Partnership for nature and people

Are EU Member State's Maritime Spatial Plans Fit for Nature and Climate?

Technical Report – Approach and Main Findings

June 2022

BirdLife INTERNATIONAL

EUROPE AND CENTRAL ASIA

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Acronyms

EBA	Ecosystem-based Approach
EEZ	Exclusive Economic Zone
GES	Good Environmental Status
GW	Gigawatts
HELCOM	Helsinki Commission
IMO	International Maritime Organisation
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning/Maritime Spatial Plan
ORE	Offshore Renewable Energy
SEA	Strategic Environmental Assessment
VASAB	Visions and Strategies around the Baltic Sea

Executive Summary

General Observations

- EU Member States with marine waters (coastal waters and/or Exclusive Economic Zones (EEZ)) are legally required to prepare maritime spatial plans (MSP).
- These **plans must implement an ecosystem-based approach (EBA) aligned with the achievement and maintenance of Good Environmental Status (GES)** for marine and coastal waters as required by the EU Marine Strategy Framework Directive (MSFD).
- **There is a strong legislative basis for ecosystem-based maritime spatial planning (MSP) in the EU**, explicitly supported by EU Directives, key statements of policy, and international environmental agreements to which the EU is formally committed.
- **Marine ecosystems are under increasing pressure** from both established uses (e.g., shipping, commercial fisheries, sand and other extractive industries) and emerging sectors such as offshore renewable energy (ORE).
- Many human uses of the sea are, in principle, reversible and not fixed to specific locations or specific moments in time.

There is considerable scope for MSP to affect a substantial re-organisation of marine space to the benefit of marine ecosystems.

Offshore wind turbine farm
Photo: Federico Rostagno

Assessment Results

- **There is considerable variation in the degree to which an effective ecosystem-based approach to MSP is currently implemented.** This may in part relate to the quality of data available across relevant ecosystem indicators.

- In most, if not all, cases of national-level MSP, **the conservation and restoration of marine ecosystems is treated as a sectoral interest** alongside other sectoral interests, rather than determining the boundaries within which those sectoral activities must take place.

- There is an evident **need for closer alignment between national-level MSP, implementation of the EU Marine Strategy Framework Directive (MSFD), and Marine Protected Area (MPA) designation and management**, to meet EU policy targets, including those in the EU Biodiversity Strategy 2030.

- A **quantitative and spatially explicit assessment of cumulative impacts must be a core component of the environmental assessment of any MSP process.** Only one of the plans evaluated includes such an assessment.

- **Assessments of cumulative impacts must include cross-sectoral synergetic impacts and take explicit account of the volume and intensity of planned/projected activities over the period of the plan**. The cumulative impact assessments of the plans evaluated fail to match these criteria.

- **Maritime spatial plans must be prepared on the basis of systemic, quantitative assessments of both ecological carrying capacity and ecosystem sensitivity.** The plans evaluated do not take sufficient account of ecological limits and ecosystem sensitivity.

- **Maritime spatial plans must balance the exploitation and protection of marine resources**, not least **by safeguarding the Natura 2000 network**. The plans evaluated here will drastically increase cumulative pressures on the marine environment not only outside, but also inside, Natura 2,000 sites.

Recommendations for the Future Development and Implementation of Ecosystem-based MSP

- A **systematic and spatially explicit analysis of ecosystem functionality, connectivity, and sensitivity must lie at the heart of MSP** and substantially inform all decisions pertaining to the planning and regulation of human activities at sea.

- A **coherent network of effectively managed MPAs should form the backbone of all maritime spatial plans.**

- **All established and emerging uses of marine space must be included within the scope of MSP**, including shipping, fishing and military activities. It is not sufficient to rely on sectoral policies or international agreements for the implementation of ecosystem-based marine policy.

- **Maritime spatial planning must be based on a robust, evidence-informed assessment of plausible alternative scenarios.** Such scenarios should set out alternative future pathways with varying volumes, intensities and spatial distributions of human activities.

- **Maritime spatial plans must include specific measures to minimise the impact of commercial fisheries on vulnerable ecosystems and species.** Relevant measures include no-take zones within protected areas, seasonal restrictions, and restrictions on the use of certain gear (e.g., bottom trawling). The EU MSP Directive requires Member States to contribute to the sustainable development of fisheries and aquaculture as well as to the protection, preservation and improvement of the environment.

- **The expansion of ORE should be coordinated and planned for each ocean basin at a European level and beyond**, in order to achieve a more balanced distribution and ensure sustainability. A number of countries such as Germany and the Netherlands have ambitious ORE goals yet limited space within their territorial waters and Exclusive Economic Zones.

- The **impacts from the volume and intensity of shipping and the routing of shipping lanes must be explicitly addressed within maritime spatial plans**. In particular, the adverse impacts caused by increasing volumes and speed of shipping traffic such as increased noise pollution and increased risk of collision or spillage of oil and chemicals must be recognised and measures must be taken to address them. In some cases, rerouting of shipping lanes may require negotiations at the level of the International Maritime Organisation (IMO). This should be acknowledged but not viewed as insurmountable obstacle.

- **Maritime spatial plans must afford greater protection of ecological connectivity** with an emphasis on bird, bat and fish migration routes as well as safeguarding the coherence of ecological corridors between MPAs.

- **Maritime spatial plans must provide buffer zones to safeguard the protection of vulnerable species and habitats from the impacts of offshore wind farms**, during both their construction and operational phases. The extent of such buffer zones must be informed by the best available scientific evidence, taking full account of the precautionary principle.

- **Maritime spatial plans must include explicit measures for both passive and active ecosystem restoration**, to facilitate effective compensation for infrastructure projects and to support the recovery, and build the resilience, of marine ecosystems and contribute to the achievement and maintenance of GES. The objective of biodiversity net gain should be encouraged.

- **Maritime spatial plans should explicitly recognise the contribution of marine and coastal ecosystems to climate change mitigation** through their functions as carbon sinks, as well as their role in coastal protection.

- **Maritime spatial plans should include provisions for timely adaptive modification** prior to 2031 in response to changes in sectoral policy goals and increased scientific understanding of ecosystem carrying capacities or vulnerabilities, for example, as a result of climate change.

- **Synergies in the implementation of the MSFD and MSP directives should be strengthened.** National MSFD assessments should provide the foundation for MSPs, and monitoring schedules should be aligned and combined, as far as possible.

Photo: Shaun Wilkinson

1. Introduction

All 22 EU Member States with marine territories, also known as Coastal MS of the EU, are obligated to develop maritime spatial plans for their coastal waters and Exclusive Economic Zones (EEZs) by March 2021. This requirement is set out in the EU Maritime Spatial Planning Directive adopted in 2014. Maritime spatial planning (MSP) is, according to the Directive, defined 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". The Directive explicitly calls for an ecosystem-based approach to MSP:

In order to promote the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources, maritime spatial planning should apply an ecosystem-based approach as referred to in Article 1(3) of Directive 2008/56/EC with the aim of ensuring that the collective pressure of all activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised while contributing to the sustainable use of marine goods and services by present and future generations.

The MSP Directive is thus explicitly aligned with the achievement and maintenance of Good Environmental Status (GES) under the EU Marine Strategy Framework Directive (MSFD). The reference to the collective pressures of all activities implies the need to assess cumulative impacts and to base MSP decisions on this assessment, while the reference to keeping collective pressures within levels compatible with the achievement of GES implies the need for an assessment of the carrying capacity of marine ecosystems in order to determine upper limits for anthropogenic pressures. The reference to the capacity of marine ecosystems to respond to human-induced changes indicates the need for an adaptive, resilience-oriented approach, with an emphasis on ecosystem functionality. At the same time, pressures on marine ecosystems are increasing rather than decreasing as emerging industries, such as offshore renewable energy compete for space with established marine sectors such as shipping, commercial fishing, mineral extraction and military activity.

Following the finalisation of their maritime spatial plans by EU Member States in 2021, there is a key window of opportunity to comparatively assess the content and strategic direction of these plans with a view to supporting transboundary learning and monitoring of the degree of coherence and alignment with EU environmental objectives. This study examines the extent of alignment of selected national-level maritime spatial plans for the Baltic and North Seas with EU environmental objectives, and the extent to which they have adopted a coherent and systematic ecosystem-based approach (EBA). It assesses the capacity of national-level MSP to contribute to the achievement and maintenance of GES and other environmental targets.

This Technical Report sets out the scientific rationale and policy context for ecosystem-based MSP in Europe (section 2), the methodological approach of the assessment (section 3) and a summary of the results of the individual national-level assessments (section 4).

2. Maritime Spatial Planning and the Ecosystem-Based Approach

2.1 Maritime Spatial Planning: A Brief Introduction

The EU Maritime Spatial Planning Directive (2014) established a common framework for maritime spatial planning in the EU and required all Member States with marine territories to prepare maritime spatial plans for their coastal waters and Exclusive Economic Zones by March 2021. According to the Directive, MSP is defined 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". The MSP Directive explicitly calls for an ecosystem-based approach:

When establishing and implementing maritime spatial planning, Member States shall consider economic, social and environmental aspects to support sustainable development and growth in the maritime sector, applying an ecosystem-based approach, and to promote the coexistence of relevant activities and uses.

MSP is a spatially explicit policy instrument focussed on managing the location and distribution of relevant human activities across space. As a planning instrument, it also has a strong temporal dimension, a concern for the planning, regulating and imagining of the future of the marine environment. Against this background, it is important that maritime spatial plans encompass, or are accompanied by, a long-term vision as well as objectives and targets to be achieved within specific timeframes. Dutch maritime spatial plans, for example, are accompanied by a long-term 'spatial agenda' with a time horizon of 2050 (see Walsh 2021a, b). MSP bears many similarities to spatial (urban and regional) planning on land, but clear differences may also be noted. MSP has evolved within a distinct marine policy context, has an ecosystem-based approach at its core, and is underpinned by scientific data-gathering and analysis. In their practical guide to MSP, Ehler and Douvre (2009) define MSP as follows:

"Marine spatial planning is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process" (Ehler & Douvre, 2009).

They identified the following characteristics of effective MSP:

- Ecosystem-based: balancing ecological, economic and social goals and objectives towards sustainable development.
- Integrated: across sectors and agencies and among layers of government.
- Place-based or area-based.
- Adaptive: capable of learning from experience and responding to changing conditions.
- Strategic and anticipatory: focussed on the long-term.
- Participatory: active involvement of stakeholders.

Adapted from Ehler & Douvre (2009, p. 18)

Significantly, Ehler and Douvre also observed that MSP does not lead to a 'one-time plan', but may be considered as a continuous, iterative process characterised by learning and adaptation. MSP is thus

central to the implementation of adaptive, ecosystem-based marine governance. It is furthermore important to note that MSP is intended to have an overarching integrative function that does not replace single-sector planning (see also WWF 2021). Relevant sectoral plans and policies may include those for wind energy, oil and gas, aquaculture, fisheries and marine conservation.

MSP, as practised to date, demonstrates a high degree of variability, with the above characteristics featuring to varying extents depending on national contexts, prevailing planning traditions and policy priorities. It is possible to distinguish between two distinct interpretations of the role of MSP (Walsh 2021a). The primary task of MSP may be understood in terms of sea-use regulation; the regulation of activities across marine space by means of zoning and use designation. Sea-use regulation can provide a degree of certainty for economic actors and other interests and help to ensure consistency, coherence and compatibility among sectoral plans. Plans of this nature are often legally binding while allowing for some discretion in decision-making on individual proposals. This is, in practice, the most common approach. MSP may, however, also perform a strategic visioning role, establishing a coherent policy framework for future decision-making, based on a future-oriented policy vision. Strategic vision statements are key to realising the cross-sectoral, integrative ambitions of MSP and may help to identify potential synergies and points of intersection across policy sectors. Existing practice indicates that individual plans can rarely perform both roles simultaneously, but formal regulatory plans may be complemented by strategic vision statements or spatial agendas. The Dutch North Sea 2050 Spatial Agenda represents an example of good practice for a maritime spatial plan with a strong strategic visioning role. Maritime spatial plans can act as a catalyst for change, an agent of transformation contributing to a shift towards more sustainable use and effective protection of marine resources.

The majority of maritime spatial plans produced to date under the EU MSP Directive have a strong spatial component, managing competing claims through spatial designations of sea uses (zoning). This is an explicit requirement under Article 8(1) of the EU MSP Directive. Maritime spatial plans may be produced at both national and sub-national levels of governance. It is important to note that, in contrast to the case of land-use planning, many human uses of sea space are typically reversible and not fixed to specific locations. This means that there is, in principle, often considerably more scope for MSP to re-organise marine space than would be the case on land. Shipping routes, for example, that are found to have adverse environmental impacts can be modified and rerouted to a far greater extent than is possible with major transportation routes on land. In practice, this may require negotiation nationally, with neighbouring states, and finally via the IMO.

The development of an ecosystem-based approach to marine management dates back to the 1990s. The adoption of twelve defining principles for ecosystem-based management under the Convention on Biological Diversity (1998) in Malawi represents an important milestone (see Table 1).

Red-throated diver *(Gavia stellata)*
Photo: Mats Brynolf

Table 1: Malawi Principles of the Ecosystem Approach to Biodiversity Management	
1	The objectives of management of land, water and living resources are a matter of societal choices.
2	Management should be decentralized to the lowest appropriate level.
3	Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
4	Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context, considering e.g. mitigating market distortions, aligning incentives to promote sustainable use, and internalizing costs and benefits.
5	Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.
6	Ecosystems must be managed within the limits of their functioning.
7	The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.
8	Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
9	Management must recognize that change is inevitable.
10	The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.
11	The ecosystem approach should consider all forms of relevant information, including scientific, indigenous and local knowledge.
12	The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

This list of principles emphasises the need for an integrative governance approach, including the participation of a wide range of stakeholders, scientific expertise from multiple disciplines, as well as drawing on indigenous and local knowledge. The principles also emphasise the importance of ecological objectives associated with ecosystem structure, functioning and limits. The concept of MSP subsequently emerged against the background of calls for integrated ecosystem-based ocean management and specifically aimed to create a spatial framework for networks of marine protected areas, which could simultaneously pursue environmental, social and economic objectives (Lieberknecht 2020). A recent WWF position paper (WWF 2020) further specified the concept of ecosystem-based MSP, highlighting issues of carrying capacity and the need for a long-term perspective concerned with the cumulative impacts of human activity:

An ecosystem-based approach in planning how we use and access our seas acknowledges that the carrying capacity of marine ecosystems against human pressures is limited. The approach considers the marine space as an integrated system, providing a variety of uses and services including marine protection. Supported by the best available science and by participatory good governance, it addresses the cumulative effects of human activities on marine ecosystems over a long-term perspective.

The WWF position paper further notes that marine economic sectors including fishing, tourism and renewable energies are dependent on healthy and resilient marine ecosystems. This perspective makes clear why an ecosystem-based approach must inform all aspects of a maritime spatial plan and in fact, contributes to the sustainable socio-economic development of marine space. The WWF assessment of maritime spatial plans for the Baltic Sea, published in March 2022, concluded that national-level plans published to date do not adequately ensure the protection and restoration of marine ecosystems (WWF 2022).

2.2 Ecosystem-based MSP, EU Legislation and Policy Frameworks

The EU Marine Strategy Framework Directive (MSFD 2008) explicitly calls for an ecosystem-based approach to marine governance:

> ***By applying an ecosystem-based approach to the management of human activities while enabling a sustainable use of marine goods and services, priority should be given to achieving or maintaining good environmental status in the Community's marine environment, to continuing its protection and preservation, and to preventing subsequent deterioration.***

The EU MSFD thus explicitly prioritises the achievement and maintenance of Good Environmental Status to protect the marine environment and prevent further deterioration, implying that the sustainable use of marine goods and services should be regarded as being of secondary importance. The EU MSFD is thus aligned with a hard sustainability orientation. This implies that the application of ecosystem-based management must be considered a precondition for the development of MSP, not as one discrete element of a wider MSP process where the economic, social and environmental dimensions of sustainability are given equal priority (Troulliet 2020, Troulliet & Jay 2021). Indeed, the MSFD and MSP Directives are envisaged to be implemented and monitored in synergy[1], which is why several countries, such as the Netherlands, have aligned at the national level their respective schedules.

More recently, the EU Green Deal (EC 2019, p. 14) envisaged a central role for a sustainable blue economy in "alleviating the multiple demands on the EU's land

1. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1593613439738&uri=CELEX:52020DC0259

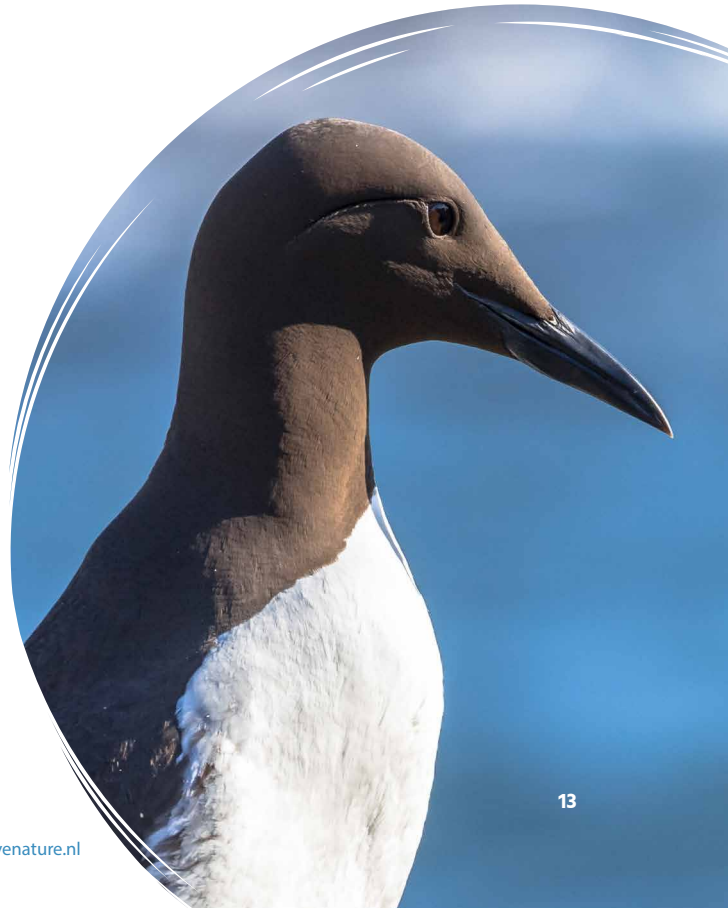
resources and tackling climate change". The Offshore Renewable Energy (ORE) Strategy (EC 2020) calls for a scaling-up of the offshore wind industry, from 12 Gigawatts (GW) of installed capacity today to 60 GW in 2030 and 300 GW by 2050. The ORE Strategy estimates that this expansion of offshore wind will require "less than 3% of European maritime space and can therefore be compatible with the goals of the EU Biodiversity Strategy" (EC 2020, 1). This simplistic assessment of compatibility fails to take account of the wide-ranging impacts of wind farms, related infrastructure and service shipping during their construction and operational phases and does not consider the distribution of ORE or vulnerable ecosystems across European maritime space.

The EU MSFD further stresses that programmes of measures implemented by Member States for the achievement of Good Environmental Status should be underpinned by the precautionary principle. This legal principle, in abstract terms, enables policy makers to take preventative regulatory action before risks materialize, in order to prevent unnecessary harm (Eckley and Selin 2004, Tosun 2013). The EU formally adopted the precautionary principle with the Maastricht Treaty. Today, it is set out in Article 191(2) of the Treaty on the Functioning of the EU. A European Commission document states that the principle is 'relevant [...] in the event of a potential risk, even if this risk cannot be fully demonstrated or quantified or its effects determined because of the insufficiency or inclusive nature of the scientific data' (European Commission 2000: 12). This statement implies that precautionary regulatory action should be taken where a potential risk is identified, independent of whether this potential risk is substantiated by scientific data. In everyday language, this may be summed up by the well-known phrase "to err on the side of caution". With regard to MSP, this principle implies that decisions should not only be based on the best available evidence but should favour protection of marine ecosystems and/or minimal intervention where potential negative impacts may be anticipated but existing scientific studies and monitoring frameworks are insufficient to quantify the extent of such environmental risks.

It is important to note that a number of analytical tools have been developed to support strategic environmental assessment for MSP. These include the following:

- Sensitivity analysis
- Risk assessment
- Interaction matrices
- Cumulative impact analyses

These are, for the most part, data-driven technical tools and require mature sophisticated monitoring systems (Hammar et al 2020, Gusatu et al 2021). Decision support tools, including a range of serious games such as the MSP Challenge, have been developed to foster stakeholder interaction and clarify preferences and objectives with regard to the marine environment (Abspoel et al 2021, Depellegrin et al 2021). A number of these decision-support tools focus systematically on the identification of points of conflict and tension between distinct uses or claims on marine space with a view towards identifying options for sustainable use, including multi-use (outside of MPAs), the co-location of activities at one location or in close proximity to one another (e.g., Bonnevie et al 2021).



common guillemot *(Uria aalge)*
Photo: Rudmer Zwerver - Creativenature.nl

2.3. Ecosystem-based MSP for the Baltic and North Seas

Transboundary coordination in MSP and environmental protection for the Baltic Sea is well established with institutional structures dating to the 1970s. Baltic Sea states have been to the fore in developing ecosystem-based approaches to MSP and effective transboundary cooperation on marine governance issues. In contrast, intergovernmental cooperation in the North Sea region is less well established and cooperation on environmental protection issues is weaker. The North Sea Region 2030 Strategy produced by the North Sea Commission in 2020 does not follow an ecosystem-based approach and takes a soft sustainability approach focussed on the productive and sustainable use of the North Sea (North Sea Commission 2020).

Broad-scale principles for MSP for the Baltic Sea were produced on a transboundary basis through a joint initiative of the Helsinki Commission (HELCOM) and Visions and Strategies around the Baltic Sea (VASAB in 2010 (HELCOM & VASAB 2010). The principles set out the role of MSP in contributing to the achievement of environmental objectives. They are reproduced in abridged form below. These principles are significant for their high-level (intergovernmental) status, and their emphasis on transboundary coordination and land-sea interactions. They state clearly that the ecosystem approach should be treated as an overarching cross-sectoral principle, aligned with the achievement of GES under the EU MSFD:

HELCOM – VASAB Broad Scale Principles for MSP

1. Sustainable management

MSP is a key tool for sustainable management by balancing between economic, environmental, social and other interests in spatial allocations, by managing specific uses and coherently integrating sectoral planning, and by applying the ecosystem approach.

2. Ecosystem approach

The ecosystem approach, calling for cross-sectoral and sustainable management of human activities, is an overarching principle for MSP which aims at achieving a Baltic Sea ecosystem in good status -a healthy, productive and resilient condition so that it can provide the services humans want and need. The entire regional Baltic Sea ecosystem, as well as sub-regional systems and all human activities taking place within it, should be considered in this context. MSP must seek to protect and enhance the marine environment and thus should contribute to achieving Good Environmental Status according to the EU Marine Strategy Framework Directive and HELCOM Baltic Sea Action Plan.

3. Long term perspective and objectives

MSP should have a long-term perspective in relation to the goals it seeks to attain and to its environmental, social, economic and territorial effects. It should aim for long-term sustainable uses that are not compromised by short term benefits and be based on long term visions strategies and action plans. Clear and effective objectives of MSP should be formulated based on these principles and national commitments. The establishment of a legal basis for MSP in the Baltic Sea countries should be investigated including vertically and horizontally well-coordinated decision-making processes concerning sea space uses to ensure efficient implementation of maritime spatial plans and to provide for an integrated sea space allocation process when such plans do not yet exist.

4. Precautionary Principle

MSP should be based on the Precautionary Principle. This implies planning has an obligation to anticipate potential adverse effects to the environment before they occur, taking into account Article 3 of the Helsinki Convention, and take all precautionary measures so that an activity will not result in significant harm

5. Participation and transparency

All relevant authorities and stakeholders in the Baltic Sea Region, including coastal municipalities as well as national and regional bodies, should be involved in MSP initiatives at the earliest possible stage and public participation should be secured. Planning processes should be open and transparent and in accordance with international legislation.

6. High-quality data and information basis

MSP should be based on best available and up to date, comprehensive information of high quality that to the largest extent possible should be shared by all.

7. Transnational coordination and consultation

MSP should be developed in a joint pan-Baltic dialogue with coordination and consultation between the Baltic Sea states, bearing in mind the need to apply international legislation and agreements and, for the HELCOM and VASAB EU member states, the EU acquis communautaire. Such dialogue should be conducted in a cross-sectoral context between all coastal countries, interested and competent organizations and stakeholders. Whenever possible maritime spatial plans should be developed and amended with the Baltic Sea Region perspective in mind.

8. Coherent terrestrial and MSP

Spatial planning for land and for the sea should be tightly interlinked, consistent and supportive to each other. To the extent possible legal systems governing spatial planning on land and sea should be harmonised to achieve governance systems equally open to handle land and sea spatial challenges, problems and opportunities and to create synergies. Synergies with Integrated Coastal Zone Management should be strengthened in all BSR countries and in a cross-border setting

9. Planning adapted to characteristics and special conditions at different areas

MSP should acknowledge the characteristics and special conditions of the different sub-basins of the Baltic Sea and their catchments. Consideration should be taken of the need for separate sub-regional planning adapted to such areas including sub-regional objectives supplementing regional objectives specified in principle 3. In general, maritime spatial plans should seek coherence across ecosystems.

10. Continuous planning

MSP should reflect the fact that planning is a continuous process that will need to adapt to changing conditions and new knowledge. Monitoring and evaluation of the implementation of maritime plans and its environmental, as well as socio-economic, effects, should be carried out with a view to identify unforeseen impacts and to improve planning data and methods. This monitoring and evaluation should, particularly in its transboundary dimensions and in addition to national and transboundary monitoring schemes, build on, and if possible be part of, regional monitoring and assessments carried out by regional organisations.

Joint transboundary guidelines for the implementation of an ecosystem-based approach to MSP have been produced for the Baltic Sea Region by HELCOM and VASAB (HELCOM & VASAB 2016). The following elements of an ecosystem-based approach to MSP were outlined. They are considered as additional to the broad-scale MSP principles adopted in 2010:

- **Best available knowledge and practice:** The allocation and development of human uses shall be based on the latest state of knowledge of the ecosystems as such and the practice of safeguarding the components of the marine ecosystem in the best possible way.
- **Precaution:** A far-sighted, anticipatory and preventive planning shall promote sustainable use in marine areas and shall exclude risks and hazards of human activities on the marine ecosystem. Those activities that according to current scientific knowledge may lead to significant or irreversible impacts on the marine ecosystem and whose impacts may not be in total or in parts sufficiently predictable at present require a specific careful survey and weighting of the risks.
- **Alternative development:** Reasonable alternatives shall be developed to find solutions to avoid or reduce negative environmental and other impacts as well as impacts on the ecosystem goods and services.
- **Identification of ecosystem services:** In order to ensure a socio-economic evaluation of effects and potentials, the ecosystem services provided need to be identified.
- **Mitigation:** The measures are envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan.
- **Relational understanding:** It is necessary to consider various effects on the ecosystem caused by human activities and interactions between human activities and the ecosystem, as well as among various human activities. This includes direct/indirect, cumulative, short/long-term, permanent/temporary and positive/negative effects, as well as interrelations including sea-land interaction.
- **Participation and communication:** All relevant authorities and stakeholders as well as a wider public shall be involved in the planning process at an early stage. The results shall be communicated. Integrated Coastal Management (also known as ICM), as an informal and flexible instrument, can support the process of participation and communication.
- **Subsidiarity and coherence:** Maritime spatial planning with an ecosystem-based approach as an overarching principle shall be carried out at the most appropriate level and shall seek coherence between the different levels.
- **Adaptation:** The sustainable use of the ecosystem should apply an iterative process including monitoring, reviewing and evaluation of both the process and the outcome.

The principles and elements of an ecosystem-based approach set out in the above policy texts at EU and intergovernmental levels have informed our selection of indicators for this assessment.

3. Methodology

Photo: Sergey Polyakov - Twixter

3.1 Assessment Approach

The assessment methodology is designed to be both scientifically robust and easily applied to diverse MSPs, taking into account their varying levels of detail and specificity.

This study comprises an ex-ante evaluation of the content of MSPs against specific environmental criteria. In contrast to a Strategic Environmental Assessment (SEA), the focus is not on the evaluation of alternatives, but on the likely environmental impacts of proposed objectives and measures. Evaluations of this type are focused on the improvement of the quality of plans and their implementation in practice (Varjopuro 2019).

The effectiveness of MSPs can be understood in terms of both conformance: a measure of the influence of a plan on material outcomes (in this case good environmental status) and performance: the influence of a plan on future decision-making (Faludi 2000, Carneiro 2013). Given that MSPs have a strategic and regulatory function and that the full impact of a plan may be felt through its influence on other sectoral policies, both aspects must be addressed here, to the extent that this is possible. The assessment methodology applied builds on the WWF Guidance Paper on the assessment of EB-MSP (WWF 2021) and expands this approach beyond the MSFD to consider a broader set of EU environmental Directives, key policy statements and international agreements. Emphasis is placed on ease of interpretation and comparability across indicators and MSPs.

3.2 Selection of Indicators

Indicators provide a summary indication of patterns and trends. In this case, our focus is on indicators of alignment between the content of national-level MSPs in the Baltic and North Seas and EU environmental objectives. Our selection of indicators is based on an analysis of relevant EU environmental legislation and policy statements, and the identification of specific objectives of relevance to MSP and the marine environment. The EU Directives and policy statements included in the assessment are found in Table 2 below. In addition, we include relevant international agreements to which the EU is a signatory (Table 3). In total, we have selected 19 indicators, grouped under 5 thematic categories. The list of indicators and the key legislation/ policy statements from which they are derived is set out in Table 4. To measure progress against the selected indicators, the assessment includes up to four criteria per indicator (e.g., 3.2a – 3.2d for the indicator 3.2 ecological corridors). The full list of indicators and criteria is set out in Annex 1. Each of the thematic categories is introduced below.

1. **Strategic Vision:** Maritime spatial plans should provide a coherent future vision with core objectives that extend beyond the legislative timeframe of the plan itself. In accordance with the EU MSFD, this future vision should be aligned with the achievement and maintenance of Good Environmental Status and not lead to avoidable adverse impacts on the marine environment. In accordance with the targets of the EU Biodiversity Strategy for 2030, MSPs should allow sufficient space for the future expansion of marine protected areas and restoration of vulnerable ecosystems.

2. **Ecosystem-Based Approach:** This section of the assessment focuses on the degree to which an effective ecosystem-based approach has been developed and applied in practice. The selection of indicators within this thematic category is informed by a review of the scientific and policy literature (see Section 2 above). Our primary concern is with the assessment of environmental impacts, sensitivities, and limits. As such, the governance dimensions commonly associated with an ecosystem-based approach (e.g., participation, recognition of diverse forms of knowledge, transboundary coherence) are not included within this assessment. In the case of six indicators within this thematic category, the specification of detailed criteria allows for a stepwise differentiation, examining the extent to which an indicator has been substantially addressed within the environmental report accompanying the MSPs, applied within policy provisions of the MSP itself, and/or informed zoning designations within the MSP, respectively. In some cases, a discrepancy between the recommendations/analysis presented in the environmental report and policy or zoning provisions of the MSP may be identified.

3. **Marine Conservation:** This thematic category concerns conservation areas, protected species, and ecological corridors and the provisions made within the MSP to safeguard their protection. The indicators relate to objectives of the Birds and Habitats directives, the EU Biodiversity Strategy as well as international agreements.

4. **Nature Restoration and Climate Change:** This thematic category concerns both active and passive measures to restore ecosystems/ecosystem components as well as consideration of current and projected climate change impacts on the marine ecosystem and the capacity of the ecosystems to adapt to such changes. Under climate change mitigation we examine the extent to which the role of marine ecosystems as carbon sinks is recognised, quantified and safeguarded within the MSPs. The role of offshore renewable energy in contributing towards achieving carbon neutrality is acknowledged but is not the focus of this assessment.

5. **Economic and Military Activities:** This final thematic category assesses measures designed to reduce the impact of anthropogenic pressures from economic activities (shipping, commercial fisheries, extractive industries, offshore wind energy) and military activity on marine ecosystems.

3.3. Qualitative Approach

Given the nature of this assessment and the diversity of current MSP practice, a qualitative approach provides more nuance than closed questions with categorical answers. With respect to most indicators, a simple yes/no response will not be sufficient. In some cases, for example, key components of an ecosystem-based approach have been applied, but with significant caveats and constraints. Assessments of cumulative impacts or ecosystem sensitivity may be conducted qualitatively at a general level or quantitatively, encompassing both cumulative and synergetic impacts across a wide range of indicators. Similarly, alternative future scenarios may be based on a detailed analysis of plausible plan alternatives or be limited to fictitious (or ideal type) scenarios with limited real-world application.

3.4 Scoring System

This assessment follows a green, amber, red traffic light scoring system as follows:

- Green: criterion satisfied
- Amber: criterion partially satisfied
- Red: criterion not satisfied

The intention is to provide a qualitative indication of the extent to which a criterion is fulfilled or not fulfilled. It is not the intention to provide a ranking of MSPs one against another. The methodology employed does not support comparison of that form, particularly, given that each of the criteria cannot be assumed to be of equal weight.

3.5. Summary Assessments

Each of the assessments begins with a qualitative summary, setting out the key messages from the assessment. In each case, we refer to the extent to which an effective ecosystem-based approach has been applied and the capacity of the MSP to contribute to the achievement and maintenance of Good Environmental Status. This is followed by a summary overview chart, providing information on the percentage of criteria within each thematic category which are fulfilled, partially fulfilled or unfulfilled.

3.6 Selection of Maritime Spatial Plans

The assessment methodology has initially been applied to four maritime spatial plans (Belgium, Germany, Latvia and Sweden). These countries were selected in order to achieve geographical spread, a mix of both established and newly developed plans, and a mix of larger and smaller Member States. The plans selected furthermore represent a mix of planning cultures and approaches (e.g., Germany: regulatory, legalistic focus, Sweden: strategic, decision-oriented). Where English (or German) translations are not available, national-level documents (MSP and SEA texts) have been translated to English with the aid of professional translation software (DeepL). For each of the four national assessments inputs were received from national experts familiar with the maritime spatial plans.

The methodology was developed such that additional national MSPs can be assessed by other stakeholders. It is non-proprietary (open source) and is intended as a resource for practitioners to take further to cover additional countries.

Black-legged Kittiwake (*Rissa tridactyla*)
Photo: Stefan Gruetzmacher

Table 2: EU Directives and Policy Statements included within the Assessment			
Short name	**Official name**	**Year of first publication**	**Current version**
EU Biodiversity Strategy	Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: EU Biodiversity Strategy for 2030 Bringing nature back into our lives	2020	2020
European Green Deal	Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal	2019	2019
EU Renewables	Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources	2009 (precursor Directive on same issue)	2018
EU MSPD	Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning (Maritime Spatial Planning Directive)	2014	2014
EU MSFD	Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)	2008	2017
EU Birds	Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds	1979 (precursor Directive on same issue)	2009
EU WFD	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a Framework for Community Action in the Field of Water Policy	2000	2014
EU Habitats	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora	1992	2013

Table 3: International Agreements included within the Assessment		
Short name	**Official name**	**Year of signature**
AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds	1995
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas	1992
CMS	Convention on the Conservation of Migratory Species	1979
EUROBATS	Agreement on the Conservation of Populations of European Bats	2014
London Convention	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter	2008
MARPOL	International Convention for the Prevention of Pollution from Ships	1973
OSPAR	Convention for the protection of the marine environment of the north-east Atlantic	1992
UNCLOS	United Nations Convention on the Law of the Sea	1982

Table 4: Link between Assessment Indicators and EU Directives and Policy Statements and International Agreements		
Theme	**Indicator**	**EU Directive / Policy & International Agreements**
1. Strategic Vision	1.1 Strategic Vision & Long-term Objectives	EU MSPD, EU Biodiversity Strategy, HELCOM-VASAB Broad-scale principles
2. Ecosystem-based Approach	2.1 Precautionary Principle	EU MSFD §1 (3), EU MSPD §3, §14, Treaty on the Functioning of the EU §191 (2)
	2.2 Cumulative impact assessment	EU MSFD §1 (3), EU MSFD §8, EU MSPD Preamble 14
	2.3 Ecological Limits	EU MSFD §1 (3), EU MSPD Preamble 14
	2.4 Ecosystem services	EU MSFD §1 (3), EU MSPD Preamble 13,14, EU Biodiversity Strategy
	2.5 Ecosystem sensitivity analysis	EU MSPD Preamble 14
	2.6 Future Scenarios	EU SEA Directive, Preamble 14
	2.7. Monitoring and Adaptation	EU MSPD, Preamble 18, MSFD §11 (1), §17(2), OSPAR, Annex IV
	2.8 Good Environmental Status	EU MSFD, EU MSPD, EU Biodiversity Strategy
3. Marine Conservation	3.1 Location of Conservation Areas and Economic Activities	EU MSFD, EU Biodiversity Strategy
	3.2 Ecological Corridors	EU Biodiversity Strategy, AEWA §2.1, Annex 3.2.4, CMS § 1, ASCOBANS, CMS, EUROBATS
	3.3 Protected Species	EU Birds, EU Habitats, CMS, ASCOBANS
4. Nature Restoration and Climate Change	4.1 Nature Restoration	EU Biodiversity Strategy
	4.2 Climate Change Mitigation	EU Green Deal, EU Biodiversity Strategy
5. Economic and Military Activities	5.1 Shipping	EU MSFD Preamble (8), OSPAR Annex V, EU MSPD §8 (2), EU MSPD, Preamble 14, MARPOL, European Green Deal
	5.2 Commercial Fishing	EU MSFD §1 (3), EU MSPD, Preamble 14, EU MSPD §8 (2)
	5.3 Extractive Activities	EU MSFD §1 (3), EU MSPD, Preamble 14, EU MSPD §8 (2)
	5.4 Military activity	EU MSFD §1 (3), EU MSPD, Preamble 14, EU MSPD §8 (2)
	5.5 Noise and Light Pollution	EU MSFD Annex III, MARPOL, ASCOBANS Annex 1

4. National Level Maritime Spatial Plan Assessment Results

The four maritime spatial plans included within this assessment differ significantly in terms of their approach and the extent of alignment with EU environmental objectives.

4.1 Belgium

Belgium's marine space is under very intensive use. The Belgian maritime spatial plan sets out clear objectives within a long-term perspective. It makes explicit spatial choices and provides a robust framework for decision-making at project level. The plan has been prepared following a thorough strategic environmental assessment, which indicates that current and planned activities risk substantial adverse impact on the marine environment. This increase in use is not counterbalanced by reducing pressure on MPAs. The plan does not include sufficient measures to mitigate these impacts and protect sensitive ecosystems. Shipping, offshore wind and commercial fishing place the most substantial impacts on the marine environment. It must be considered very unlikely that the volume and density of planned activity within these sectors is compatible with the achievement of Good Environmental Status as required under the MSFD.

4.2 Germany

Germany's maritime spatial plan is strongly focused on the expansion of offshore renewable energy. The plan follows a narrowly defined understanding of the role of spatial planning at sea, primarily focussed on the spatial coordination of individual uses of and claims on marine space, rather than acting as a framework for strategic, cross-sectoral decision-making or resolving anticipated conflicts between sectoral objectives. The plan does not place effective constraints on shipping, fishing or resource extraction activities or effective limits on the volume or intensity of offshore wind energy development. Although the plan makes explicit reference to the application of the 'ecosystem approach', it makes provision for a high volume and intensity of activity at sea, without due regard for the carrying capacity of the marine ecosystems and the cumulative and synergetic impact of offshore wind, shipping, fishing, extractive industries and military activities. This increase in use is not counterbalanced by reducing pressure on MPAs. In a number of cases, there are clear indications that the precautionary principle has not been applied, and indeed substantial adverse impacts on the marine ecosystem must be anticipated. The scientifically informed advice of the Federal Agency for Nature Protection, concerning fundamental aspects of the plan has not been given sufficient consideration. The Strategic Environmental Assessment does not provide a thorough, systematic assessment of the likely cumulative of the levels and types of economic uses provided for within the plan nor an assessment of meaningful alternative scenarios. Against this background, it must be concluded that the German plan does not follow an ecosystem-based approach and does not support the achievement and maintenance of Good Environmental Status.

4.3 Latvia

Latvia's marine space is busy with substantial areas of current and potential future use. Latvia's marine ecosystems face substantial pressures due to the high density of activities in close proximity, particularly within coastal waters. There are some positive indications that elements of an ecosystem-based approach to maritime spatial planning have been applied. The use of a compatibility matrix to guide decision-making in situations of multi-use is also encouraging. Nevertheless, it must be regarded as a significant limitation that neither a systematic assessment of the cumulative impacts of current and projected activities nor an analysis of ecological sensitivities has been undertaken as part of the preparation of the maritime spatial plan. Large areas of marine space are given the status of areas of investigation of natural values. The maritime spatial plan also includes provision for extensive research areas for wind park development. These areas provide an indication of the location of future protected areas and offshore wind parks and reflect the need for further research prior to formal zoning designation. Existing

protected areas, however, provide limited protection and consideration of ecological connectivity beyond the boundaries of nature protection areas is very limited. The capacity of Latvia's plan to guide provide a framework for ecosystem-based marine management is dependent on ongoing monitoring and research efforts and the rigour of environmental impact assessments on a case-by-case basis.

4.4 Sweden

Sweden's maritime spatial plan represents a comparatively good example of an evidence-informed plan. Coastal and maritime activities play an important role in Swedish society and economy. It sets out a vision for the future use of marine space, intended to provide a framework to guide decision-making at lower levels. It is substantially informed by a robust, spatially explicit quantitative assessment of cumulative impacts and ecosystem sensitivities. The environmental assessment indicates, however, that both the negotiated plans and an eco-alternative scenario would contribute only marginally to a reduction in overall impact on the ecosystems of the Baltic and North Seas (compared to a business-as-usual alternative with less wind energy generation). This may in part, be explained by the role of human pressures that are impacted to a limited extent only by the maritime spatial plan (e.g., fisheries, eutrophication due to agricultural runoff). It is also possible that changes in the weighting of specific values (pressures, sensitivity) could impact meaningfully on the overall results of the cumulative impacts assessment. The Swedish plan, in many respects, takes the form of an evidence-based guidance document. Its primary focus is on informing future decision-making. It thus contains few binding commitments. Consequently, the impact of the plan will be determined by its success in acting as a basis for decision-making. A number of the key proposals of the plan with potentially significant implications for the protection of the marine environment will require legislative measures for their implementation, including the designation of an expanded and coherent network of marine protected areas.

Photo: Colin Ward

✓ Criterion is satisfied -/- Criterion partially satisfied ✗ Criterion is not satisfied

Table 5: Compiled National Level MSP Assessment Results

N°	Criteria	Belgium	Germany	Latvia	Sweden
1.1a	Strategic vision with long-term objectives	✓	-/-	✓	✓
1.1b	MSP positioned within a longer timeframe	✓	✗	-/-	✓
1.1c	Future expansion of marine protected areas	✗	✗	-/-	-/-
2.1a	Explicit reference to the precautionary principle	✓	-/-	✓	✓
2.1b	Precautionary principle applied to relevant MSP provisions	-/-	✗	-/-	✓
2.1c	Precautionary principle informed MSP zoning	✗	✗	-/-	✓
2.2a	Cumulative impact assessment conducted	✓	-/-	✗	✓
2.2b	MSP designed accordingly, recognising ecological limits and cumulative impacts	✗	✗	✗	✓
2.2c	Cumulative impacts assessment informed zoning	✗	✗	✗	-/-
2.3a	Calculation of ecological limits/carrying capacity	✗	✗	✗	✗
2.3b	Ecological limits informed zoning	✗	✗	✗	✗
2.4a	Identification of ecosystem services	-/-	✗	✓	✓
2.4b	Ecosystem services informed zoning	✗	✗	-/-	-/-
2.5a	Ecosystem sensitivity analysis conducted	✗	✗	✗	✓
2.5b	Ecosystem sensitivity analysis informed zoning	-/-	✗	✗	✓
2.6a	Alternative future scenarios conducted	✓	✓	✓	✓

N°	Criteria	Belgium	Germany	Latvia	Sweden
2.6b	Future scenarios informed zoning	◐	✓	◐	✓
2.7a	Arrangements for ongoing monitoring	✓	◐	✓	✓
2.7b	Provision for adaptive modification in response to changes	✓	✗	◐	✓
2.8a	Explicit reference to MSFD objective of achieving Good Environmental Status	✓	◐	✓	✓
2.8b	MSFD implementation process has informed the MSP	✓	✗	✓	✓
3.1a	Location of protected areas founded on scientific rationale	✓	◐	◐	◐
3.1b	Exclusion of economic activities from protected areas	✗	✗	◐	✗
3.1c	Buffer zones around wind farms	✗	◐	✗	✗
3.1d	Scientific rationale for co-location	◐	✗	✓	✓
3.2a	Protected ecological corridors	✗	✗	◐	◐
3.2b	Life-cycles of mobile marine species accounted for	◐	✗	✗	◐
3.2c	Protection of migratory routes for birds	✗	◐	◐	✗
3.2d	Disruption/fragmentation of ecological corridors minimised	✗	✗	✗	✗
3.3a	Explicit measures to ensure protection of species	◐	◐	◐	✗
4.1a	Provisions for restoration of ecosystems	◐	✗	✗	✗
4.1b	Impacts of climate change on marine ecosystems	◐	◐	✓	✗
4.1c	Mitigation of climate change impacts on marine ecosystems and adaptive capacity	◐	✗	◐	◐
4.1d	Provision for compensation measures	✗	✗	✗	✗

N°	Criteria	Belgium	Germany	Latvia	Sweden
4.2a	Reference to role of marine ecosystems as carbon sinks	⊘	✗	⊘	⊘
4.2b	Quantification of contribution of marine carbon sinks	✗	✗	✗	✗
4.2c	Protection of marine carbon sinks	✗	✗	✗	✗
5.1a	Negative impacts on marine ecosystems from shipping	✓	✗	✗	✗
5.1b	Assessment of risks posed by shipping accidents	✓	⊘	✗	⊘
5.1c	Mitigation of risks posed by shipping accidents	✓	✗	✗	✗
5.1d	Seasonal restrictions on shipping	✗	✗	✗	⊘
5.2a	Restrictions on commercial fishing methods	⊘	✗	⊘	⊘
5.2b	Additional restrictions on commercial fishing activity	⊘	✗	✗	⊘
5.3a	Restrictions on extractive activities	⊘	✗	✓	⊘
5.4a	Restrictions on military activity	✗	✗	✗	✗
5.5a	Assessment of noise pollution	✓	⊘	⊘	✓
5.5b	Measures to mitigate noise pollution	✗	✗	✗	⊘
5.5c	Measures to minimise impact of light pollution	✗	✗	✗	✗

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Annexes

Annex 1: Maritime Spatial Plan Assessment Indicators and Criteria			
Theme	**Indicator**	**Criteria**	
1. Strategic Vision	1.1 Strategic Vision & Long-term Objectives	1.1a	Does the MSP set out a future vision with long-term objectives?
		1.1b	Is the time period of the plan (usually 5 or 10 years) positioned within a longer timeframe?
		1.1c	Does the MSP allow for the future expansion of Marine Protected Areas (MPAs) to meet the targets set out in the EU Biodiversity Strategy for 2030?
2. Ecosystem-based Approach	2.1 Precautionary Principle	2.1a	Does the MSP make explicit reference to the precautionary principle as the basis of decision-making?
		2.1b	Has the precautionary principle been applied to relevant MSP provisions?
		2.1c	Is there evidence that MSP zoning decisions and/or spatial policies have been substantially informed by the precautionary principle?
	2.2 Cumulative Impact Assessment	2.2a	Was a cumulative impact assessment conducted as part of the preparation of the MSP?
		2.2b	Is the MSP designed accordingly, recognizing ecological limits and cumulative impacts?
		2.2c	Is there evidence that MSP zoning decisions have been substantially informed by an assessment of cumulative impacts?
	2.3 Ecological Limits	2.3a	Does the MSP include an explicit calculation of ecological limits or carrying capacity?
		2.3b	Is there evidence that MSP zoning decisions have been substantially informed by an assessment of ecological limits (e.g., safe biological limits for commercially exploited fish and shellfish)?
	2.4 Ecosystem Services	2.4a	Does the MSP explicitly identify ecosystem services?
		2.4b	Is there evidence that MSP zoning decisions and/or spatial policies have been substantially informed by an assessment of ecosystem services?

	2.5 Ecosystem Sensitivity Analysis	2.5a	Does the MSP include an ecosystem sensitivity analysis, assessing in particular sensitivity to human-induced changes or influences?
		2.5b	Is there evidence that MSP zoning decisions have been substantially informed by an assessment of ecosystem sensitivity?
	2.6 Future Scenarios	2.6a	Have alternative future scenarios informed the preparation of the MSP?
		2.6b	Is there evidence that MSP zoning decisions and/or spatial policies have been substantially informed by an assessment of alternative scenarios?
	2.7. Monitoring and Adaptation	2.7a	Does the MSP make arrangements for ongoing monitoring of marine ecosystems?
		2.7b	Does the MSP make provision for adaptive modification of the MSP in response to identified changes in the marine environment, or new information pertaining to pressures on the marine environment?
	2.8 Good Environmental Status	2.8a	Does the MSP make explicit reference to the requirements of the Marine Strategy Framework Directive (MSFD) in relation to the achievement of Good Environmental Status (GES)?
		2.8b	Does the MSP indicate how the MSFD implementation process has informed the MSP?
3. Marine Conservation	3.1 Location of Conservation Areas and Economic Activities	3.1a	Is the location of protected areas founded on a clear and transparent scientific rationale?
		3.1b	Do conservation areas explicitly exclude the following from taking place within or adjacent to their boundaries: commercial fishing; wind energy development; shipping; sand and gravel extraction; military use?
		3.1c	Does the MSP include buffer zones to ensure sufficient distance between protected areas and wind energy zones?
		3.1d	Does the MSP provide a clear and transparent scientific rationale for the colocation (multi-use) of conservation areas and economic activities?

	3.2 Ecological Corridors	3.2a	Does the MSP provide for protected ecological corridors ensuring connectivity between conservation areas?
		3.2b	Does the MSP take explicit account of the life cycles of mobile marine species (birds, bats, fish and marine mammals)?
		3.2c	Are migratory routes for birds protected by the provisions of the MSP ?
		3.2d	Does the MSP make provisions to minimise the disruption or fragmentation of ecological corridors due to the following activities: shipping; sand and gravel extraction; seismic exploration; offshore wind (and related servicing infrastructure)?
	3.3 Protected Species	3.3a	Does the MSP include explicit measures to ensure the protection of species in accordance with EU legislation and international commitments?
4. Nature Restoration and Climate Change	4.1 Nature Restoration	4.1a	Does the MSP make specific provisions for the restoration of ecosystems ?
		4.1b	Does the MSP explicitly take account of the likely impacts of climate change on the marine ecosystem?
		4.1c	Does the MSP include specific measures to mitigate the impacts of climate change on the marine ecosystem and allow for adaptation (e.g., migration of species)?
		4.1d	Does the MSP identify suitable areas for compensation, or does it have relevant provisions to support the implementation of compensation measures in the marine environment (e.g., for infrastructure projects on land or at sea)?
	4.2 Climate Change Mitigation	4.2a	Does the MSP make reference to the role of marine ecosystems as carbon sinks ?
		4.2b	Does the MSP quantify the contribution of marine carbon sinks to climate mitigation?
		4.2c	Does the MSP include explicit measures to safeguard the contribution of marine carbon sinks?

5. Economic and Military Activities	5.1 Shipping	5.1a	Does the MSP include specific measures to ensure marine ecosystems are not negatively impacted by shipping activity?
		5.1b	Does the MSP include an assessment of the potential risks posed by shipping accidents (e.g., spillages of hazardous substances) to marine ecosystems?
		5.1c	Does the MSP include explicit measures to mitigate the risks posed by shipping accidents to marine ecosystems?
		5.1d	Does the MSP include seasonal restrictions on shipping, such as speed restrictions or re-routing (e.g., during the breeding season of protected and vulnerable species)?
	5.2 Commercial Fishing	5.2a	Does the MSP include restrictions on commercial fishing methods (e.g., bottom-trawling) to minimise damage to marine ecosystems?
		5.2b	Does the MSP include additional restrictions on commercial fishing activity (e.g., vessel size, seasonal constraints) to minimise damage to protected and vulnerable ecosystems and habitats and to achieve healthy populations of commercial fish species?
	5.3 Extractive Activities	5.3a	Does the MSP include restrictions on extractive activities (e.g., oil, gas, deep-sea mining, sediment extraction) to minimise damage to protected and vulnerable ecosystems and habitats?
	5.4 Military activity	5.4a	Does the MSP include restrictions on military activities (e.g., seasonal, time of day, noise restrictions) to minimise damage to protected and vulnerable ecosystems and habitats?
	5.5 Noise and Light Pollution	5.5a	Does the MSP include an assessment of the impacts of noise pollution on the marine ecosystem?
		5.5b	Does the MSP include specific and concrete measures to ensure that noise pollution is minimised?
		5.5c	Does the MSP include specific measures to minimise the impact of light pollution (e.g., from shipping and harbour activities)?

Partnership for nature and people

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Stichting BirdLife Europe gratefully acknowledges the financial support from the European Commission and the European Climate Foundation. All content and opinions expressed on these pages are solely those of Stichting BirdLife Europe. The European Commission and the European Climate Foundation are not responsible for any use that may be made of the information it contains.