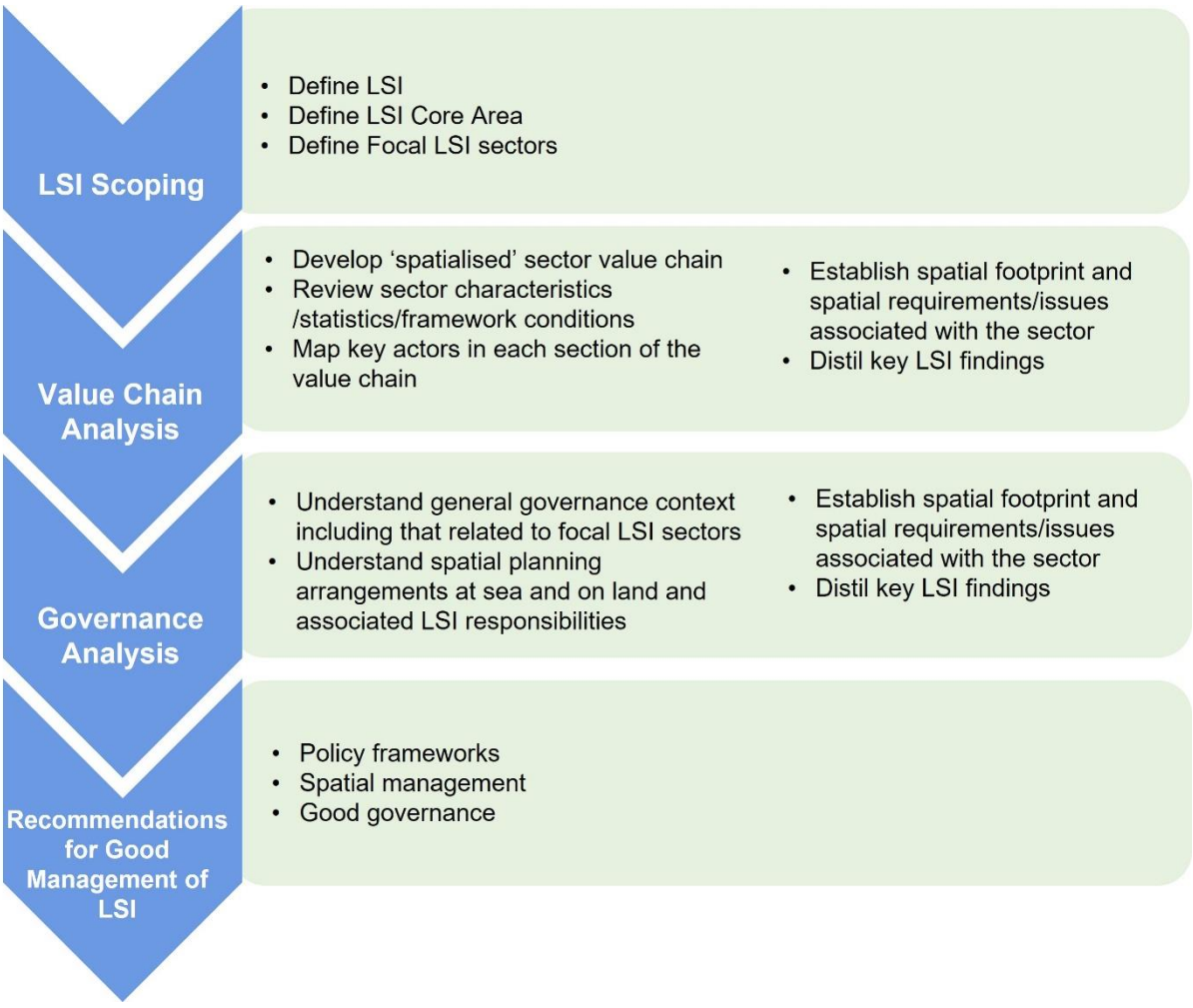


Figure 15. A method for Exploring LSI in territorial planning (source: Maritime Spatial Planning and Land-Sea Interactions - Targeted Analysis, ESPON 2020).

The fact that the MSP-LSI Methodology was applied successfully in five very different case study, at very different scales across Europe, demonstrate its suitability for replication in other areas. It was also used within the SIMAtlantic Project Area to examine Offshore Wind generation in the Irish Sea (see SimAtlantic Report 2.4, Irish Sea Pilot). The predominantly desk based nature of this exercise also provides an advantage for MSP authorities where resources to conduct such an investigation may be limited. The approach does however have its limitations, especially the strong socio-economic focus of the approach, which may mean that environmental issues resulting from a particular activity are not given enough consideration.

3.2 Pan Baltic Scope – Integrating LSI into MSP

The Pan Baltic Scope Project ran from 2018-2019 and was funded by the European Maritime Fisheries Fund. One of the key activities of the project was addressing LSI with a focus on cross-border cooperation, in particular where MSP in different countries may be at different stages. Geographically, the work focused on states within the Baltic Sea Region (BSR). This expanded upon the work of the EU MSP Platform study and the MSP-LSI Project (above). The project notes that while many of the insights and aspects of both projects are aligned, Pan Baltic Scope aims to add a more explicit focus on LSI with a cross border focus due to the density of borders that surround a relatively enclosed sea basin such as the Baltic. The importance of stakeholder engagement is key throughout all of the work undertaken in Pan Baltic Scope.

Blue arrow: human induced land-sea interactions; green arrow: environmental processes; red arrow: planning and management action; grey arrows: influences between the blue-green land-sea interactions and the land-sea planning continuum managing them. Figure by Sarah Mahadeo & Andrea Morf, Nordregio.

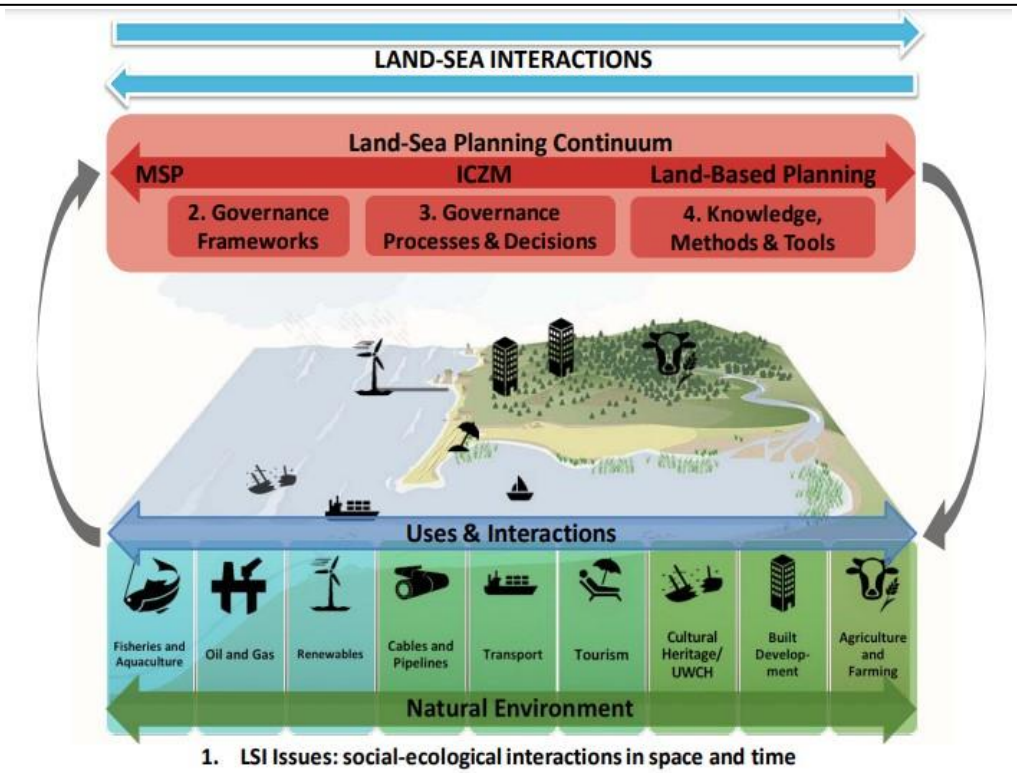


Figure 16. A 4-dimensional visual framework for thinking about LSI including a land- sea planning continuum (source: Lessons, stories and ideas on how to integrate Land-Sea Interactions into MSP, Nordregio, Stockholm. Morf et al, 2019).

The project's definition is as follows, *"The term land-sea interactions(s) in coastal and marine spatial planning encompasses all natural and human-induced flows and processes between marine and terrestrial environments in both directions, as well as how these interactions are perceived and managed by societies and their different actors through MSP and other governance frameworks and processes (i.e. authorities, enterprises, users, NGOs and what they do about these interactions)."* The project produced a framework which is shown in Figure 16 below, showing the interactions between land and sea uses and activities, natural processes and the governance systems which can be used to address them.

As with the MSP-LSI project, the framework and methodology was tested across multiple case studies, two of which had a transboundary nature. The three case studies were as follows: a) the Gulf of Bothnia shared between Finland, Åland and Sweden, including the special case of coastal and marine areas between Åland and Satakunta ; b) the Riga Bay shared between Latvia and Estonia which focused on local authority needs and opportunities for becoming involved in MSP; c) and Germany as an example of more advanced MSP. The project used the work and lessons learned from the three case studies to produce a series of recommendations and tools. It also introduced the concept of 'LSI thinking' for marine planners to use within the MSP process. Box 4 summarises the key conclusions from the project.

• Different coastal and marine planning systems have different challenges and enablers for integrating LSI in MSP. The most important challenge at present is the awareness gap with respect to LSI, and the need to make LSI more tangible by identifying specific LSI issues.

• There is a strong need for communication, knowledge and capacity development within local and regional authorities and stakeholders, so that they can link up with marine planning and start filling in the considerable knowledge gaps.

• Overall, we recommend using a cross-sector and multi-dimensional perspective on LSI (issues/sectors, institutions, processes, knowledge and methods) and looking both ways, aware of different institutional levels, geographical ranges and directions of land-sea interactions (land <> sea/ bottom <> up/past <> future) including cross-border perspectives.

Box 4: Key conclusions from the BaltSea Plan LSI activities (*source: Lessons, stories and ideas on how to integrate Land-Sea Interactions into MSP. Nordregio, Stockholm, Morf et al, 2019)*

The project also produced a number of tools which can be used in MSP when addressing LSI, including a checklist of questions which should be considered throughout the process and can help practitioners and others stakeholders to acquire an 'LSI mindset' and an 'Institutional LSI Learning Loop' which can be seen in Figure 17 below.

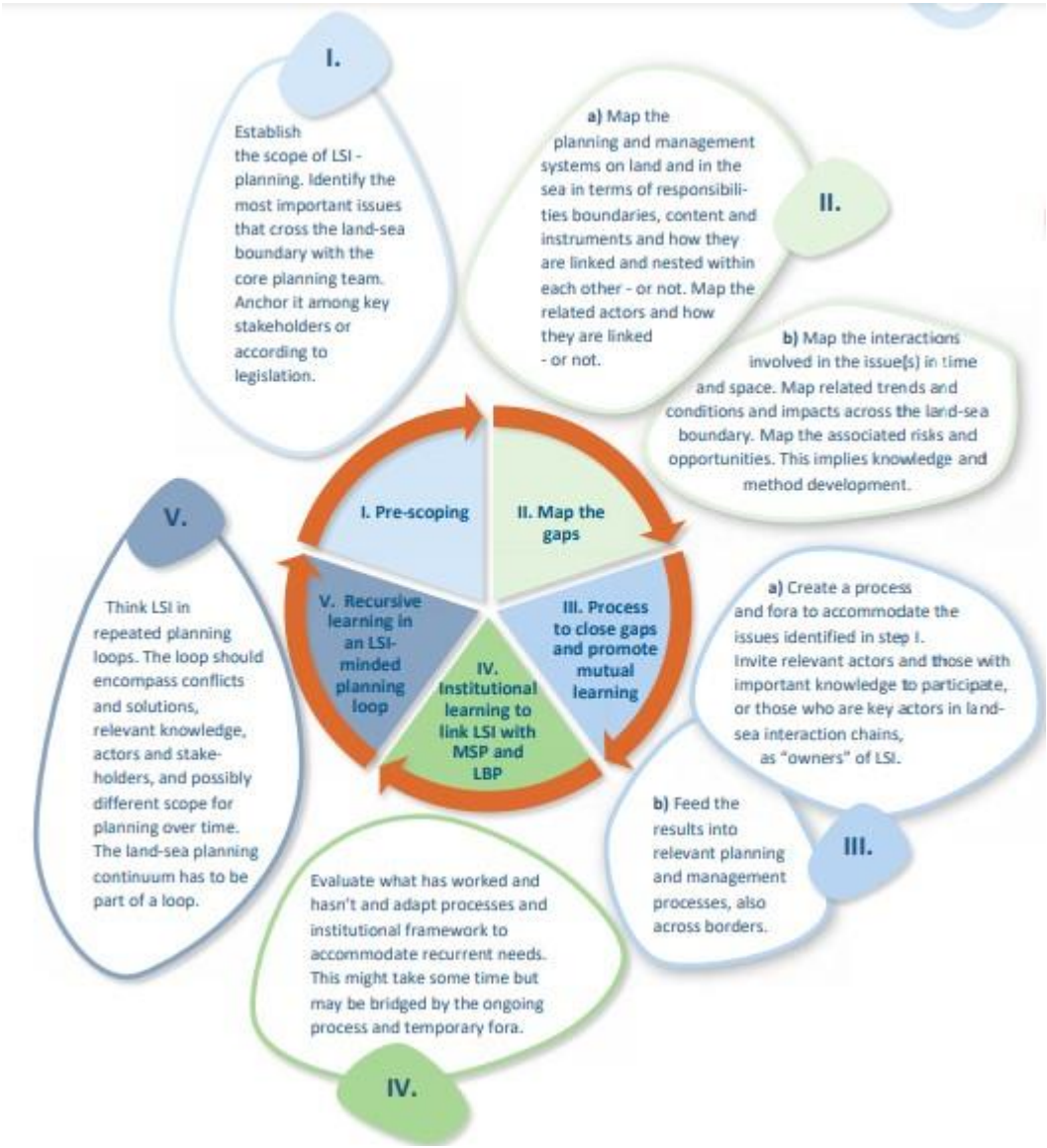


Figure 17. Institutional LSI Learning Loop: Linking LSI-LBP-ICZM-MSP (source: Lessons, stories and ideas on how to integrate Land-Sea Interactions into MSP. Nordregio, Stockholm. Morf et al, 2019).

While some of the recommendations of the project are specific to the BSR, the overall concepts and ideas, in particular the importance of stakeholder engagement and having an 'LSI mindset' throughout the whole MSP process, are applicable in any planning area.

4 A Framework to examine the approaches to LSI.

The above projects have sought to address LSI in a structured and nuanced manner, often driven by the locations of the specific issues or the needs of the sectors and activities which take place within the given project area. Although there is a specificity to many of these approaches, many can be replicated in other areas where similar activities take place or have a close correlation with the cultural environment. To make the best use of the array of tools which have been made available, the following step-by-step process seeks to guide MSP practitioners and others involved in the management of LSI in the SIMAtlantic area and beyond.

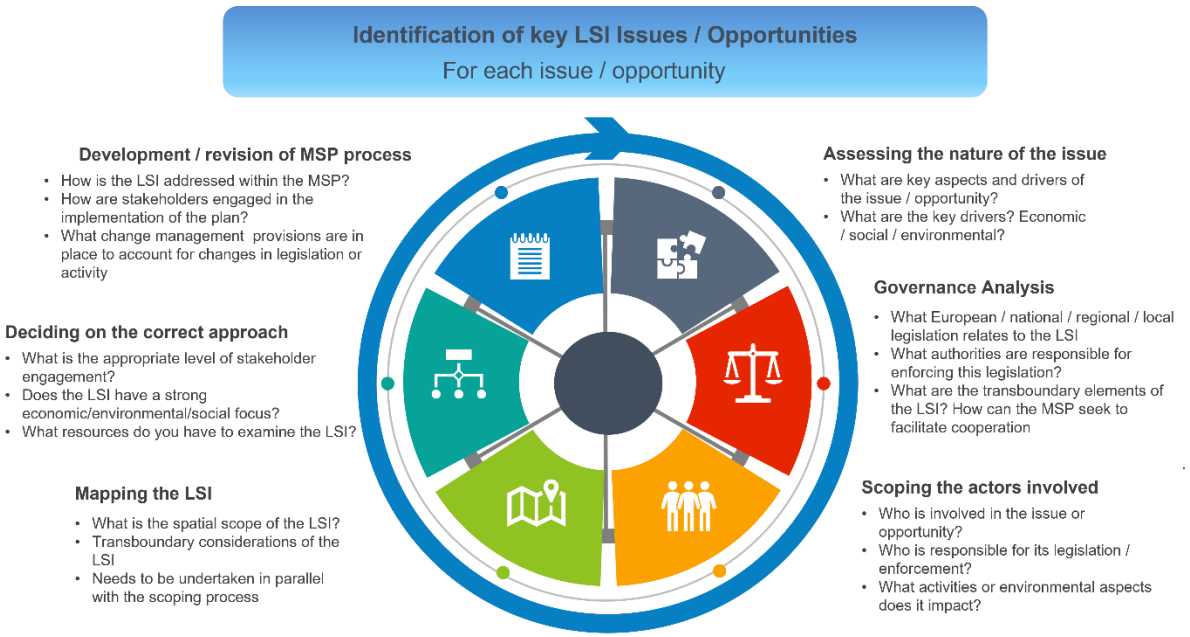


Figure 18. A framework to assess the approach to be used to address LSI.

This framework is designed to be used to address each issue or opportunity identified as part of the early stages of a maritime spatial plan development during which issues are identified and the necessary evidence gathered. This framework should be used throughout the MSP process and during review of the plan. This is designed to be a quick desk-based exercise which aims to establish the most appropriate methodology

Step 1 – Assessing the nature of the issue

This should be carried out during the early stages of MSP, when issues (or opportunities) are raised and evidence gathered. This is important as the amount and quality of evidence available may have a bearing on the methodology chosen to examine a particular LSI. In areas where data is scarce or too expensive to obtain, or for LSI with a strong transnational element,and there is disparity in quality across borders. a stakeholder or expert opinion-led approach may be more suitable than a science or risk management- based approach.

Step 2 – Governance analysis

The major pieces of legislation at play may well have been identified during early stages in the process. However, more detailed analysis should be done to include, not only the legislation which exists in the country for which the MSP is being carried out, but also neighbouring countries where a transboundary element exists. Governance should be examined at an international, European, national, regional and local level where appropriate. Thought should be given to how MSP can be used as a bridging tool bringing together the implementation of this legislation.

Step 3 – Scoping the actors involved

Engagement with relevant stakeholders will be crucial no matter which methodology is used to address a particular LSI. MSP authorities will need to be involved, often from more than one countryIt will also be important to engage with land planning counterparts, national environmental agencies and industry regulatory bodies. Engaging with stakeholders from particular industries may be difficult, with stakeholders from different companies or regions reluctant to share information. Early engagement with stakeholders has been shown to increase success within this regard so identification of actors at an early stage is crucial (Gopnik et al. 2012).

Step 4 – Mapping the LSI

Understanding where the issue, opportunity or activity takes place will allow an initial spatial footprint to be drawn up. In addition to sites of operation, there should also be an understanding of how far-reaching an area may be affected. The effects of the LSI can be environmental, such as agricultural run-off entering marine and coastal waters, or economic, creating jobs for local communities such as offshore wind, or social, such as with historic fishing communities. This step in the process should be undertaken in parallel with step 2 as developing an understanding of the spatial footprint of the LSI may uncover additional stakeholders not initially considered, but who may need to be involved in the MSP process.

Step 5 – Deciding on the correct approach

By this stage in the process, there should be an idea of the data and evidence available to examine the issue and its spatial scale, and the key actors involved. Based on this information, a review of available approaches should be made, based, for example, on Chapter 3 of this report. It is important to note however that research into LSI is a rapidly evolving field with new approaches being developed. Also, no one approach may be entirely suited to a specific LSI in a specific location. For example, where a value chain analysis may be an appropriate tool, this may need to be modified in certain circumstances due to data availability, and additional engagement and the use of expert judgement used in its place to fill in data gaps where appropriate.

Step 6 – Development / revision of MSP process

The final step will be to incorporate the LSI and how it will be addressed into the MSP process. Consideration should be given into how often the plan will be revised, and also how likely major changes to the activity are, in order to establish whether a change in management process should be established.

This process should be completed for every revision, taking into account any changes that have occurred since the last plan was created.

5 Summary and Conclusions

There are a number of different approaches that can be taken when looking to address the complex phenomena of LSI. No one approach is entirely suitable to address all issues and opportunities, and thought needs to be given to the scope of the issue or opportunity involved and the timeframe in which decisions need to be made. To add to the complexity of addressing LSI, widely varying governance mechanisms exist in each country, in addition to EU and international legislation that many activities are subject to. Investigating the governance mechanisms at play within the project area is a complex affair, with gaps existing between the high-level drivers outlined by the EU and national priorities, and the policies to deliver them (O'Hagan et al. 2020)

With this in mind, this report has aimed to highlight the different possible approaches to addressing LSI within the SIMAtlantic project area, to allow those involved in MSP, especially those involved in activities with a strong LSI component, to have access to a point of reference to start their investigations. The cross-border aspect to many of key LSI activities including aquaculture, wind energy and shipping within a plan area, highlights the importance of being aware of the legislation relating, not just to the country an activity is registered in, but also that of those who could be influenced by its effects which can often be far reaching (Kidd et al. 2019).

Different approaches have been trialled and tested as part of various projects over the past five years that seek to address a variety of different LSI; some of these approaches have also been utilised within MSP. Through examination of the approaches discussed in this report and the national approaches to LSI in each of the SIMAtlantic partner countries, a series of key findings and recommendations are as follows.

1. The effects of LSI can be far reaching, often extending beyond regional and national borders, and can be environmental, social and economic in their nature.
2. LSI are a complex phenomena that MSP can help to address. Creating a dialogue between marine and terrestrial planners is key for the success in addressing LSI, and a process for integration of planning regimes should be considered in the development or revision of maritime spatial plans.
3. The potential impacts of LSI are likely to be exacerbated by climate change. Temperature, salinity and sea level rise can all affect many activities ,exacerbate issues and possibly create additional opportunities, such as changes to the suitable habitable range for aquaculture species. Predicted increased storm activity can lead to increased pressure on coastal defence systems and increased run-off and sediment influx to sensitive coastal ecosystems. It is recommended that MSP takes into consideration change management for such instances.
4. Many different approaches for the management of LSI exist and can be modified for use in a North East Atlantic context. The approaches outlined in

this report can act as a starting point for future work into addressing LSI in the SIMAtlantic region and beyond.

5. There is no ‘one size fits all’ approach that can be used to address LSI. Careful consideration needs to be given to the specific geography of LSI; its scale and its nature.
6. LSI cannot be addressed by MSP alone, though this is one tool that can be used to promote cooperation between governmental departments, industry and countries.

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